THE THIRD INTERNATIONAL CONFERENCE ON 
BASIC & APPLIED SCIENCES

BOOK OF ABSTRACTS

19th-20th, March 2018
Almashtal Hotel – Gaza, Palestine
THE THIRD INTERNATIONAL
CONFERENCE ON
BASIC & APPLIED SCIENCES

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19 -20 March 2018
Al Mashtal Hotel – Gaza, Palestine
Conference Committees

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Dr. Mohammed Iqelan
Mr. Abd Al-Rahman Abu Lebda
Mr. Abd Al-Raouf Al-Mashharaway

Mr. Rami Nafee
Mr. Ahmed Ismail
Mr. Ahmad Ashour
Conference Chairman Message

The Faculty of Science is committed to its vital role for developing scientific knowledge.

We are honored to kindly invite you to attend the third version of the International Conference on Basic and Applied Sciences (ICBAS III) that is organized to convene at Al-Azhar University– Gaza (AUG) on 19- 20 March, 2018.

ICBAS III seeks to provide an optimum opportunity for academic, scientists, and researchers to convene, present, discuss and share their latest experiences and exchange their scientific findings, to address newly emerging trends and challenges in science community.

Scientists coming together in this celebration for solving scientific dilemmas will bring about profound contributions and recommendations to the community. It is worth mentioning that the contribution of ICBAS I and ICBAS II have added distinctive values to the scientific community.

ICBAS III endeavors to promote knowledge and to find answers to standing questions of concern to the Palestinian society and of concern to scientists on short and long terms.

ICBAS III researchers are believed to be motivated to utilize and to empower the relationship with other science institutions and world scientists to facilitate joint scientific researches.

ICBAS III will also assist the Palestinian researchers in the besieged Gaza Strip to gain new experiences and knowledge by interacting with world scientists and scholars.

On behalf of the ICBAS III committees, we are looking forward to seeing you in the city of Gaza – Palestine.

Prof. Dr. Abdel Khaliq AlFarra
ICBAS III Chairman
President, Al-Azhar University – Gaza
Organizing Committee Message

Dear Ladies and Gentlemen,

Scientific research gives universities the appreciation and recommendation amongst all communal societies that goes beyond all methods of regular education to be a mean of valuing countries' progress and achievements. The quality and status of scientific research have become vital indicators in the global battle of institutional excellence. We at the Faculty of Science would like to emphasize on this increasingly critical theme through encouraging, promoting and supporting research related activities at the institutional as well as at the individual levels.

Organizing and launching the current 3rd international conference on basic and applied sciences (ICBAS III) aim to provide clear solutions to current difficulties and to empower the researchers for translating theories into practices and achieve challenging results that can be shared and utilized with partners and relevant institutions all over the world. This gathering will provide the perfect forum for all participants from the different institutions and research centers to interact, cooperate, negotiate, and possibly discuss future collaborations and networking.

The conference was scheduled to be held two years ago but that was not possible due to the blockade and siege imposed on the Gaza Strip that negatively influence the whole life aspects including academic and research issues. However, the organizing committee challenged all difficulties and decided to hold ICBAS III on March 2018 to sustain the excellence of the first and second conferences.

Since the announcement of the conference, the different committees have been working diligently and provided every possible efforts in coordination and organization to bring it out in such decent and honorable content and shape. Researchers in the different scientific disciplines are encouraged to participate and share their knowledge with their colleagues from all participating institutions. The active participation expresses and emphasizes on the invaluable collaboration between the different Universities and colleagues in the Gaza Strip. The scientific committee received 217 research abstracts which were evaluated by specialists inside and outside Gaza. One hundred twenty five research abstracts were accepted, which will be presented in the conference oral and poster sessions. The full research articles will be peer-reviewed for publication at Al-Azhar-Gaza Scientific Journal. Finally, on behalf of the ICBAS III organizers and committees, we look forward to seeing you during the conference activities on 19-20 March, 2018

Sincerely Yours

Prof. Dr. Amal M. AlKahlout
Chairperson of ICBASIII Organizing Committee
Dean, Faculty of Science
Conference Scientific Program

First Day, Monday 19 March 2018

(First Session, 10:45-12:15)

<table>
<thead>
<tr>
<th>Theme</th>
<th>Venue</th>
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<tbody>
<tr>
<td>Basic &amp; Applied Chemistry</td>
<td>Hall 1</td>
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<tr>
<td>Pure &amp; Applied Mathematics</td>
<td>Hall 2</td>
</tr>
<tr>
<td>Biological, Medical &amp; Paramedical Sciences</td>
<td>Hall 3</td>
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</tbody>
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**Coffee Break**

(Second Session, 12:30-14:00)

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<tr>
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**Coffee Break**

(Third Session, 14:15-15:45)

<table>
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<tr>
<th>Theme</th>
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<tbody>
<tr>
<td>Theoretical &amp; Applied Physics</td>
<td>Hall 1</td>
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<tr>
<td>Earth &amp; Environmental Sciences</td>
<td>Hall 2</td>
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<tr>
<td>Biological, Medical &amp; Paramedical Sciences</td>
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</tbody>
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# Second Day, Tuesday 20 March 2018

(First Session, 9:00-10:30)

<table>
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<tr>
<th>Theme</th>
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<td>Theoretical &amp; Applied Physics</td>
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<tr>
<td>Biological, Medical &amp; Paramedical Sciences</td>
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*Coffee Break*

(Second Session, 10:45-12:15)

<table>
<thead>
<tr>
<th>Theme</th>
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<tbody>
<tr>
<td>Theoretical &amp; Applied Physics</td>
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*Coffee Break*

(Third Session, 12:30-14:00)

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<tr>
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*Coffee Break*

(Fourth Session, 14:15-15:45)

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BIOLOGICAL, MEDICAL & PARAMEDICAL SCIENCES

PART I: Oral Presentations
### First Day
#### First Session
**Hall (3) 10:45 – 12:15**
**Chairperson:** Prof. Dr. Abdelraouf El Manama

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Presenter</th>
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</table>
| 10:45-11:15   | **Keynote Lecture**
Promoting the wellness and health for Palestine                        | Dr Mahmoud Daher                 |
| 11:15-11:30   | Discussion                                                            |                                  |
| 11:30-11:45   | Antifungal activities of Punica granatum L. peel-compost tea for controlling damping-off disease caused by R. solani | Mona J. Wadi                     |
| 11:45-12:00   | Application of certain herbal essential oils feed supplementation as therapeutic agents and growth promoters in poultry (Broiler performances) against infected bacterial pathogens | Mohammed Al-Jarousha            |
| 12:00-12:15   | Microbiological Quality of Soaps and Efficacy of Antiseptics and Disinfectants Used in Hospitals in Gaza – Palestine | Ahmad Saleh Auda Salama          |
| 12:15-12:30   | **Coffee Break**                                                      |                                  |

### Second Session
**Hall (3) 12:30-14:00**
**Chairperson:** Dr. Emad Abou El Khair

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Presenter</th>
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</thead>
</table>
| 12:30-13:00   | **Keynote Lecture**
Emerging Infectious Diseases: Global threat                           | Prof. Dr. Abdelraouf El Manama   |
| 13:00-13:15   | Discussion                                                            |                                  |
| 13:15-13:30   | Spreading of multidrug, extensively drug and pandrug-resistant Bacteria, specially Carbapenemase producing Enterobacteriaceae and MRSA in Gaza strip hospitals | Nahed Al Laham                   |
| 13:30-13:45   | Cutting costs of hospitalization in suspected neonatal sepsis         | Shireen Abed                     |
| 13:45-14:00   | Incidence of multi-drug resistance blood stream infections at Al-Nassr Pediatric Hospital | Ahmed Al Afifi                   |
| 14:00-14:15   | **Coffee Break**                                                      |                                  |
### ICBAS III, 2018

**19/3/2018  First Day  Third Session  Hall (3)  14:15-15:45**

**Chairperson: Dr. Nahed Al Laham**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Presenter</th>
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<tbody>
<tr>
<td>14:15-14:30</td>
<td><strong>Antibacterial &amp; Antifungal Potentiality of Ricinus communis &amp; Coleus forskohlii on Some Human pathogenic microorganisms</strong></td>
<td>Mahmoud El Hindi</td>
</tr>
<tr>
<td>14:30-14:45</td>
<td><strong>Association of blood glucose levels and sepsis-related mortality</strong></td>
<td>Lina aboud</td>
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<tr>
<td>14:45-15:00</td>
<td><strong>Microbial Quality and Antibiotic Residues of Fish Sold in the Gaza strip, Palestine.</strong></td>
<td>Asmaa Elsiqali</td>
</tr>
<tr>
<td>15:00-15:15</td>
<td><strong>Evaluation of essential oils of umbelliferae family members against fusarium oxysporum f. Sp. Lycopersici, wilt pathogen of tomato</strong></td>
<td>Nedal Fayyad</td>
</tr>
<tr>
<td>15:15-15:30</td>
<td><strong>Development of Antibiotic Detection Bioassay Kit from Locally Isolated Bacteria</strong></td>
<td>Ayat ElKurd</td>
</tr>
<tr>
<td>15:30-15:45</td>
<td><strong>Effect of Microwave Treated Water on the Growth of Corn (Zea mays) and Pepper (Capsicum annuum) Seedlings</strong></td>
<td>Etimad M. Alattar</td>
</tr>
<tr>
<td>15:45</td>
<td><em>Lunch and Closing of the first day</em></td>
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**20/3/2018  Second Day  First Session  Hall (3)  09:00 – 10:30**

**Chairperson: Dr. Saleh Nazmy Mwafy**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
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<tbody>
<tr>
<td>09:00-09:30</td>
<td><strong>Keynote Lecture</strong> Pharmacogenetics in practice of personalized medicine</td>
<td>Dr. Basim Ayesh</td>
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<tr>
<td>09:30-09:45</td>
<td><strong>Should sex differences be considered when applying mathematical indices and formulas for discriminating β- thalassemia minor from iron deficiency?</strong></td>
<td>Mahmoud Sirdah</td>
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<tr>
<td>09:45-10:00</td>
<td><strong>Hematological and biochemical evaluation of β-thalassemia major patients in Gaza Strip: cross sectional study</strong></td>
<td>Hani Ayyash</td>
</tr>
<tr>
<td>10:00-10:15</td>
<td><strong>Glucose-6-phosphate dehydrogenase (G6PD) Deficiency in Gaza: molecular spectrum and clinical significance</strong></td>
<td>Lina aboud</td>
</tr>
<tr>
<td>10:15-10:30</td>
<td><strong>Consanguinity and a number of Inherited disorders in the Gazian population</strong></td>
<td>Abed El-Raoof Masoud</td>
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<td>10:30-10:45</td>
<td><em>Coffee Break</em></td>
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### Second Session

**Chairperson:** Dr. Basim Ayesh  
**Date:** 20/3/2018  
**Time:** 10:45 – 12:15

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<thead>
<tr>
<th>Time</th>
<th>Title</th>
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</table>
| 10:45-11:15   | **Keynote Lecture**  
Can β-thalassemic baby births be avoided in highly consanguineous populations?  
Islamic and genetic counseling perspective  
Prof. Dr. Mahmoud Sirdah | Prof. Dr. Mahmoud Sirdah |
| 11:15-11:30   | Chemotherapeutic autophagy as a sincere friend of apoptosis         | Saeb Aliwaini              |
| 11:30-11:45   | Incidence of BRCA1 185delAG, BRCA1 5382insC and BRCA2 6174delT as a common genetic mutations associated with breast cancer risk in Gaza strip | Mahmoud Manaama            |
| 11:45-12:00   | CTLA-4 Gene Polymorphisms in Women with Idiopathic Recurrent Pregnancy Loss | Eman Helles                |
| 12:00-12:15   | Novel Palladacycle, ASH-10, Exhibits Anti-Tumour Activity in Cervical Cancer Cells | Noura Zouher Ramadan        |
| 12:15-12:30   | **Coffee break**                                                   |                            |

### Third Session

**Chairperson:** Prof. Dr. Abdel Nasser K. Abu Shahla  
**Date:** 20/3/2018  
**Time:** 12:30 – 14:00

<table>
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<tr>
<th>Time</th>
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<tr>
<td>12:30-12:45</td>
<td>Thyroid hormones, lipid profile and anthropometric changes after programmed weight loss in Palestinian obese adult females.</td>
<td>Saleh Nazmy Mwafy</td>
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<tr>
<td>12:45-13:00</td>
<td>Palestinian micronutrient survey (PMS)</td>
<td>Adly Bahjat Skaik</td>
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<tr>
<td>13:00-13:15</td>
<td>Challenges facing adequate estimation of micronutrient deficiencies among children in Palestine</td>
<td>Mahmoud Srour</td>
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<tr>
<td>13:15-13:30</td>
<td>Comparative study between Test tube Babies and Normal babies At Gaza- Strip Palestine</td>
<td>Maha M. El-Hallaq</td>
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<tr>
<td>13:30-13:45</td>
<td>Analysis of the hematology and some biochemical parameters in children after exposure to EMWs and the therapeutic action of olive oil</td>
<td>Mohammed Abujami</td>
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<tr>
<td>13:45-14:00</td>
<td>Relationship between Vitamin A and Other Micronutrients among Malnourished Children in Gaza City</td>
<td>Mirvat Abdraboh</td>
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<tr>
<td>14:00-14:15</td>
<td><strong>Coffee Break</strong></td>
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<tr>
<td>Time</td>
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<tr>
<td>14:15-14:30</td>
<td>The effect of vitamin C and/or E supplementations on type 2 diabetic</td>
<td>Asmaa Abu Ghali</td>
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<td>adult males under metformin treatment: a single-blinded randomized</td>
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<td>controlled clinical trial</td>
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<td>14:30-14:45</td>
<td>Diagnostic utility of corin and furin as biomarkers for cardiovascular</td>
<td>Ayman M. Abu</td>
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<td>complications in type 2 diabetes mellitus patients</td>
<td>Mustafa</td>
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<td>14:45-15:00</td>
<td>Hepcidin Status Correlated with Biochemical Parameters and Hematological</td>
<td>Mohammad Abosakran.</td>
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<td>Indices among Iron Deficient Anemic Children Aged (6 – 12) Years in</td>
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<td>Gaza City: A Case Control Study</td>
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<tr>
<td>15:00-15:15</td>
<td>Serum vitamin D level in type 2 diabetic patients from Gaza Governorate</td>
<td>Abed El-Raoof D.</td>
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<td></td>
<td>, Gaza strip</td>
<td>Masoud</td>
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<tr>
<td>15:15-15:30</td>
<td>Possible association between non-alcoholic fatty liver disease and</td>
<td>Suliman K. Abu</td>
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<td></td>
<td>metabolic syndrome (case-control study)</td>
<td>Hasanien</td>
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<tr>
<td>15:30-15:45</td>
<td>Vitamin D levels in Gestational Diabetic Patients from Gaza Strip</td>
<td>Zainedeen Nassar</td>
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</tbody>
</table>

*Lunch and closing ceremony*
Antifungal Activities of Punica Granatum L. Peel-Compost Tea for Controlling Damping-off Disease Caused by R. Solani

Mona M. Abou El Nour¹, Zeinab M.H. Kheiralla¹, Abdel-Wahab A.F.M.², Ehab A.D. Sarhan³, Mona J.M.Wadi⁴*

¹Botany Dept., Women's College for Arts, Science and Education, Ain Shams University
³Plant Pathology Research Institute, Agricultural Research Center, Giza, Egypt
⁴Biology Dept., Faculty of Science, Al-Azhar University-Gaza, Palestine
Email: mona_wadi@yahoo.com

Rhizoctonia solani is common fungal pathogen to lupine plants (Lupinus albus L.) causing damping-off disease resulting in serious economic losses. In vitro experiment was conducted to evaluate the efficacy of individual compost tea and pomegranate peel-compost tea prepared using water and alkaline water against R. solani. Three pomegranate types (two Palestinian and one Egyptian) were used. Greenhouse experiment was also conducted using the Palestinian sour pomegranate peel which showed a significant antifungal activity. Lupine plants were treated with compost alone or combined with pomegranate peel powder and their extracts to control lupine damping-off disease in comparison with untreated infected soil (control), and the fungicide (Rizolex-T). In vitro experiment, results showed that pomegranate peel-compost tea significantly decreased linear growth of the R. solani compared to individual compost tea. Alkaline water led to a significant reduction in the fungal growth compared to water. Under greenhouse conditions, all applied treatments significantly induced reduction in the damping-off percentage and improved the nodulation status and growth parameters compared to infested control. The maximum survived plants percentage and growth parameters of lupine plants were recorded for pomegranate peel-compost tea treatment, followed by the fungicide. Whereas the best nodulation status was achieved by the fungicide and pomegranate peel-compost tea. It could be concluded that pomegranate peel-compost tea may provide a high efficacy to pomegranate peel and compost in combination, so it might be used in a commercial scale for controlling damping-off disease.

Keywords: Lupine, R. solani, compost, compost tea, pomegranate peels, Rizolex-T.
Application of Certain Herbal Essential Oils Feed Supplementation as Therapeutic Agents and Growth Promotors in Poultry (Broiler Performances) Against Infected Bacterial Pathogens


Alisraa University, Gaza, Palestine
E.mail: m-jarousha@hotmail.com

This study was conducted in Gaza strip with one-day-old chicks apparently healthy and proven bacteriologically to be free from bacterial infections obtained from private hatchery were used throughout the experiments to evaluate the effects of dietary supplementation of three medicinal plants on the performance, the chicks were used in a completely randomized study. The aim of the present study was to evaluate the antimicrobial activity and therapeutic efficacy of different extracts of medicinal plants (garlic, thyme and sage). And to describe their effect on growth performance, the immune system of the chicks. Eighty healthy chicks were used for testing the pathogenicity of each Salmonella typhi, E.coli and Campylobacter jejuni marked by Leg marks and reared in pens, were divided into 4 equal groups, each of 20 chicks. Groups were coded as groups I, II, III and IV. The groups I, II and III were received medicated concentrated ration containing herbal medicinal plants as (Garlic oil) Allium sativum mixed at a percent of (0.5%, 1.0% and 1.5%) for ten days. Group IV was kept as non-medicated controls. Eighty infected chicks of each Salmonella typhi, E.coli and Campylobacter jejuni ten days old were introduced into chicks in groups I, II, III and IV. The experimental chicks were observed daily from time to time for a period of three weeks for abnormal clinical signs and deaths. Post mortem examination was carried out on clinically symptoms and dead birds and isolation trials from those birds were conducted. The same had been done on Thyme and Sage oils at the same concentrations. The results of observations in the experimental chicks were registered and illustrated. The pathogenicity of Salmonella typhi, E.coli and Campylobacter jejuni on chicks fed on ration mixed with garlic, thyme and sage oils (0.5, 1.0 and 1.5%), resulted in high mortality at 0.5%, lower mortality was appeared when fed with ration mixed with 1.0%, while no mortality was recorded by increasing oil concentration to 1.5 and the pathogenicity of Salmonella typhi, E.coli and Campylobacter jejuni to the chicks (control) was very high.

Keywords: herbal essential oils, therapeutic agents, growth promotors, poultry
Microbiological Quality of Soaps and Efficacy of Antiseptics and Disinfectants Used in Hospitals in Gaza – Palestine

Abdelraouf A. Elmanama¹, Ahmad S. Salama¹*, Hashem Arafa²

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The aim of this study is to investigate the microbial quality, identify bacterial contaminants, and the efficacy of antiseptics and disinfectants used in Gaza strip’s Hospitals. Conventional microbiological techniques were sued to determine the number and types of contaminants. The efficacy of antiseptics on bacteria, stainless steel cylinder method was employed. pH measurements and active ingredient concentration test were also performed according to standard methods. The percentage of soap samples that complied with the microbiological standards was 15/15 (100%) at the European Gaza Hospital (EGH), and the lowest (6.7%) at Kamal Adwan Hospital with an overall passing value of 69.5%. The most common cause of failure was due to coliforms (13.4%), Pseudomonas spp. (11.4%) and Bacillus spp. (5.7%). Contamination with yeast (10.5%) was higher than with mold (6.7%). Overall passing samples based on pH test in hospitals was 41% with the highest 18/20 (90%) in Nasser Hospital, the lowest passing value (0%) at the EGH. The antiseptics/disinfectants results expressed as average of zone of inhibition in mm (28.2 for E. coli, 20.8 for P. aeruginosa, and 20.7 for S. aureus). 60% of antiseptics/disinfectants passed the concentration test with Chlorhexidine having the highest percentage while chlorine showed the lowest percentage (48.3%). In conclusion, the study demonstrated high percentage of soap sample failure (74.3 %.) and Antiseptics/Disinfectants samples (40.3%). Continuous microbiological and chemical monitoring of such sensitive products should be implemented.

Keywords: microbiological quality, antiseptics, disinfectants, soap, hospitals in Gaza, Palestine, S. aureus, P. aeruginosa, E. coli.
Spreading of Multidrug, Extensively Drug and Pandrug-Resistant Bacteria, Specially Carbapenemase Producing Enterobacteriaceae and MRSA in Gaza Strip Hospitals

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Carbapenem-resistant Enterobacteriaceae (CRE) and Methicillin-Resistant S. aureus (MRSA) have been reported worldwide as a consequence largely of acquisition of carbapenemase and meca genes respectively. Multidrug resistant (MDR) was defined as acquired non-susceptibility to at least one agent in three or more antimicrobial categories, extensively drug resistant (XDR) was defined as non-susceptibility to at least one agent in all but two or fewer antimicrobial categories (i.e. bacterial isolates remain susceptible to only one or two categories) and pandrug resistant (PDR) was defined as non-susceptibility to all agents in all antimicrobial categories. The global spread of CRE and MRSA has limited the physicians’ antimicrobial treatment options of infected patients and have been responsible for high patients’ morbidity and mortality in many parts of the world, including Palestine. In our previous work, we discovered a specific clonal complex of MRSA harboring toxic shock syndrome toxin (TSST-1) that are endemic in our hospitals and also a pandrug-resistant Proteus mirabilis isolate. Moreover, we recently reported the identification of five VIM metallo-β-lactamase-producing Alcaligenes faecalis, associated with a small outbreak in Al Shifa hospital in Gaza, Palestine. So, in Gaza strip, do we have these superbugs spread in our hospitals?

Keywords: multidrug resistant, extensively drug resistant, pandrug resistant, outbreak, Gaza strip hospitals.
Cutting Costs of Hospitalization in Suspected Neonatal Sepsis

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This study was to evaluate the role of CRP in ruling out neonatal sepsis and thus shortening duration of hospitalization in cases unlikely to have sepsis. A total of 105 neonates admitted for suspected neonatal sepsis were prospectively evaluated using standardized clinical protocols over a 7-month period (April -November 2017). A locally designed assessment tool was used for data collection. Blood samples were sent to the hospital lab as a part of routine work-up of these cases (baseline CRP on admission, after 12-24 hours and serial follow-up till discharge). The clinical course was monitored and blood culture results were checked on the 3rd day of admission. Patients were categorized according to clinical and laboratory data into sepsis (proven, probable or possible) and no sepsis (sepsis unlikely). All data were computerized using Microsoft excel sheet and then statistically analyzed using SPSS-version 21. Out of the 105 neonates (age 1-28 days), 67 cases were categorized as sepsis unlikely. Antibiotic therapy was started in all admitted cases. In babies with clinical response and negative blood culture, two normal CRP results (≤ 6mg/L) were used as a justification for discontinuation of antibiotic treatment at 72 hours. For this category of patients, CRP was a good ancillary tool for excluding sepsis (p-value <0.001, specificity 100%, sensitivity 86.8%). The clinical impact of this result has been helpful to shorten duration of hospitalization in 58% of cases unlikely to have sepsis. About 36% of cases were discharged at 5-7 days while 6% were discharged late because of lack of clinical response. CRP is highly specific and reliable for ruling out neonatal sepsis. Beside clinical judgment, duration of hospitalization can be shortened when we utilize CRP as a guide. This finding is also useful in decreasing the risks of unwarranted antibiotic treatment, and thus decreasing antibiotic resistance.

Keywords: C-Reactive protein, neonatal sepsis, possible sepsis, probable sepsis, proven sepsis, Al-Nassr Pediatric hospital (NPH).
Incidence of multi-drug resistance blood stream infections at Al-Nassr Pediatric Hospital

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Bloodstream infections (BSI) are an important cause of morbidity and mortality. The causative bacterial pathogens vary in different parts of the world. Extensive use of antibiotics has added to the escalation of antibiotic resistance. The aim of study is to determine Incidence of multi-drug resistance blood stream pathogens at Al-Nassr Pediatric Hospital during the year 2017. A retrospective descriptive study carried out at Al-Nassr Pediatric Hospital in Gaza City over a period of 12 months (January 2017-December 2017). A total of 2596 blood culture specimens were examined microbiologically from all departments of the hospital. 146 had positive results. Of those, Gram positive organisms were (24%) and Gram negative isolates (76%). The commonest pathogens were CoNS followed by Klebsiella and staph. aureus. Antimicrobial sensitivity was higher for Gentamycin, Vancomycin, Meropenem and Amikacin respectively. Percentage of Multidrug resistant (MDR) and extensively drug resistant (XDR) from the Total 146 isolates were 53.4 and 8.2% respectively. Conclusion: Sepsis is one of the main causes of morbidity and mortality in children. This study showed alarming results of antibiotic sensitivity and resistance patterns. The antibiotics which are routinely for management of sepsis showed poor activity against most of the organisms. The broad spectrum antibiotic Meropenem was the most useful for most of the isolates but this will raise the antibiotic resistance in the future.

Keywords: sepsis, Al-Nassr Pediatric Hospital, multi-drug resistance, Antimicrobial susceptibility.
Antibacterial & Antifungal Potentiality of *Ricinus Communis* & *Coleus Forskohlii* on Some Human Pathogenic Microorganisms

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The objective of the present study was to explore the antibacterial and antifungal activity of two plant extracts (*Ricinus communis* & *Coleus forskohlii*) against some selected pathogen (*Staphylococcus aureus, Escherichia coli, Klebsiella pneumoniae* and *candida albicans*) using microdilution method (MIC) at different concentrations (100-0.195mg/ml) and Disc diffusion method (200 mg/ml). The extracts of plants were prepared using Soxhlet apparatus for 8 hr. The results of this study proved that the water extract of *Ricinus communis* showed maximum zone of inhibition against *E. coli* and the lowest minimum inhibitory concentration against all tested microorganisms. *Coleus* showed powerful antimicrobial activity against Gram positive and Gram negative bacteria. The water extract of *Coleus* showed maximum zone of inhibition against *k. pneumonia.*

**Keywords:** Antibacterial & antifungal, microdilution method (MIC), Disc diffusion method, *Ricinus communis, Coleus forskohlii.*
Neonatal sepsis (NS) is a significant contributor to infant mortality especially in low- and middle income countries. Neonatal sepsis can alter the glucose level causing either hypoglycemia, or hyperglycemia. This may have a significant effect on the outcomes of septic neonates. Our objectives were to evaluate the blood glucose levels among admitted patients diagnosed to have neonatal sepsis, and correlate their association with sepsis-related mortality. This study was carried out at the neonatal unit of Al-Nassr Pediatric Hospital over a 2-months period (January-February 2018). A total of 75 neonates admitted for suspected neonatal sepsis were retrospectively evaluated using a standardized clinical pathway. An approved hospital-designed assessment tool was used for data collection. Blood samples were sent to the hospital lab for determination of blood glucose levels at the time of admission as a part of routine work-up. The patients were divided in three groups according to their glucose levels: < 50 mg/dl, 50-120 mg/dl, and > 120 mg/dl. Clinical outcomes were also recorded. Among the 75 cases, glucose levels were below 50 mg/dl in 11 patients (14.7%), between 50 mg/dl to 120 mg/dl in 58 (77.3%), and above 200 mg/dl in 6 patients (8%). Of these three groups, 1 (9%), 3 (5.2%), and 1 (16.6%) neonates died respectively (p-value < 0.001). In conclusion, the majority of patients with neonatal sepsis had glucose levels between 50 and 120 mg/dl at admission. Those with the levels below 50 mg/dl and above 120 mg/dl had higher mortality rates.

**Keywords:** Neonatal sepsis, Hyperglycemia, Hypoglycemia, sepsis-related mortality
Fish diseases caused by pathogens (e.g. bacteria, viruses, fungi and parasites) affect the survival and growth rates of fish, and consequently lead to major economic losses. Furthermore, the microorganisms responsible for these infections belong to bacterial families that also produce infections in humans. Therefore, their transmission to human is highly probable. Several antibiotics including oxytetracycline, sulfamerazine and ormetoprim, are used for treating bacterial infections in farmed fish. The use of antibiotics in aquaculture systems is usually associated with serious health hazard not encountered in wild captured species. The main concern is antibiotic residues and development of antimicrobial resistance in bacteria that may be transferred to consumers. Several types of fish are consumed daily by inhabitants of Gaza strip as source of protein.

In this study, the microbial quality for locally farmed, caught and imported (frozen) fish was evaluated and the presence of antibiotic residues was investigated. The study examined 100 fish specimens that were purchased from local markets (60 farmed and 30 frozen and 10 caught fish). Total coliform, total viable count, Staphylococcus aureus, Salmonella, and Vibrio spp. were tested using standard methods. To investigate the presence of antibiotic residues, four classes of antibiotics were determined in fish samples using a bioassay method recommended by United States Department of Agriculture (USDA). The most detected antibiotic residues were aminoglycosides 52 (52%) in sea bream, red tilapia and Nile tilapia. followed by tetracyclines 1 (1%) in sutchi catfish fillet and negative results for β-lactams and macrolides. Microbiological quality tests showed that 39% of fish samples failed to comply with the Palestinian standards, the percentage of failure due to Total Plate Count (4%), Total Coliform bacteria (39%), S. aureus 13%, and Salmonella spp. (1%). Results confirmed the presence of antibiotic residues in fish samples collected from Gaza strip. A confirmatory method such as gas chromatography (GC) is recommended to be used to determine residues compliance with the maximum residue limits. It is also recommended that measures should be implemented to ensure observing proper withdrawal periods before marketing and drug control in veterinary use. In addition, a monitoring policy should be implemented to ensure the conformity of fish sold in Gaza strip with international standards. The results emphasizes the need to promote awareness about possible health hazards that could result from poor handling of farmed fish.

**Keywords:** Fish, Microbial quality, Antibiotic residues, Gaza-Palestine.
Evaluation of Essential Oils of Umbelliferae Family Members against Fusarium Oxysporum F. Sp. Lycopersici, Wilt Pathogen of Tomato

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Fusarium oxysporum f s lycopersici (FOFL) is considered as one of the most important plant pathogen causes fusarium wilt specifically in tomato. In the present study, the antimicrobial activity of Umbelliferae members Carrot, Parsley, Celery, Coriander, Caraway, Anise, Dill and Cumin essential oils on phytopathogenic fungus. These extracted oils used at different concentration (1, 2, 4 and 8%) and proved their bioactivity as antifungal agents for the inhibition of FOFL radial growth, fungal biomass and sporulation. Dill, Caraway, Parsley, Cumin, Celery, Coriander and Anise at 8% concentration were showed more than inhibition of radial growth than chemical fungicide (Bavistin at 10 ppm), but all essential oils of used plants were showed the inhibition of fungal biomass less than chemical fungicides (Bavistin at 10 ppm ). Our results in this study revealed that significant antagonistic effects of Umbilleferae members against FOFL and therefore could be used a viable for natural fungicides.

Keywords: Fusarium oxysporum, Plant pathogen, Antimicrobial activity, Antifungal agents.
The main objective of this study is to develop antibiotic residues detection bioassay kit from locally isolated bacteria from soil sample in Gaza strip. Soil samples were collected from different locations in the five governorates at Gaza strip. 116 bacteria isolates were isolated from soil sample. The bacteria isolates were identified as the most resistance of all antibiotics. They were then able to grow in different cultures at 60 °C. After that, formation the developed culture media suitable for bacterial growth. Collecting 81 milk samples and then determination the containing antibiotic residues using a commercial test (MiRA test) and the developed local test. The percentage of presumably positive results after 4 hours experiment was 82.7, 79.0 and 76.5 for the LDMBB-4 h, LDMBG-4 h and MiRA Test-4 h respectively. After 24 h, this percentages were dropped to 49.4, 35.8 and 17.3% in LDMBB-24 h, LDMBG-24 h, and MiRA Test-24h respectively. Results of the chi-square test of homogeneity revealed a statistically significant difference ($p < 0.001$) in proportions of positive (or negative) residues in milk samples between the six experimental trials. The result was statistically significant compared to locally kit and commercial kit. Therefore, we recommend that used for locally kit, when to use it positive effects on consumer health.

**Keywords:** raw milk, Antibiotic resistance, residual antibiotic, develop local kit, commercial kit
Effect of Microwave Treated Water on the Growth of Corn (Zea mays) and Pepper (Capsicum annuum) Seedlings

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This paper presents the investigation of the influence of microwave treated water on the growth of the plants. For this experiment, four groups of seedlings were used and subjected to the study. We took drinking water and divided it into four parts, each group was given only one part. The first group was given water that had been heated to boiling in a glass cup on a gas stove. The second and third group were given water that had been heated in a microwave to boiling (100°C) and 60°C respectively. The fourth group of seedlings was given water that had not been heated at all and used as control. The growth of seedlings was studied for 30 days. The analysis of the results shows that corn seedlings that exposed to microwaved water show lower growth rate in comparison to the control ones. Corn seedlings when watered with normal water or with water heated on the stove grew faster and have shoot length significantly bigger than the corns which were watered with water heated in a microwave at 60°C/100°C. On the other hand, pepper seedlings watered with either microwaved water or not microwaved water were found with no significant effects on their growth characteristics.

Keywords: Microwave, Treated Water, Corn and Pepper, Seedlings
Should Sex Differences be Considered when Applying RBC-Based Indices and Formulas for Discriminating β-thalassemia from Iron Deficiency?

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β-thalassemia minor (BTM) and iron deficiency (ID) are common disorders characterized by microcytosis and/or hypochromasia, leading to a challenge in their discrimination during mass-screening programs especially in developing countries where resources are limited. It has been shown with varying reliability that quick exclusion of either disorder could be achieved mathematically using RBC-based indices and formulas. However, none of these proposed indices and formulas considered the sex-based hematological differences. This comparative retrospective study examined the efficacy of using sex-based RBC indices in the mathematical discrimination BTM and ID in adult males and females. The CBC of randomly selected eight hundred adults diagnosed with BTM or ID (200M & 200F BTM, and 200M & 200F ID) were used in the comparisons. The discrimination power, in terms of sensitivity, specificity, positive likelihood ratio, negative likelihood ratio, and Youden index were calculated for all subjects and separately for males and females for 20 mathematical indices and formulas. Data revealed significant differences in the RBC-based indices between males and females for both BTM and ID groups. Significant variation in reliability indicators for the different indices and formulas were discovered between males and females samples. Sex-based indices and formulas are necessary to improve the reliability in mathematically discriminating between BTM and ID in mass screening programs. We also advocate for a large–scale multicenter study to establish the parameters of such indices and formulas with sex and age.

Keywords: β-thalassemia minor, iron deficiency, mathematical indices and formulas, discrimination power, sensitivity, specificity.
Hematological and Biochemical Evaluation of β-thalassemia Major Patients in Gaza strip: Cross Sectional Study

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The thalassemias are the global commonest human monogenetic disease, they are a family of hereditary anemias that have been encountered practically in every racial group and geographic location of the world. Aim: We designed the present work to evaluate hematological and biochemical aspects of our β-thalassemia major patients at the European Gaza hospital and their correlation with iron overload. Methods: Our study included 65 transfusion-dependent β-thalassemic patients (32 boys and 33 girls) aged 12-42 year old. Results: Sex-based differences in the hematological and biochemical parameters included in this evaluation study were reported among patients as compared to the normal reference range. Deteriorated hematological and biochemical statuses were reported in both males and females of our β-thalassemic patients. Severe anemia and severe iron overload were reported in males and females and are associated with worsened liver function tests, increased uric acid and decreased Calcium concentrations. The results concerning the splenectomized vs none- splenectomized β-thalassemic patients revealed significantly higher values in splenectomized patients for WBC, PLT, AST, ALT. Conclusion: This study justified the necessity for strengthen the efforts for regular evaluation and follow up of the β-thalassemic patients which could be used to improve or modify the management protocols and thus ameliorating their deteriorated hematological and biochemical status.

Keywords: β-thalassemia minor, anemia, iron overload, Gaza strip
Glucose-6-phosphate dehydrogenase (G6PD) deficiency is one of the most common inherited disorders, with more than 217 mutations discovered leading to acute hemolytic anemia (AHA) especially in young children. Comprehensive molecular characterization and clinical significance of ethnically prevalent G6PD mutations is lacking. In this work we summarized results studies performed by our research groups (Sirdah et al., 2012 & 2016, Reading et al., 2012 & 2016) on G6PD deficient with AHA. Molecular analyses revealed different mutations in the exonic or exon/intron boundaries with G6PD Mediterranean, African G6PD A-, and G6PD Cairo accounting for most cases. Other less frequent include G6PD Gaza, G6PD Beverly Hills, G6PD Chatham, G6PD Aures, G6PD Cosenza, in addition to three polymorphisms reported outside exonic or exon/intron boundaries. The severity of anemia was significantly greater with G6PD Mediterranean and G6PD Cairo than with G6PD A-, and with G6PD Cairo, compared to the other two variants. We conclude that the Gaza Palestinian population has a wide molecular diversity of G6PD deficient variants in exonic or exon/intron boundaries and in other uncommon regions of the G6PD gene. G6PD deficiency is a significant public health problem in Gaza and justifies nationwide G6PD newborn screening program.

**Keywords:** G6PD deficiency, G6PD Mediterranean, G6PD Cairo, G6PD African, G6PD Gaza, Acute Hemolytic Anemia
Parental consanguinity considered one of the main causes of genetic disorders among Gazian population. Five genetic diseases were selected and highlighted in this study which is celiac disease (CD), phenylketonuria (PKU), hemophilia, Thalassemia and cystic fibrosis (CF). Consanguineous marriages among Gazian population are relatively common. Data were collected from three health centers at Gaza strip which are Ard el-ensan center, Al-Remal Medical Center and CF Friend-Gaza-Palestine center. Nearly 58.5% of CD patients, 65.8% of PKU patients, 78% thalassemic, 89% of CF patients, and more than 95% of hemophilia patients were born to consanguineous parents. The recessive genes present in both relative parents considered the most concern of having affected offspring. This suggests a strong correlation between consanguineous marriages and genetic disorders.

Keywords: Celiac disease, Consanguinity, hemophilia, cystic fibrosis, Gaza, Gaza strip, thalassemia, Phenylketonuria.
Recently palladium (Pd) complexes have attracted a lot of interest as chemotherapeutic agents because they have been shown to exert a significant cytotoxic effect on cancer cells. Importantly, Pd complexes have been shown to exert antitumor activity in cisplatin resistant cells and to have less side effects than cisplatin, a widely used platinum-based chemotherapeutic agent. This led to suggestions that Pd (II) compounds may have different mechanisms of action from those of cisplatin, but this is still unresolved. It is, however, generally accepted that the cytotoxic effects exerted by most metal-based compounds result from their capacity to trigger DNA double-strand breaks which activate a canonical DNA damage signaling pathway through activating ataxia telangiectasia mutated (ATM), the checkpoint kinase 2 (CHK2), and the tumor suppressor protein p53. These proteins play an important role in deciding cell fate in response to DNA damage through trans-activating the cyclin-dependent kinase inhibitor \( p21 \) as well as pro-apoptotic proteins. While most chemotherapeutic agents have been described to induce cell death via apoptosis, there is increasing evidence that they can also function by initiating mitotic catastrophe and autophagy. Indeed, several studies have confirmed a complex cross-talk between apoptosis and autophagy, but while some studies indicate that autophagy inhibits the process of apoptosis, others suggest a role for autophagy in the induction of cell death. It would, however, appear that these opposing roles of autophagy depend, in part, on both the cell type and the chemotherapy used.

**Keywords:** Cancer, apoptosis, autophagy, Palladium compounds, DNA damage
Incidence of BRCA1 185delAG, BRCA1 5382insC and BRCA2 6174delT as a Common Genetic Mutations Associated with Breast Cancer Risk in Gaza strip

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Breast cancer (BC) is the most common cancer that affects women in Palestine, which reached 33.7% with a rate of 33.1 new cases per 100 thousand females in Palestine annually according to the Palestinian Information Center. Specific mutations in BRCA1 and BRCA2 tumor suppressor genes account for the majority of hereditary breast and ovarian cancer. 185delAG and 5382insC in BRCA1 and 6174delT in BRCA2 genes have been reported to be of high prevalence mutations in different populations. The aim of this study was to screen 185delAG, 5382insC of BRCA1 and 6174delT of BRCA2 mutations in breast cancer patients in Gaza strip. A total of 100 histological confirmed breast cancer patients were included in this study. Family history was obtained by interview questionnaire. Genomic DNA was extracted from peripheral blood samples, the presence of the mutation was investigated by PCR-mediated site-directed mutagenesis using Allele-specific oligonucleotide primers. A total of 100 breast cancer patients and 50 healthy control (age range: 20–80 years) were screened for 185delAG and 5382insC in BRCA1 and 6174delT in BRCA2 mutations. None of the patients were found to carry any of these three mutations. Our findings suggest that these BRCA mutations may not have a strong effect on breast cancer in Gaza BC Patients. The contribution of these founder mutations to breast cancer incidence is probably low and could be limited to specific subgroups. So it is very important to search for other mutations contributing to non-BRCA breast and ovarian cancers.

Keywords: Palestine, BRCA2, BRCA1, Breast cancer
Recurrent pregnancy loss (RPL) is the miscarriage of two or more consecutive pregnancies before 20th gestational week. We suggest that dysregulated immune-tolerance contributes to idiopathic RPL. Cytotoxic T lymphocyte associated antigen-4 (CTLA-4) is considered as a negative regulator of T cell activation and its role in maintaining immune-tolerance is well established. The present study aimed to investigate the CTLA-4 +49 A/G, -1661 A/G, -318 C/T and -1722 T/C single nucleotide polymorphisms (SNPs) and predisposition to RPL in Gaza Strip - Palestine. This case-control study was performed on DNA samples from 200 women with a history of two or more pregnancy losses (case group) and 200 control women with at least two live births and without any previous history of RPL. PCR-based restriction fragment length polymorphism (RFLP-PCR) method was used for genotyping CTLA-4 polymorphisms. Our study results revealed that there is no significant association between the allele/genotype frequencies of the investigated CTLA-4 SNPs and RPL. This relation remained true under dominant, co-dominant and recessive models. The A\G genotype of -1661 A\G polymorphism was higher in patient (45%) as compared to controls (39.5%) but without statistical significance. The minor allele frequencies (MAFs) of the CTLA-4 gene polymorphisms in the control group were as follows: +49A\G: 0.22, 318 C\T: 0.11, -1661 A\G: 0.26 and -1722T\C: 0.08. The study showed that there is no significant association between the four investigated CTLA-4 polymorphisms and the risk of RPL in the study population. Testing other CTLA-4 gene polymorphisms and the level of CTLA-4 expression in RPL patients is recommended.

**Key words:** Recurrent pregnancy loss, CTLA-4, Gene Polymorphism, PCR-RFLP.
Cancer continues to represent one of the most serious health problems worldwide and there is an urgent need to develop improved anti-tumour agents. For many years, most tumours have been treated with platinum [Pt(II)] drugs but recently, many other metals including palladium, have been tested for anti-cancer properties. Here we describe the anti-tumour activity of a novel binuclear palladacycle complex (ASH-10) in Hela cervical cancer cell line. We show that ASH-10 is effective in inhibiting the proliferation of cancer cells with an IC50 of 6.8 µM. Furthermore, ASH-10 was shown to inhibit cancer cell migration as measured by wound healing assay. We show, using an antibody to phosphorylated H2AX that the anti-tumour function of ASH-10 is achieved through inducing DNA damage which leads to an increase in p53, p21 and cleaved PARP levels. Together these findings suggest that ASH-10 may be an effective drug in the treatment of cervical cancer cells.

**Keywords:** Cervical cancer, Palladium compound (AS10), DNA damage,
This study aimed to investigate the changes in thyroid hormones, lipid profile and anthropometric measures after programmed weight loss in Palestinian obese adult females. This prospective study included 94 obese female (20-50 years old) as cases and 94 Non-obese of same age as controls for baseline comparisons. Obese female were assigned for low calorie diet (1200-1500 Kcal/day) in addition to a daily program of therapeutic exercise for six month. Parameters were measured, statistically analyzed and compared with control before and after study. Baseline measurements showed significant differences between cases and control regarding BMI, TG, TC, LDL-C, TSH, T3 and T4. After six months of low calorie diet and exercise there was a significant decrease in BMI, TC, TG and LDL-C in cases as compared to their levels before the study ($P \leq 0.05$). TSH was significantly increased, while, $T_3$ and $T_4$ were significantly decreased in the cases as compared to their levels before the study. Statistically significant correlations were reported between different parameters of the study. Low calorie diet and moderate intensity therapeutic exercise significantly improved the deteriorated health indicators in the cases which justifies the necessity for introducing such low calorie diet coupled with moderate exercise.

**Keywords:** Thyroid Hormone, Body-Mass Index, BMI, Weight Loss.
In 2013, the Palestinian Ministry of Health decided together with UNICEF, with the scientific cooperation of the University of Vienna, to conduct a representative cross-sectional study on the micronutrient status, prevalence and causes of nutritional anemia, coverage and use of flour fortification, salt iodization, micronutrient supplements and lifestyle and behavioral aspects of breastfeeding, physical activity, smoking and frequency of food consumption and anthropometric characteristics. The study was carried out on children (6–59 months, 7–12 years), adolescents (15–18 years), pregnant women (18–43 years), additionally, a small group of pregnant women aged under 18 years was separately evaluated and compared with the major part of the sample aged 18–43 years) and lactating mothers (18–48 years) in the State of Palestine. The results illustrated that major problems arise from iron, vitamin A, and iodine deficiency but zinc, vitamin D, and folic acid have been identified as emerging critical nutrients. The results of the micronutrient status assessment confirm that iron and zinc deficiency is the major cause of mild and moderate anemia occurring in the State of Palestine. To improve the absorbability of iron and zinc added to flour, to improve the coverage of flour fortification, to continue iron supplementation for children under 2 years and pregnant women as well as lactating mothers, to educate the population about dietary factors influencing iron and zinc absorption and how to change eating behavior and consumption habits to optimize iron and zinc status.

**Keywords:** Micronutrient status, Anemia, Coverage, Anthropometric, Behavioral aspects.
Assessment of nutritional status among vulnerable groups especially children in communities living under harsh conditions has a unique considerations and significance, an accurate estimations for the micronutrients depend mainly on both appropriate facilities and well trained staffs, meanwhile, influenced by funding availability, validity of the national nutrition strategy, local authorities and NGOs willing and commitment, besides presence of micronutrients database. In the Palestinian national authorities (PNA) territories, and due to political situation, social and religion barriers, many constraints are influencing the micronutrients surveys, giving unrealistic data resulting in inadequate nutritional interventions. In Gaza strip around 13% of children fewer than 5 are stunted, 57 % of the children 6-36 month suffering from anemia and 27% under 59 month diagnosed with VAD. Although existing some micronutrients data in PNA territories, but it seems that the data are not reflecting the status quo, thus, there is ultimate need to establish a scientific executive body responsible for guiding and monitoring the micronutrients surveys in PNA territories, not only that, but also data interpretation and providing recommendations. All of that will not be achieved without complete coordination between UN agencies, local authorities, scientific committees and working NGOs. Understanding the underlying causes which lead to insufficient and inadequate micronutrients surveys helps in designing appropriate and effective surveys, which is reflected on the quality of the nutritional intervention.

Keywords: micronutrient, deficiencies, children, Palestine
Comparative Study between Test Tube Babies and Normal Babies at Gaza strip, Palestine

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Several studies have concluded that in vitro fertilization (IVF) or intracytoplasmic sperm injection (ICSI) babies have many differences compared with babies conceived after spontaneous conception related to their health, normality of their body and risk of malformations. The aim of this study is to determine the differences between babies after assisted reproductive technologies (ART) and spontaneously conceived babies and whether there is risk for their health. A total of 81 infants between 2 to 5 years old were included in our data analysis, 51 case conceived via ICSI, IVF and other methods, and 30 case conceived naturally. In 51 cases which births after assisted conception (31 ICSI/ 14 IVF). Fourteen of 51 IVF-conceived children (27.5 %), 31 of 51 ICSI-conceived children (60.8 %) and other rare methods were the least method (9.8 %). Infants conceived with the use of ART have many differences from naturally conceived infants related to birth weight, childhood illness, age of gestation. No significant differences existed in the prevalence of congenital malformations, height and inelegance level. Infants conceived with use of IVF or ICSI don’t have high a risk of congenital malformation compared to naturally conceived infants. However, higher risk of adverse outcomes, such as preterm birth, low birth weight and regular visit to hospital for health monitoring compared as naturally infants.

Keywords: test tube babies, normal babies, Gaza strip, Palestine
Hematological and Biochemical Study on Children After Exposed to Cell Phone-Like Electromagnetic Radiation and Treatment by Olive Oil

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Several recent studies have indicated that global system mobile communications (GSM) radiation have an adverse health effect on cells of human beings. As there is a significant increasing growth in the use of mobile telecommunications services in the Gaza Strip, which leads to increase in the number of base station locations. The purpose of this research aimed to investigate the effects of non-ionizing radiation emitted from the base station on the children's blood and possible protective role of olive oil supplementation provided to the target children. Samples total of 120 children (6-12 years) were examined included three groups. The first group (30 children) served as normal control. The second group (50 children) comprised the exposed to electromagnetic field (E.M.F) alone, the third group (40 children) exposed to E.M.F and was given 2.5 ml/day olive oil supplementation for five weeks. All of them participate filled questionnaire including detailed about health, Behavior, and Physical conditions. Blood samples were measured to investigate CBC and some biochemical parameters in all participate. Electromagnetic field exposure showed obvious increment of WBC, lymphocyte, MCV, MCH, MCHC, and decrease in Hematocrit, Hb, RBC, and PLT count in response to the exposure to E.M.F alone. Concerning biochemical parameters, the more obvious changes were observed in increased the concentrations of serum glucose, triglycerides, total cholesterol and albumin but total protein and globulin were decreased. Signs of improvements in the previous hematological and bio chemical parameters were noticed during treatments with electromagnetic field in addition to Olive oil supplementation.

\textbf{Keywords:} Non- ionizing radiation, Electromagnetic field, Base station, Olive oil, Blood picture
Malnutrition in children often begins at birth and is associated with retarded physical and cognitive development. Vitamin A is a fat soluble vitamin and an essential micronutrient needed in small amounts for the normal functioning of the visual system, maintenance of cell function for growth, epithelial integrity, red blood cell production, immunity and reproduction.

To study the relation between some micronutrients including iron and zinc and VA level of the children. This cross sectional study consisted of 150 malnourished children under 5 years old from both sexes. Questionnaire interview with parents was used. Anthropometric measurements (weight, length and height) were taken. Blood samples were drawn for determination of serum vitamin A, iron, zinc and Hb. Statistical analysis was performed using SPSS version 18.0. The study population was (150) cases, (53.3%) males and (46.7%) females. It was found that (62%) of children were moderately underweight. In turn, the prevalence of stunting was higher in study sample which (40%) moderately, while forty one per cent (40.7%) of the children were mildly wasted. It was also found that no correlation between zinc with serum VA level, while the correlation between each of iron and Hb with serum VA level was statistical significant. The majority of surveyed children (82.7%) had low level of hemoglobin (Hb<11). Interventions to improve children nutritional status must be in concern. The need for clinical nutritionist to be present within the follow-up group for malnourished children is required.

**Keywords:** Vitamin A, anthropometric measurements, malnutrition, micronutrients, Gaza city.
The Effect of Vitamin C and/or E Supplementation on Type 2 Diabetic Adult Males under Metformin Treatment: A Single-Blinded Randomized Controlled Clinical Trial

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Recently, there has been an increasing interest in the influence of vitamin C and/or vitamin E supplementation on the efficacy of oral hypoglycemic therapy in type 2 diabetic patients (T2DM). This study was designed as single-blinded randomized controlled clinical trial and aimed to investigate the effect of vitamin C and/or E supplementation on the efficacy of oral hypoglycemic therapy in T2DM Palestinian male patients from the Gaza Strip. Forty T2DM male patients aged 40-60 years without chronic complications and on metformin treatment were selected and randomly divided into four groups, each group received an additional one of the following daily oral supplements for 90 days: placebo, vitamin C, vitamin E, vitamin C plus vitamin E. after overnight fasting (12 hours), venous blood specimens (5 mL) were collected from all individuals into K3-EDTA tubes and serum tubes for measuring the biochemical and hematological parameters of the study at baseline and after 90 days of vitamin supplementation. Results revealed that vitamin C and/or E improve fasting blood sugar (FBS), HbA1c, lipid profile, insulin, homeostasis model assessment of insulin resistance (HOMA-IR), reduced glutathione (GSH), and Quantitative Insulin Sensitivity Check Index (QISCI) compared with diabetic patients group that received placebo. In conclusion, this study provided additional evidence on the beneficial effects of supplementing antioxidant vitamins in the therapeutic protocols of type 2 diabetes mellitus which could improve the clinical condition and attenuate or prevent diabetic pathogenesis and complications that, secondly to poor glycemic control, could attributed to the imbalance between the decline in the endogenous antioxidants and increasing production of the reactive oxygen species leading to the oxidant-mediated damage present in the diabetic context.

Keywords: Antioxidants, Insulin, Oxidative Stress, Diabetes, Vitamins
Corin and Furin as Biomarkers for Cardiovascular Complications among Type 2 Diabetes Patients

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Cardiovascular diseases (CVD) are the highest-incidence cause of death and morbidity in patients with type 2 diabetic (T2DM). The natriuretic peptide is important in controlling blood pressure and salt water balance. Both corin and furin are involved in cleave pro-atrial natriuretic peptide (ANP) and pro-BNP (Bryan natriuretic peptide) into their active forms (ANP and BNP). The human corin gene is on chromosome 4p12-13, which has 22 exons and spans approximately 200 kb in length. Single-nucleotide polymorphisms in the corin gene were found to alter corin protein structure and impair its biological activity. It has been suggested that corin defects could contribute to CVD. This study includes 360 subjects divided into three groups, 120 healthy subjects as controls (Gr I), 120 T2DM patients with no medical history of CVD (Gr II) and 120 T2DM patients confirmed diagnosis of CVD (Gr III). All groups were matched for age and gender. All subjects were investigated for biochemical markers, serum corin and furin levels were determined by ELISA techniques. Human corin level in T2DM patients with and without CVDs was significantly lower than the control group, while furin level were significantly higher in T2DM with CVDs compared to T2DM patients without CVDs and control groups. There was a significant negative correlation between serum corin and furin levels in study populations. Furin was found to be more sensitive than corin (72.5% vs. 46.7%, p<0.01). Also furin showed higher specificity when compared to corin (96% vs. 84%, p<0.05) and corin (92.5% vs. 72.5%, p<0.0001) in predicting cardiovascular complications in T2DM patients. Results of this study suggested that serum furin and corin associated with CVD development but furin showed higher specificity and sensitive so, it may be serve as a biomarker in CVDs diagnoses in T2DM patients.

Keywords: Corin, Furin, Cardiovascular disease, Type-2 Diabetic, Palestinian
Hepcidin is a small cysteine-rich peptide hormone produced in the liver. It was discovered in 2000. In humans, HAMP (hepcidin antimicrobial peptide) is the gene that encodes for hepcidin. Recent studies demonstrated that hepcidin is a master iron regulator. Therefore, assessment of the status of hepcidin and clarifying its association in iron deficiency anemia (IDA) could constitute a promising therapy of the disease. To correlate hepcidin hormone status with some biochemical parameters and hematological indices among IDA children aged (6 – 12) years in Gaza City. This case-control study comprised 80 IDA children and 80 apparently healthy non IDA children controls. Questionnaire interview was applied. Serum hepcidin, serum ferritin were measured by ELISA. Serum iron and total iron binding capacity (TIBC) were determined photometrically. Complete blood count (CBC) was also performed by [Cell-Dyn-1800] autoanalyser. Transferrin and transferrin saturation were calculated by different equations. Ethical considerations were observed. Data was analyzed using SPSS package version 20.0. The mean level of serum hepcidin was significantly lower in IDA children compared to healthy non IDA children controls ($P=0.001$). The Pearson correlation test showed negative significant correlation between hepcidin level and serum iron, TIBC and transferrin ($r=-0.232$, $P=0.003$, $r=-0.172$, $P=0.030$ and $r=-0.168$, $P=0.033$, respectively), and positive significant correlation with serum ferritin ($r=0.320$, $P=0.000$). The Pearson correlation test also showed positive significant correlation between hepcidin level and RBC and Hb ($P=0.043$ and $P=0.037$). Hepcidin is strongly correlated with serum iron, TIBC, transferrin and serum ferritin. Thus it is considered as a good marker and promising therapeutic agent of IDA. Thus, it is recommended to introduce hepcidin hormone assay for IDA in our area, and conduct further research related to the relationship of hepcidin hormone with IDA.

**Keywords:** Hepcidin hormone, Serum iron, Serum ferritin, Iron deficiency anemia, Gaza.
Serum Vitamin D level in Type 2 diabetic Patients from Gaza Governorate, Gaza strip

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Type 2 diabetes is prevalent in Gaza strip. Although vitamin D deficiency has been recently linked to diabetes, biochemical tests are restricted to traditional monitoring of glucose. Therefore, introducing vitamin D test in Gaza hospitals may help in the management of the disease. To assess serum vitamin D level in type 2 diabetic patients from Gaza Strip. This case-control study comprised 58 type 2 diabetic patients (29 males and 29 females) and 58 healthy controls (29 males and 29 females). Questionnaire interview was applied. Body mass index was determined. Data were computer analyzed using SPSS version 18.0. The mean ages of cases and controls were 52.8±7.3 and 52.9±7.5 years, respectively. Type 2 diabetes mellitus was more frequent among unemployed individuals, families with low income and individuals with family history of the disease (P<0.05). About two-thirds of the patients were not on diet and almost half of the patients had diabetes since 5 years or less. The main self-reported complications were retinopathy, cardiovascular disease and neuropathy. The BMI was significantly higher in cases than controls. The mean level of vitamin D was significantly lower in cases compared to controls (25.9±11.0 vs. 34.6±13.8 ng/dl, P=0.000). The levels of blood HbA1c and serum glucose were significantly increased in cases compared to controls (7.9±1.7 vs. 5.3±0.8 %, P=0.000 and 208.2±113.0 vs. 100.5±24.4 mg/dl, P=0.000 respectively), whereas serum insulin was significantly decreased in cases (13.0±13.7 vs. 18.0±8.7 MIU/ml, P=0.030). The mean levels of triglycerides was significantly higher in cases compared to controls (284.7±120.2 vs. 234.2±134.6 mg/dl, P=0.035) whereas HDL-C was significantly lower in cases (34.5±7.1 vs. 41.3±10.9 mg/dl, P=0.000). The activities of ALT and AST were significantly higher in cases compared to controls (20.9±14.8 vs. 16.5±6.2 U/L, P=0.045 and 22.6±10.6 vs. 17.9±6.0 U/L, P=0.004, respectively). Serum calcium was significantly lower in cases compared to controls (9.0±0.7 vs. 9.4±0.7 mg/dl, P=0.002). Vitamin D was inversely associated with family history of diabetes. Serum vitamin D levels showed significant negative correlations with BMI (r= -0.201, P=0.032), HbA1c (r= -0.188, P=0.046), ALT (r= -0.192, P=0.040) and AST (r= -0.188, P=0.044), and significant positive correlations with HDL-C (r=0.188, P=0.044) and calcium (r=0.239, P=0.010). Serum vitamin D was significantly lower in type 2 diabetic patients compared to controls. Serum vitamin D levels showed significant negative correlations with BMI, HbA1c, ALT and AST, and significant positive correlations with HDL-C and calcium.

Keywords: Type 2 diabetic patients, Serum vitamin D, Gaza strip.
Possible Association between Non-Alcoholic Fatty Liver Disease and Metabolic Syndrome (Case-Control Study)

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The aim of this study is to find out possible correlation between NAFLD and MS among adult males and females in Gaza, and also to determine the prevalence of NAFLD in Gaza. This is a case-control prospective study, adults who were diagnosed by radiologist with NAFLD in center of Gaza were included in this research. The study sample included 300 individuals (150 cases, 150 healthy controls), aged 35-65 years. Socio-demographic and clinical data were collected by questionnaire interview and venous blood samples were collected for biochemical analysis. For all study subjects, serum Fast Blood Glucose (FBG), total cholesterol, Triglyceride (T.G), High Density Lipoprotein (HDL), Low Density Lipoprotein (LDL), Aspartate Aminotransferase (AST), and Alanine Aminotransferase (ALT) were determined for overnight fasting venous blood. Body mass index, waist circumference and blood pressure were measured. According to NCEP guidelines, about two third of cases in this study who suffered of NFALD have metabolic syndrome (99, 66%), while none of controls have the metabolic syndrome (0.0%). There is a significant difference between cases and control groups (χ²=147.761, P< 0.001). The overall prevalence of NAFLD was 14% of study population, and it was significantly higher in women than in men (54.66 % and 45.43%, respectively). The highest percent of NAFLD cases was found in the age group 46-55 years (41.34%), followed by 35-45 years (30%) and 56-65 years (28.7%). There was a significant difference between the monthly income, smoking habit and food type of the cases and the controls (P=0.015, P< 0.001, P=0.004 respectively). More than half of NAFLD cases have significantly increased glucose level (54.66%) and inherited diabetes mellitus (52.66%) in comparison to controls (P<0.001). Also, heart disease, inherited heart disease, cholesterol elevation, triglyceride elevation, blood pressure elevation, inherited blood pressure elevation, increased ALT and AST levels. About two-third of cases were not doing exercises (66%) (P=0.001), and 76.7% were using drugs for treatment (P<0.001). The mean value of FBG, cholesterol, TG and low density lipoprotein in NAFLD cases was higher than in the controls, while the mean value of HDL in controls (52.02 mg/dl) was higher than in cases (37.70 mg/dl). NFALD disease was found to be significantly associated with MS. There was significant high number of NAFLD cases who smoke, having high blood glucose level, inherited diabetes mellitus, heart disease, inherited heart disease, high cholesterol level, high triglyceride level, blood pressure elevation, inherited blood pressure elevation and abnormal levels of liver enzymes AST and ALT.

Keywords: Non-alcoholic fatty liver disease, metabolic syndrome, Prevalence, Gaza.
Gestational diabetes mellitus (GDM) is described as glucose intolerance of variable intensities that begins or is first diagnosed during pregnancy. Vitamin D is a fat-soluble vitamin that plays an essential role in calcium homeostasis and the maintenance of normal function in multiple tissues. In Gaza strip vitamin D deficiency remains a common problem among pregnant women. During pregnancy low concentration of serum 25-hydroxyvitamin-D is a dangerous sign and can lead to several complications. Knowledge of the relationship between vitamin D and GDM could lead to new indicators for earlier treatment of cases with GDM, appropriate management to minimize prenatal deaths and to improve the quality of survival among both mother and child. To assess vitamin D status among GDM pregnant women and its relationship with some biochemical variables in Gaza strip. This case control study comprised 45 GDM pregnant women and 45 apparently healthy pregnant women. Questionnaire interviews were applied among the study population. Serum vitamin D and insulin were measured by ELISA, glucose, glycated hemoglobin (HbA1c), triglyceride, cholesterol, high density lipoprotein (HDL), low density lipoprotein (LDL), phosphorus, and calcium were determined chemically. Blood pressure was also measured. Body mass index (BMI) was calculated. An approval was acquired from local ethical committee to perform this study. All data were analyzed by a computer using SPSS program. The average of vitamin D in GDM cases (29.6±10.6 mg/dl) was lower than that in control (34.5±10.6 mg/dl), the difference is statistically significance (P=0.031). There was an increase in the average of fasting blood glucose (FBG), oral glucose tolerance test (OGTT), HbA1c and insulin levels in GDM cases (105.8±15.8 mg/dl), (187±15.8 mg/dl), (7.1±0.4%), (20.4±8.4 MIU/ml), versus (66.5±8.1 mg/dl), (85.8±8 mg/dl), (4.4±0.4%), (6.2±1.7 MIU/ml) in control respectively with (P<0.001). Pearson correlation test showed negative correlation significance between vitamin D and the parameters: weight (r = -0.251, P = 0.017), BMI (r = -0.223, P = 0.035), glucose (r = -0.235, P = 0.026), OGTT (r = -0.249, P = 0.018), HbA1c (r = -0.232, P = 0.028) and phosphorus (r = -0.401, P < 0.001). Vitamin D was lower in GDM pregnant women than apparently healthy pregnant women.

**Keywords:** Vitamin D, GDM, insulin resistance, HbA1c, Gaza strip.
BIOLOGICAL, MEDICAL & PARAMEDICAL SCIENCES

PART II: Poster Presentations
Consanguinity and Phenylketonuria in the Gazian Population, Palestine

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Consanguineous marriages are widely practiced in Gaza- strip. This study was done to investigate the relationship between consanguinity and the genetic disorder Phenylketonuria (PKU). PKU is a metabolic disorder characterized by an inherited defect in a liver enzyme phenylalanine hydroxylase which convert phenylalanine to tyrosine. This study was carried out on 120 individual (56 males and 64 females) with PKU aged between 1 and 30 years at AL-remal health Centre and Alshefaa hospital. A significant relation between consanguineous marriages and PKU was observed. Seventy nine cases (65.8%) out of one hundred and twenty cases are consanguineous marriages. In order to control and reduce the elevation of the inherited cases of PKU, a health education and genetic counseling are highly recommended within our population.

Keywords: Phenylketonuria, Consanguinity, Genetic disorder and Gaza- Strip.
Etiology and Antimicrobial Resistant Pattern of Otitis Media Pathogens Isolated from Children in North Gaza

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The present study was aimed to isolate and characterize the causative pathogenic microorganisms causing otitis media among children in Northern Gaza and to study its antimicrobial resistance pattern to the most common prescribed antibiotics by treating doctors. This prospective cross-sectional study included 150 out-patients children suffering of ear infection and visiting ENT clinics at North of Gaza. The collected samples from ear discharge were tested for bacterial and fungal pathogens. Culture and identification of causative pathogens and antimicrobial sensitivity testing were performed using standard microbiological procedures and CLSI guidelines. The results showed that 103 (68.7%) of the total samples were positive for inflammation of the otitis media and (47, 31.3%) samples were negative. Bacterial infection rate was 96.1% and the ratio of fungal inflammation was 3.9%. Pseudomonas aeruginosa was the most common pathogen isolated in cases of otitis media (39.4%), followed by Staphylococcus aureus (18.2%), Klebsiella pneumonia (10.1%), Escherichia coli and Streptococcus pneumoniae at a rate of 9.1% for each, and followed by Enterobacter spp. (7.1%), Proteus spp. (6.1%), and Haemophilus influenza with the lowest rate of 1%. The most effective antibiotics against these pathogens were gentamicin with sensitivity rate of 87.9%, followed by amikacin with sensitivity rate of 83.8% and ciprofloxacin with sensitivity rate of 68.7%. However, the sensitivity effect of amikacin was found to be statistically significant with P value = 0.05 and gentamicin found to be statistically significant with P = 0.01. The least effective antibiotics were amoxicillin, ampicillin, amoxicillin-clavulanate, penicillin and erythromycin. In conclusion, P. aeruginosa and S. aureus were found to be the common cause of otitis media in Northern Gaza children. However, low incidence of fungal pathogens were detected.

Keywords: Otitis media, Risk factors, Bacterial isolates, Antimicrobial resistance, Northern Gaza.
Isolation and Characterization of *Streptococcus Mutans* as Causative Agent of Dental Caries in Gaza strip and their Antibacterial Susceptibility Pattern.

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Dental caries is a well-known major oral health problem in most countries. The multifactorial etiology of the disease includes multiple bacterial species, *S. mutans* is the main pathogen associated with the disease. *S. mutans* is a facultative gram-positive anaerobe commonly found in oral cavity. The aim of this study is to isolate and characterize *S. mutans* as potential causative bacteria of dental carries and studying its sensitivity to antibacterial agents and antibacterial mouth rinses from patients visit the dental clinic in Gaza strip. Open label experimental study was performed on 300 patients and 300 control visit the dental clinics in Gaza strip. The study was carried out during the period from July 2015 to July 2016. All suspected *S. mutans* isolates were identified biochemically, tested against ten common used antibiotics by disc diffusion method, studied in vitro for efficacy of nine essential oils, five toothpaste and four mouth rinses. Among 300 patients tested in this study, 95 showed a positive result for the presence of *S. mutans* in their saliva and dental caries. The most positive cases for the presence of *S. mutans* in dental caries and saliva were detected in the age group 20-35 year and in nonsmoker patients. Colgate showed the best antimicrobial activity among 5 different toothpastes. Antibiotic sensitivity test indicated that *S. mutans* was most susceptible against vancomycin (100%), tetracycline (83.2%), doxycycline (84.2%), ciprofloxacin (81.1%) and amoxyclov (75.8%). Gargarol was found to be the most effective mouth rinse against *S. mutans*. Clove bud, lemon grass and Tea tree were the most effective oils against *S. mutans* respectively. *S. mutans* isolates were moderately resistant to antibiotics. Use of plant extracts (essential oils) may be recommended as a supportive or alternative option to conventional formulations.

*Keywords*: *Streptococcus mutans*, Dental caries, Gaza strip, Essential oils, Tooth paste, Mouth rinses.
Autism is a neural and lifelong developmental disorder. People with autism have impairment in social skills, verbal and nonverbal communications. Autism may accompany with mild or severe mental retardation, dyslexia, and dyspraxia. We highlighted on this study on the inherited causes of autism beside other factors such as educational level of the parents, mother age at birth, and the economical and health problems of the entire family of the patient. A total of 88 individual between 1 to 20 years old were included in our study. A non-significant relation between consanguineous marriages and autism was noticed.

Keywords: Autism, Consanguinity, Gaza.
Assessment of Physicochemical Parameters and Some Heavy Metals in Pond Water and Muscles of Farmed Fishes in Gaza Strip Piscicultures

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We aimed to determine the physicochemical parameters in pond water and analyze cadmium (Cd), copper (Cu) and lead (Pb), concentrations in the white muscles of commonly farmed fish species, Oreochromis niloticus, Oreochromis hybrids, and Sparus aurata, in Gaza strip piscicultures. The physicochemical analyses of water were determined using standard methods and atomic absorption spectrophotometer used to determine the heavy metal concentration. The results revealed that pH, nitrate, nitrite and ammonia concentration in water samples were within the standard values, while, the electrical conductivity, alkalinity, total dissolved solids, hardness and chloride were exceed the international maximum standard limits. Cd and Pb concentration in the water samples were higher than the standard maximum permissible limit while Cu were below the recommended limits for water quality. In addition, Cd, and Pb concentration in white muscle of farmed fish samples were exceed the WHO, FAO and codex standard (0.59–2.08, 4.16–10.36 µg/g wet weight respectively), while the concentration of copper below the recommended limits. The estimated daily intakes of all metals (lg/day/person) through consumption of the fish species by Palestinian people in the Gaza Strip were below the permissible tolerable daily intake for 70 kg person (PTDI70) set by FAO/WHO. The levels heavy metals observed in the fish and water samples indicated that as far as these metals are will bioaccumulate in the farmed fish and become unfit for human consumption. However, the permissible tolerable daily intake of heavy metals (µg/day) from studied farmed fish for 70 kg person seems to have no harmful effect on the general public health.

Keywords: Pisciculture, farmed fish, heavy metals, Gaza strip.
Knowledge, Perception and Behavior of Mothers Towards Intestinal Parasites in Gaza Governorates.

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The knowledge, behavior and perceptions of mothers towards intestinal parasites in three regions in Gaza Governorates was studied. A total of 378 mothers of children attended a primary health care center for medical services were selected in three regions in Gaza governorates. Mothers were questioned about their knowledge, perception and behavior of intestinal parasites, their hygienic habits, health-seeking behavior and socio-economic factors through a questionnaire in the year 2015. The survey results showed that there was a significant difference through regions in Gaza governorates where the south of Gaza had a high prevalence of intestinal parasites (26.7%). There was a high prevalence of intestinal parasites (53.3%) in relation to a type of house ($P=0.009$) and also according to number of rooms in the house with significant difference ($P=0.007$). Good hygienic practices and knowledge of mothers about intestinal parasite were associated with a low prevalence of infection in the children.

**Keywords:** intestinal parasites, hygienic habits, Gaza governorates.
Conception and pregnancy are complex processes that include different biological aspects and phases. The inability to procreate is frequently considered a personal tragedy and a hardship for couples, influencing the entire family and even the local community. There are possible etiological risk factors leading to subfertility among women, which included the genetic polymorphisms in the genes encoding for the enzymes of coagulation cascade leading to hypercoagulable state and increased risk of thrombosis or thrombophilia. Therefore, we designed the present study to find any association between some thrombophilic polymorphisms with infertility and recurrent miscarriage among infertile women in the Gaza Strip.

Methods: The study included a randomly selected 169 infertile women who attended the Al Basma Fertility Center for medical management of infertility. In addition, 115 healthy fertile women who attended public or private clinics for family planning issues were included as the control group. All the women were investigated for heterozygosity or homozygosity in one or more of the three common genes affecting the coagulation factors in the clotting cascades by PCR/RFLP. The investigated gene variants were MTHFR 677 C > T and digested by Hinf I, factor V Leiden 1691 G > A digested by Mnl I and prothrombin 20210 G > A digested by Hind III.

Results: About 30.2% of the women in the infertile group exhibited one or more of the thrombophilic disorders screened. The results revealed that women with thrombophilic disorders are about 21 times more likely to be infertile than those with normal thrombophilic profile with adjusted OR = 21.42, 95% CI, 6.80-67.51, P = 0.001).

Conclusion: The present study highlighted the importance of these disorders in developing infertility in Gaza women. Therefore, testing and managing these thrombophilic disorders in women before conception are justified and recommended.

Keywords: Thrombophilic polymorphisms, infertility, women, Gaza Strip
Consanguinity and Celiac Disorder in the Gazian Population, Palestine

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Parental consanguinity considered one of the main causes of genetic disorders. One of these is Celiac disease (CD), also known as celiac sprue or gluten-sensitive enteropathy. CD is a genetic gluten-sensitive intestine disorder. The main aim of this study is to assess the relationship between CD which is a common inherited chronic disease spread among Gazian population and consanguinity. Gazian population is mainly Muslim as well as Arab population and consanguineous marriages are relatively common among them. Data about CD were collected from Ard el- Ensan center which is a growth and a developmental center for children and it is considered the main center in Gaza which has the capability to diagnose CD cases. Nearly 57 % of CD patients were born to consanguineous parents. This suggests there is no a strong correlation between consanguineous marriages and CD.

Keywords: Celiac disease, Consanguinity, Gaza, Genetic disorders.
Iron deficiency anemia (IDA) is the most common hematological disorder in the community. Several changes in platelets have been reported in patients with iron-deficiency anemia (IDA), so a relationship between iron metabolism and thrombopoiesis should be consider. We aimed to study the relationship between the iron status and several blood parameters among Gazian subjects. A retrospective study was conducted include 320 sample of Gazian subjects, applied to the medical relief center in Gaza city. Complete blood count and serum ferritin was performed. The relationship between serum ferritin and hematological parameter were calculated by SPSS 17.0 program. A total of 315 patients met inclusion and exclusion criteria. Among these subjects 27.6% (87 of 315) were males, 72.4% (228 of 315) were females Serum ferritin shows differences between several age group but these differences were not significant while with PLT count, MCHC, WBC shows highly with $p<0.001$ differences between several age groups statistically significant. The relationship between blood parameter and serum ferritin varies among several age groups and the effect of iron depletion differs between males and females.

Keywords: Gaza, ferritin, blood parameters. Iron deficiency.
### ICBAS III, 2018

**19/3/2018 First Day**  
**First Session**  
**Hall (3)**  
**10:45 – 12:15**  
**Chairperson: Dr Nabil Shurrab**

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<th>Time</th>
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| 10:45-11:15| **Keynote Lecture**  
Synthesis, Structural Properties and Applications of mesoporous materials | Prof. Dr. Issa El Nahhal           |
| 11:15-11:30| Shape- and size- controllable synthesis of silver nanostructure       | Jamil Salem                        |
| 11:30-11:45| Approaches Towards Syntheses of Novel Chiral Dendrimers               | Rami Murjan                       |
| 11:45-12:00| Assessment of Latvia–originated sphagnum peat moss as solid sorbent in the removal of different dyes from aqueous solution applying dispersive solid–phase extraction | Said Lubbad                       |
| 12:00-12:15| Improvement in the performance of articaine Carbon Paste electrode by using tin doped indium oxide nanoparticles | Hazem Abu Shaweesh                |
| 12:15-12:30| Coffee Break                                                          |                                    |

**19/3/2018 First Day**  
**Second Session**  
**Hall (1)**  
**12:30 – 14:00**  
**Chairperson: Dr. Rami Murjan**

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<td>12:45-13:00</td>
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<td>Hussein Al Hindawi</td>
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<td>Entrapment of phenol red (PR) pH indicator into sol–gel matrix in presence of</td>
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### Second Day  
#### Third Session  
**Hall (1)**  
**12:30 – 14:00**

**Chairperson: Prof. Dr. Jamil Salem**

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Surface-modified nano-film electrodes with high solar conversion efficiency and stability | Prof. Dr. Hikmat Hilal              |
| 13:00-13:15   | New room temperature ionic liquids with interesting properties      | Salman Saadeh                      |
| 13:15-13:30   | Metal Oxide Nanoparticles Reinforced Conducting Poly(Aniline-Co-o-Phenylenediamine) nanocomposite | Omar Melad                          |
| 13:30-13:45   | Synthesis of Some New Pyrazolotriazolopyrimidine Acyclo C-Nucleosides via Oxidative Cyclization | Nabil Shurrab                      |
| 13:45-14:00   | Determination of atomoxetine in biological fluids Using Potentiometric Carbon Paste electrode modified by TiO2 nanoparticles | Ahmad H. Tabaza                    |
| 14:00-14:15   | **Coffee Break**                                                   |                                    |

### Second Day  
#### Fourth Session  
**Hall (1)**  
**14:15 – 15:45**

**Chairperson: Dr. Said Lubbad**

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<td>14:15-14:30</td>
<td>Large Multiresidue analysis of pesticides in edible vegetable oils by using efficient solid-phase extraction sorbents based on quick, easy, cheap, effective, rugged and safe methodology followed by gas chromatography-tandem mass spectrometry</td>
<td>Ahmed Meghari</td>
</tr>
<tr>
<td>14:30-14:45</td>
<td>Syntheses, Density Functional and Sparkle PM6 semi empirical theoretical studies of O,O'-dialkyl/alkylenedithiophosphate derivatives of tin(IV) Phthalocyanine adducts</td>
<td>Ahmed M. Mkadmh</td>
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<td>14:45-15:00</td>
<td>Adiabatic ionization potential and electron affinity of 2-amino-2-oxazoline-4-one and its methyl derivatives using Density functional theory</td>
<td>Subhia Al Hasanat</td>
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<td>15:00-15:15</td>
<td>Synthesis of mesoporous silica using surfactant templating leads to highly ordered pore distribution, its supporting by metal oxide nanoparticles give highly catalytic activity</td>
<td>Heba. Abu Ebtihan</td>
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<td>15:15-15:30</td>
<td>Syntheses, NMR-Studies and Biological Activities Evaluation of Novel Series of tris-N-acylhydrazones of Citric Acid</td>
<td>Neda. Eleiwa</td>
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<tr>
<td>15:30-15:45</td>
<td>Antibacterial Activities of Novel Furoic Acid Hydrazides and their Conversion into N-acetyl-1,3,4-oxadiazoles</td>
<td>Mohammed Qashlan</td>
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<td><strong>Lunch and closing ceremony</strong></td>
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Attachment of electro-active species to the surface of a given semiconductor (SC) electrode permanently affects its photo-electrochemical (PEC) properties. Depending on the charge of the electro-active species, the flat band potentials may be shifted up (more negative) or down (more positive). The shift value depends on the applied ion charge density at the surface. Up to 300 mV shifting has been achieved here. Moreover, the electro-active species behaves as charge transfer catalyst across the electrode/redox junction. This increases the charge (holes or electrons depending on the type of the SC) transfer rate between the SC electrode and the redox couple. By doing so, the SC electrode can become more stable to photo-corrosion. All such advantages can be gained simply by attaching the proper electro-active materials to the proper SC electrode. The attachment can be performed by either chemical linkage or more recently by embedding the electro-active material inside a polymer matrix. The new technique has been successfully applied to monolithic and to polycrystalline SC electrode systems. Monolithic n-GaAs electrode showed up to eight fold enhancement in conversion efficiency. Polycrystalline film electrodes, involving nanoparticles of semiconductors (CuS, CuSe, CdSe, CdTe, and others), are are globally known to be unstable and yield low conversion efficiency (in the order of 1.0% or less) under PEC conditions. Stability and efficiency of such new types of electrodes have been enhanced here by the new technique. Conversion efficiency values of 4.4, 8.0, 15.0% and 18.0% have been observed from CdSe, CdTe, CuS and CuSe film electrodes, respectively. Such values have not been reported for pristine metal chalcogenide film electrodes before. This presentation will show a critical survey of our results observed throughout the last 15 years, as compared to other literature. The new model proposed for the efficiency and stability enhancement will also be rigorously presented. Future prospects of this work will also be discussed.

**Keywords:** Solar energy, Conversion efficiency & stability, Thin film electrodes, Charge transfer catalysis.
KEYNOTE LECTURE
Synthesis, Structural Properties and Applications of Mesoporous Materials

Issa El Nahhal

Chemistry Department, AlAzhar University-Gaza, Gaza, Palestine, P.O. Box 1277
Email: issanahhal@hotmail.com

Mesoporous silica based nanoparticles are of potential interest for the development of novel many applications in chemistry, environment, industry and therapies in nanomedicine due to their high surface areas (above 1000 m²/g), large internal pore volumes and unique ordered porous structures. These arise from the use of selfassembling organic templating agents during the sol-gel preparation of the amorphous silica, enabling the design of pore sizes (between 2-50nm), pore structure, connectivity, as well as their particle size and surface chemistry. In this presentation we are going to talk about the synthesis and modification of mesoporous silica materials. We also would present the tools and methods that have been used for structure characterization as well as the most important applications in different fields.

Keywords: mesoporous materials, nanoparticles, surface area, connectivity, selfassembling
Stable solutions (sols) of silver nanostructure were synthesized with controllable color and surface plasmon resonance absorption band by reducing silver nitrate with sodium borohydride in the presence of polyvinyl alcohol (PVA). These sols were characterized by UV-vis and fluorescence spectroscopy. The presence of PVA and its molar ratio relative to silver nitrate both played important roles in determining the surface plasmon resonance band and the color of silver nanostructure solution which is a function of the geometric shape and size of the product. Controlling the size, shape, and structure of metal nanoparticles is technologically important because of the strong correlation between these parameters and optical properties.

**Keywords:** silver nanostructure, PVA, surface plasmon resonance band, controllable color
The project describes the synthesize of new chiral dendrimers where the chirality is based on attachment of different dendrimer fragments to a chiral core unit (represented at one step in (Figure 1). Tris-1, 1, 1-(hydroxymethyl) ethane and tris-1, 1, 1-(hydroxynitro) ethane were utilized as starting materials to synthesize different core units. The essential differentiation of the chemically identical three hydroxyl groups was achieved via protection of two of the three hydroxyl groups of tris-1,1,1-(hydroxymethyl) ethane and tris-1,1,1-(hydroxynitro) ethane as acetals. The third hydroxyl group was protected as an ether with various protecting groups. Selective reductive ring-opening of the acetal ring provided a core unit with two protected hydroxyl groups and one free hydroxyl group. Different dendrimer fragments (dendrons) based on 3, 5-dihydroxybenzoic acid and 4, 4bis (4’hydroxyphenyl)pentanol (Fréchet-type), and 3,5-diaminobenzoic acid with verity of focal points were synthesized. A novel chiral dendrimer was obtained via assembling the core unit and the dendrons using coupling reagents. The structure and purity of the products were confirmed by all the available analysis methods (IR, $^1$H NMR, $^{13}$C NMR, MS, EA and X-ray).

**Fig.1:** Schematic representation for the syntheses of the chiral dendrimers

**Keywords:** Chirality, Chiral Dendrimers, NMR, X-ray, MS
Assessment of Latvia–Originated Sphagnum Peat Moss as Solid Sorbent in the Removal of Different Dyes from Aqueous Solution Applying Dispersive Solid–Phase Extraction

Karam Abu-Saqer, Balsam Abu-Rous, and Said H Lubbad*

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Water-Borne toxicity from organic pollutants of industrial effluents presented a serious threat to the living beings and the environment. It has been demonstrated that many dyes are toxic and even carcinogenic thus affecting the aquatic biota and human health. These dyes are stable to light, heat, biodegradation or aerobic digestion. Moreover, they also add color to the water body that screen sunlight from passing through. Various remediation techniques were investigated, but proven to be either time– or cost–ineffective. Yet, adsorption was believed to be a universal method for the removal of organic contaminants, besides the low cost and the ease of operation. Numerous solid–phases were reported for removal of different organic pollutants from water such as activated carbon and various plant sorbents. In this study, Latvia–originated sphagnum peat moss as solid sorbent was assessed in the removal of different dyes from aqueous solution applying dispersive solid–phase extraction. Cost– and time–effective sorbent of Latvia–originated sphagnum peat moss was substantiated for the removal of dyes from water solutions, where ultra–fast and highly efficient removal of malachite green was concluded. A break–through in the speed of malachite green removal, 97.3 % in ~30 sec, present a practical method for field application of dye removal from industrial effluents in contrary to time consuming methods reported in

Keywords: Latvia–originated sphagnum peat moss, organic pollutants, dyes, malachite green, industrial effluents
Improvement in the Performance of Articaine Carbon Paste Electrode by Using Tin Doped Indium Oxide Nanoparticles

Hazem M. Abu Shawish\textsuperscript{1*}, Naji Al Dahoudi\textsuperscript{2}, Amal Al Kahlout\textsuperscript{2}, Mubarak D. Abd Allah\textsuperscript{3}, Salman M. Saadeh\textsuperscript{4}, Badea I. Khalil\textsuperscript{1}

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Simple potentiometric carbon paste electrodes (CPEs) based on articaine –tetraphenylborate (ART-TPB) as ion-pair incorporated with tin doped indium oxide (ITO) nanoparticles and sodium tetraphenylborate as additives were most useful. This work describes the attempts to develop the electrode and measurements of its characteristics. The electrode was notable for bringing down the detection limit to $7.0 \times 10^{-6}$, wide linear ranges $8.7 \times 10^{-6}$– $1.0 \times 10^{-2}$, slope $58.7 \pm 0.5$. It is highly selective for ART ion over tested cations and excipients commonly added to drug formulations. The sensor as indicator electrode were successfully applied for determination of the drug in pharmaceutical preparation with excellent recovery and more efficiency.

Keywords: Articaine, Ion selective electrodes, Carbon paste electrode, Nanoparticles, Ion-pairs
Enhanced Transport of Nandrolone Decanoate Drug by Human Serum Albumin in Presence of [BMIM]PF₆ and [BMIM]BF₄

Zeyad Yasseen¹, Salman M. Saadeh¹ and Hazem M. Abu Shawish²

¹Department of Physics, Faculty of Science, Islamic University of Gaza, Gaza, Palestine
²Chemistry Department, Faculty of Science, Al-Aqsa University, Gaza, Palestine
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The study on the interaction of human serum albumin (HSA) with three widely used drugs (diclofenac sodium (DIC), furosemide (FUR) and dexamethasone phosphate (DEX)) was investigated by fluorescence method. Fluorescence emission spectra of HSA in presence of the studied drugs was recorded at excitation wavelength 278 nm and showed that the studied drugs act as quenchers. A decrease in fluorescence emission at 340 nm was attributed to changes in environment of the protein fluorophore caused due to presence of the ligand. The modified Stern–Volmer equation was used as a mathematical model to calculate the binding constants between the drug and HSA. The binding constants for the studied drugs with HSA were found inversely related with temperature.

The thermodynamic parameters, the changes of standard Gibbs free energy (ΔG°), enthalpy change (ΔH°) and entropy change (ΔS°) for the drug-HSA interaction were calculated according to van't Hoff equation. Among the thermodynamic parameters, the values of ΔG° were: -25.83, -25.29 and -25.09 kJ/mol for the drugs DIC, FUR and DEX, respectively, and the values of ΔH° and ΔS° were negative suggested that the hydrogen bonding and van der Waals forces were the predominant intermolecular forces in stabilizing the drug-HSA complex formed. The effect of pH on the binding of the studied drugs to human serum albumin in phosphate buffer solutions (pH 6.0 - 8.0) has been investigated in this study. The results showed that the binding of each studied drug was decreased with pH studied and the results were attributed according to the ionic forms of both protein and drug in the pH range studied.

Finally, the distances between the donor (HSA) and the acceptor (drug) were estimated to be 2.98, 3.52 and 5.30 nm for the drugs DIC, FUR and DEX, respectively, based on Förster’s resonance energy transfer theory (FRET).

Keywords: Thermodynamic parameters, Human serum albumin, Fluorescence quenching, Drug interaction, Modified Stern-Volmer, Förster’s theory
Exfoliation of Lambda-Zirconium Phosphate by Intercalation of Primary Alkylamines. Lambda-Type Materials with Extended Interlayer Separation

Hussein Al Hindawi¹, Ernesto Brunet², Huda Hammouda¹, Elena Rodriguez-Payan² and Olga Juanes²

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The exfoliation of layered Zirconium phosphate (ZrP) is very important synthetic tool by which the diffusion and incorporation of the huge organic or inorganic spacers inside the interlayer gallery of ZrP could be facilitated. The exfoliation of α- and γ-type ZrP by intercalation of amines or solvents is well studied. However, until now, the exfoliation of λ-ZrP has not been investigated. This research paper deals with the conditions under which a colloidal dispersion (exfoliation) of λ-ZrP can be achieved. It has been found that a colloidal dispersion is obtained by intercalation of primary amines (CₙH₂ₙ₊₁NH₂, n = 1, 2, 4 and 6). Therefore, delaminated λ-type layered materials of a general formula ZrPO₄OH(CₙH₂ₙ₊₁NH₂)(1-x)(H₂O)ₓ.X H₂O with extended interlayer separation have been prepared. Regarding the stability of the obtained colloidal dispersion, it is stable for several hours when λ-ZrP is intercalated with methyl, ethyl or butylamine (moderate level of exchange), while it is stable for several days when λ-ZrP is intercalated with butyl or hexylamine (high level of exchange). All the intercalation compounds are characterized by X-ray diffractometry, Solid MAS ³¹P-NMR, FT-IR spectrophotometries and elemental and thermogravimetric analyses. With respect to the X-ray diffraction patterns, they show that the interlayer distance of λ-ZrP systematically increases from 1.02 to 2.17 nm when the mentioned alkylamines are intercalated into the interlayer region.

Keywords: λ-Zirconium phosphate, Primary alkylamines, Organic-inorganic hybrid materials, diffusion
A sol–gel approach was used to encapsulate bromothymol blue (BTB) C_{27}H_{28}Br_{2}O_{5}S pH indicator into mesoporous silica material, in presence of ethanediyl-1,2-bis (dimethyldodecylationmonium chloride) (Gemini 12-2-12) surfactant. An ordered mesoporous inorganic matrix including Gemini 12-2-12 and BTB was obtained. It is found that encapsulated BTB/Gemini 12-2-12 exhibit same behavior for pH change as that of the free BTB, which indicate that only physical interaction between BTB molecules and host mesoporous silica network are obtained. The addition of Gemini 12-2-12 surfactant has increased the porosity of the host silica material and increased its sensing capability. The presence of Gemini 12-2-12 surfactant has shifted pKa values of the system to more acidic in comparison with that of free BTB, BTB entrapped silica and BTB/CTAB entrapped silica.

**Keywords:** pH-sensor, bromothymol blue, silica gel, Entrapment, Gemini
Condensation of 1,3-diphenyl-4-hydrazinopyrazolo[3,4-d]-pyrimidine 1 with aldohexoses 2a-c and aldopentoses 2d-f by heating in an aqueous ethanolic solution and in the presence of a catalytic amount of HCl gives the corresponding hitherto unknown aldehydo-sugar N-(1,3-diphenylpyrazolo[3,4-d]pyrimidin-4-yl)hydrazones 3a-f. The structures of the sugar hydrazones 3a-f were confirmed by their elemental analyses and spectral (IR, 1H NMR and MS) data. Oxidative cyclisation of the sugar hydrazones 3a-f with Ferric chloride in ethanol at room temperature gave the title acyclo C-nucleosides 4a-f. The structural elucidation of products is reported and also some of the products were screened for their antimicrobial activity.

Keywords: Hydrazones, Pyrazolo[4,3-e]pyrimidine, Nitrilimines, 1,5-electrocyclization, Heterocycles
Benchmarks calculations such as Adiabatic ionization potential (AIP), vertical ionization potential (VIP), adiabatic electron affinity (AEA) and vertical electron affinity of 2-amino-2-oxazolin-4-one and its methyl derivatives have been calculated by employing the Density functional Theory (DFT) using B3LYP, B3P86, and B3PW91 functional with 6-311++G(d, p) basis set. The calculations were carried out in gas phase and in solution. The highest occupied molecular orbitals (HOMO), the lowest unoccupied molecular orbitals (LUMO), the energy gaps, the hardness and the softness of all the investigated compounds were calculated and discussed. Results revealed that the AIPs decrease whether increasing the number of the substituted methyl groups and dielectric constant in solution. The computed AEA values of the parent compound are greater than its methyl derivatives in both gas phase and in solution. Furthermore, the computed AEA values are increased with increasing the dielectric constant in solution.

**Keywords:** Adiabatic ionization potential, adiabatic electron affinity, Density functional Theory, 2-amino-2-oxazolin-4-one, B3LYP
New Room Temperature Ionic Liquids with Interesting Properties

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A new set of room temperature ionic liquids (RTIL), tetrabutylammonium (TBA) salts: formate, acetate, propionate, butyrate, benzoate, nitrobenzoate, cinnamate, salicylate, sulfanilate, linoleate, and oleate, were prepared by neutralization of tetrabutylammonium hydroxide (TBA OH) and the corresponding acid. The compounds showed interesting chemical and biological properties. They are soluble in water and organic solvents producing conducting solutions and are effective against certain Gram-negative as well as Gram-positive bacteria. Notably, they affected some proteins such as bovine serum albumin (BSA) and catalase (CAT) as inferred by following the fluorescence emission spectra.

Keywords: Ionic liquids, Tetrabutylammonium (TBA) salts, Fluorescence, Catalase, Bovine serum albumin, Biological activity
Metal Oxide Nanoparticles Reinforced Conducting Poly(Aniline-Co-o-Phenylenediamine) Nanocomposite

*Omar Melad*, **Iman Ismail**

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Magnesium oxide (MgO), Zinc oxide (ZnO) and Iron(II,III) Oxide (Fe$_3$O$_4$) nanoparticles were synthesized by liquid phase method, sol-gel method and wet chemical reduction technique respectively. The formation of composite with conducting poly(Aniline-co-o-phenylenediamine) copolymer obtained via chemical oxidative polymerization. The obtained nanocomposite showed an improvement in the thermal behavior as shown by thermogravimetric analysis T.G.A. T.G.A results illustrated that the decomposition temperature of nanocomposite was higher than the pure copolymer. The nanocomposite were also confirmed by Fourier transform infrared spectroscopy FTIR, ultraviolet visible spectroscopy Uv-vis respectively. FTIR spectrum endorsed the formation of nanocomposite. Iron(II,III) Oxide (Fe$_3$O$_4$) nanocomposite has the highest values of conductivity compared to ZnO and MgO nanocomposites.

**Keywords:** Metal Oxide Nanoparticles, Poly(Aniline-Co-o-Phenylenediamine), Nanocomposite, thermogravimetric analysis, FTIR, Uv-vis.
The Efficiency of Mixed Surfactants as Air Entraining Agents in Cement Pastes

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The interaction that occurs when combining surfactants is more than the sum of the properties of each surfactant. These interactions can either enhance or detract from the action of these surfactants as air entraining agents. In an attempt to understand these interactions of some surfactants used as air entraining agents, the effect of several air-entraining agents was compared, in addition to two mixtures of them. The results show that CABP surfactants can be used lonely and in conjunction with other surfactant groups, taking into consideration that the compatibility of betaines with anionic surfactants is better than that with cationic surfactants. Higher compressive strength and less pore size appeared when using LM solo and in mixes which demonstrates the positive impact of using LM in these mixes.

Keywords: air-entraining agent, density, compressive strength, SEM, HYPR, LM, SDBS, CABP, mixed surfactant
Syntheses, NMR-Studies and Biological Activities Evaluation of Novel Series of tris-N-acylhydrazones of Citric Acid

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Syntheses of novel series of N-acylhydrazones of citric acid hydrazides 5a–m via condensation of citric acid hydrazides 4 with the corresponding aldehydes and ketones is described (Scheme 1). The series 5a–m was fully characterized by MS, HRMS, 1H-NMR, and 13C-NMR. The assemblage of three amide and three imine functions in N-acylhydrazone leads to the possibility of these compounds to exist as C=N double bond stereoisomers (E/Z) as well as syn/antiperiplanar conformers about the amide CO-NH bond. The existence of a mixture different isomers and the investigation of the stereochemistry of the synthesized compounds was proved and studied via using variable-temperature 1H-NMR and 2D-NOE spectrum. The antibacterial activity of the synthesized compounds was evaluated against gram-negative E. coli (Escherichia coli) and gram-positive S. aureus (Staphylococcus aureus) bacteria. The zone of inhibition was measured using the disk diffusion method, and in vitro minimum inhibitory concentration indicating that the synthesized compounds were effective against E. coli with MICs rang between of 0.3 and 32.0 μg. The results shown that compounds 5j-5k were the most effective with MICs 0.7, 0.3, 0.3 and 0.3 μg respectively.

Scheme 1: Syntheses of tris N-acylhydrazone

Keywords: N-acylhydrazones of Citric Acid hydrazides, Biological Activities, stereoisomers, NMR, HRMS, MS
Large Multiresidue Analysis of Pesticides in Edible Vegetable Oils by Using Efficient Solid-Phase Extraction Sorbents Based on Quick, Easy, Cheap, Effective, Rugged and Safe Methodology Followed by Gas Chromatography-Tandem Mass Spectrometry

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The aim of this research was to adapt the QuEChERS method for routine pesticide multiresidue analysis in edible vegetable oil samples using gas chromatography coupled to tandem mass spectrometry (GC–MS/MS). Several clean-up approaches were tested: (a) D-SPE with Enhanced Matrix Removal-Lipid (EMR-Lipid™), (b) D-SPE with PSA, (c) D-SPE with Z-Sep, (d) SPE with Z-Sep. Clean-up methods were evaluated in terms of fat removal from the extracts, recoveries and extraction precision for 213 pesticides in different matrices (soybean, sunflower and extra-virgin olive oil). The QuEChERS protocol with EMR-Lipid d-SPE provided the best reduction of co-extracted matrix compounds with the highest number of pesticides exhibiting mean recoveries in the 70–120% range, and the lowest relative standard deviations values (4% on average). A simple and rapid (only 5 min) freeze-out step with dry ice (CO₂ at −76 °C) prior to d-SPE clean-up ensured much better removal of co-extracted matrix compounds in compliance of the necessity in routine analysis. Procedural Standard Calibration was established in order to compensate for recovery losses of certain pesticides and possible matrix effects. Limits of quantification were 10 µg kg⁻¹ for the majority of the pesticides. The modified methodology was applied for the analysis of different 17 oil samples. Fourteen pesticides were detected with values lower than MRLs and their concentration ranged between 10.2 and 156.0 µg kg⁻¹.

Keywords: GC–MS/MS, Multiresidue pesticide analysis, Procedural Standard Calibration, EMR-Lipid
Determination of Atomoxetine in Biological Fluids using Potentiometric Carbon Paste Electrode Modified by TiO\textsubscript{2} Nanoparticles

Ahmad H. Tabaza\textsuperscript{1*}, Hazem M. Abu Shawish\textsuperscript{2}, Hassan M. Tamos\textsuperscript{1} and Salman M. Saadeh\textsuperscript{3}

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\textsuperscript{2}Chemistry Department, College of Science, Al-Aqsa University, Gaza, Palestine
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Endeavors to improve the limit of detection for atomoxetine-selective electrode were documented. Simple potentiometric carbon paste electrodes (CPEs) based on atomoxetine–derivatized with tetraphenylborate (ATM-TPB) or phosphotungstic acid (ATM-PTA) as ion-pairs decorated with TiO\textsubscript{2} nanoparticles and sodium tetraphenylborate as additives were most useful. Parameters affecting the performance of the electrodes were investigated, such as paste composition, type of solvent mediators, kind of electroactive materials and interfering ions. The electrodes were notable for bringing down the detection limit to 8.0 \times 10^{-7} and 9.2 \times 10^{-7}, wide linear ranges 1.1 \times 10^{-6} - 1.0 \times 10^{-2} and 1.75 \times 10^{-6} - 1.0 \times 10^{-2}, slope 58.7\pm 0.5 and 67.2\pm 0.8 respectively. Importantly, the potential reading became more stable and shortly attained in presence of the additives. The selectivity for the drug over other species such as inorganic and organic cations as well as different excipients that are likely incorporated in pharmaceutical preparations was high making their effect negligible on the response of the electrodes. The sensors as indicator electrodes were successfully applied for determination of the drug in pharmaceutical preparation, urine and serum with better accuracy, excellent recovery and more efficiency.

Keywords: Atomoxetine, Ion selective electrodes, Carbon paste electrode, Nanoparticles, ion-pairs
Entrapment of Phenol Red (PR) Ph Indicator into Sol–Gel Matrix in Presence of Some Surfactants

Issa M. El-Nahhal*, Jacques Livage2, Shehata M. Zourab3, Fawzi S. Kodeh1, Asma Alswearky1

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Sol–gel entrapment method was used to entrap phenol red (PR) pH indicator into mesoporous silica materials, in presence of ethanediyl-1, 2-bis (dimethyldodecylammonium bromide (Gemini 12-2-12), alkyl hydroxyethyl dimethyl ammonium chloride (HY, R = 12–14) and sodium dodecyl sulfate (SDS) surfactants. The use of surfactants has modified the morphology and porosity of silica host matrix for better sensing capabilities. The physical interactions of the different surfactants between PR molecules and host mesoporous silica network are well explained. The presence of SDS, Gemini 12-2-12 and HY surfactants has shifted pKa values of to less acidic and more basic in comparison with that of free PR and PR-entrapped silica system.

Keywords: phenol red, sol–gel sensor, sol–gel Entrapment method, surfactants, sol-gel matrix, Entrapment of pH indiocators
Synthesis of Mesoporous Silica Using Surfactant Templating Leads to Highly Ordered Pore Distribution, Its Supporting by Metal Oxide Nanoparticles Give Highly Catalytic Activity

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In this work mesoporous SBA-15 silica was synthesized using triblockcopolymers P123. Zinc Oxide (ZnO) and Copper Oxide (CuO) nanoparticles with different percentages (5, 10, 15 and 20% ), were successfully loaded into mesoporous silica SBA-15, by impregnation method. Amine functional group was grafted onto mesoporous silica SBA-15 modified with metal oxides nanoparticles, by post condensation method. Several techniques were used for structural examination of these materials like, fourier transform infra-red spectroscopy (FT-IR)spectroscopy, wide and small angle X-ray diffraction (XRD), thermal gravimetric analysis (TGA) and photoluminescence spectroscopy (PL). FT-IR spectra showed that, the loaded metal oxide were not chemically interacted with the host mesoporous silica SBA-15 and probably physically interacted with silica network. XRD analysis showed that, the loaded metal oxides were found in the crystalline form as hexagonal structure for ZnO and as monoclinic structure for CuO. The properties of mesoporous silica SBA-15 do not changed by the introduction of metal oxide nanoparticles, and only slight decreasing in the d-spacing after loading of metal oxide, was confirmed by XRD small angle. TGA analysis had approved that mono amine functional groups were grafted onto surface of mesoporous silica coated metal oxide nanoparticles. The amine functionalized mesoporous silica SBA-15, immobilized and free immobilized ZnO (20%), showed a removal of E124 azo dye from water. UV-vis spectra have indicated that, these materials exhibited high potential for extraction of toxic dyes.

Keywords: Condensation, Supported SBA-15, Metal oxide nanoparticles, Mesoporous SBA-15, Impregnation
A New Potentiometric Sensor for the Determination of Ketamine Hydrochloride in Ampoules and Urine

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Ketamine drug in urine and pharmaceutical preparations was determined by a new chemically modified carbon paste electrode (CMCPE) based on an ion-exchanger of ketamine hydrochloride with sodium tetraphenylborate (KT-TPB) as a chemical modifier. The best performance was exhibited by the electrode having a paste containing 0.5 wt% ion-exchanger (KT-TPB), 54.3 wt% graphite, 45.0 wt% tri(2-ethylhexyl) phosphate (TEPh) and 0.2 wt% sodium tetraphenylborate (Na-TPB). The prepared electrode showed a Nernstian slope of 58.9 ± 0.3 mV per decade for ketamine ions in the concentration range of 9.0 × 10⁻⁶ M to 1.0 × 10⁻² M with a limit of detection of 7.3 × 10⁻⁶ M. The electrode has a short and stable response time of 8 s and good reproducibility, and it can be used in a pH range of 3.7–6.6. The selective coefficients were determined in relation to several inorganic and organic ions, sugars and some common drug excipients. Ketamine is determined successfully in ampoule and urine using the standard addition and the calibration curve methods.

Keywords: Ketamine drug, carbon paste electrode, ion-exchanger, ampoule and urine, response time
Antibacterial Activities of Novel Furoic Acid Hydrazides and Their Conversion into N-Acetyl-1, 3, 4-Oxadiazoles

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Synthesis of a series of novel N-acylhydrazones of furoic acid hydrazides 3a-j via condensation of furoic acid hydrazide 1 with the corresponding aldehydes and ketones 2a-j and their conversion into N-acetyl-1, 3,4-oxadiazole derivatives 4a-j via reaction of compounds 3a-j with acetic anhydride is described (Scheme 1). The obtained compounds were fully characterized by MS, HRMS, 1H-NMR, 13C-NMR and X-ray. The series 3a-j was evaluated for in vitro antibacterial activity against tested microorganisms (S. aureus, E. coli and p. aeruginosa). The obtained results showed that compounds 3a-j have good inhibition against all the tested bacterial pathogens by microdilution method with MIC ranging from 0.4-12.5 μg.

Scheme 1: Syntheses of N-acylhydrazone and their conversion into N-acetyl-1, 3,4-oxadiazoles

Keywords: Hydrazides, N-Acylhydrazone, 1, 3,4-oxadiazole, N-Acetyl-1,3,4-Oxadiazoles, Antibacterial
Syntheses, Density Functional And Sparkle PM6 Semi Empirical Theoretical Studies Of O, O'-Dialkyl/Alkylenedithiophosphate Derivatives of Tin(IV) Phthalocyanine Adducts

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Seven new PcSn[S₂P(OR)₂]₂ and PcSn[S₂P(OGO)₂]₂ tin complexes where Pc is phthalocynine, R = Et, n-Pr, ios-Pr and tert-Bu and G = C₂H₂CMe₂CH₂, C₂H₂CMe₂CH₂, and CMe₂CMe₂ were synthesized and characterized by elemental analyses, Molecular weight determinations, IR and ³¹P spectroscopy. A sudden novel PcSn[S(P(OR)₂O)]₂ where R=iso-Pr has been recovered upon the hydrolysis of the complex with R=iso-Pr during recrystallization. Microanalytical and ³¹P NMR data revealed a 1:2 metal-ligand (O,O’-dialkyl and alkylenedithiophosphate) molar ratio in all complexes. Geometries were fully optimized at the B3LYP functional where the basis sets used were specified as generic basis sets and geometrical structures and electronic properties of the complexes were evaluated. The optimized geometries were confirmed to be minima on the potential energy surfaces through frequency calculations. The validity of the employed level of theory has been established through comparison of the calculated geometrical parameters of 12 with their observed counterparts. Thermodynamic stabilities were assessed through energy calculations. Aromaticity indices, local softnesses and condensed Fukui Functions were evaluated utilizing the optimized geometries at the specified level of theory. The absorption spectra of the complexes have been established using ORCA2.9 package utilizing the predicted optimized wave functions. Complexes proved to have high electronic susceptibilities.

Keywords: phthalocyanine, tin, aromaticity, B3LYP, Fukui Functions
EARTH & ENVIRONMENTAL SCIENCES
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*Lunch and closing of the first day*
### First Session

**ICBAS III, 2018**  
20/3/2018 **Second Day**  
**Hall (2)**  
**09:00 – 10:35**  

**Chairperson: Dr. Khalid Ubeid**

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### Second Session

**ICBAS III, 2018**  
20/3/2018 **Second Day**  
**Hall (2)**  
**10:45 – 12:15**  

**Chairperson: Dr. Ziad Abu Heen**

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<td>11:30– 11:45</td>
<td>Visual symptoms and control of the Red Palm Weevil (Rhynchophorus ferrugineus) in the Gaza Strip, Palestine</td>
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<td>12:00 – 12:15</td>
<td>Green sustainable method for water and soil purification: photo-degradation of soil and water organic contaminants using nanomaterial semiconductors</td>
<td>Ahed Zyou</td>
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Proposed Research Topics Targeting the Marine Environment and Fisheries Resources of the Gaza Strip – Palestine

Abdel Fattah N. Abd Rabou¹*, Mohammed A. Abd Rabou², Mazen T. Abualtayef³

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Since decades, the Gaza Strip suffers from various environmental, political, military, and socioeconomic crises affecting the sustainability of its total environment. Particular emphasis was paid by the responsible parties toward studying and conserving the marine environment and its fisheries resources. The existing researches dealing with this branch of science seemed to be few or scattered and they need to be re-formulated. The current study aims at proposing research topics in the areas targeting the marine environment and fisheries resources of the Gaza Strip. The current study relied much on the researcher's observations, field visits and surveys, discussions with stakeholders, and the available literature.

Three main themes have been proposed by the researchers to deal with such research topics targeting the local marine environment and its fisheries resources. The first theme deals with marine biodiversity issues like the classification of marine fishes, studies on the globally threatened marine turtles, diversity of birds and mammals inhabiting the Eastern Mediterranean, marine invertebrates, classification and use of marine algae, investigations on Lessepsian marine biota, and finally surveying the diseases and parasites infecting the local ichthyofauna.

The second theme targets the fisheries resources and aquaculture (fish farming) issues. Suggested topics regarding this theme may include fishery stock assessment, assessment of local fishing gear, obstacles facing Gazan fishermen, open and closed aquaculture, and the assessment of the current pisciculture projects of the Gaza Strip. The third theme handles the marine pollution and coastal management aspects. The proposed topics may cover wastewater discharge and its impacts on the local marine habitats, desalination and its brine management, coastal land cover and land use issues, assessment of Gaza sea ports and sea groins, and mitigation measures concerning coastal erosion. Finally, the study recommends the establishment of local marine research centers promoting the protection and prosperity of the marine environment and sustainable fisheries resources of the Gaza Strip.

Keywords: research topics, marine environment, coastal management, fisheries resources, Gaza Strip.
Threats Facing the Coastal and Marine Environments of the Gaza Strip, Palestine

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The Gaza Strip is an arid to semi-arid land that covers an area of about 365 km² and harbors a dense population of two million people. The local coastal and marine environments are home to a variety of terrestrial and aquatic wildlife species, inhabiting different ecosystems and habitats. The integrity of these ecological units is facing serious anthropogenic challenges. Frequent field visits, meetings and discussions with local parties and stakeholders in addition to a great deal of literature reviews are main tools involved to conduct the current study, which aims at presenting the threats facing the coastal and marine environments of the Gaza Strip, Palestine.

The current study reveals that both the coastal and marine environments are subject to serious challenges. Some of them are presented as follows:

1. Local coastal sand erosions caused by establishing various structures along the coastline, e.g. Gaza fishing port, marinas, shore resorts and other constructions.
2. Deterioration of coastal resources and habitats such as sand dunes and the shore area due to overpopulation, overexploitation, misuse and mismanagement of the available resources.
3. Decline in the local fisheries resources due to the limited fishing zone dictated by the Israeli army, overfishing, use of bottom trawlers and nets, and lack of responsible regulatory bodies.
4. Disrespect of endangered or threatened coastal and/or marine species such as sea turtles, devil rays and other target or non-target fish species.
5. Pollution of the coastal zone and marine environment by escalating and huge quantities of untreated or partially treated wastewater.
6. Pollution of the coastal zone and marine environment by different categorizes of solid wastes including municipal, agricultural, construction, etc.

In conclusion, urgent and planned actions should be implemented to mitigate and combat the mentioned threats. Scientific identification of coastal and marine biota, wastewater and solid waste management, economization in the exploitation of coastal and marine resources, improvement in fisheries and fishing gear sectors, regulation and protection of marine resources, monitoring of coastline erosion and institutional strengthening are good concerns for ecological restoration.

Keywords: Coastal and marine environments, threats, fishing, pollution, Gaza Strip.
Woody Components (Trees and Shrubs) Prevailing in the Urban Green Spaces of the Gaza City – Palestine

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The Gaza City is a main city in the Gaza Strip, having a variety of urban green spaces such as public parks, community gardens and cemeteries. These urban ecosystems of the Gaza City have never been studied for their woody components (trees and shrubs). Accordingly, the current study aims at identifying and recording the woody components of some selected urban green spaces. Three public parks and gardens, namely the Gaza Municipality, Barcelona and Al-Azhar, were selected to carry out the current study. Frequent visits, observations and discussions with stakeholders were carried out during a six-month study (October, 2016 – March, 2017) to satisfy the purpose of the study. A total number of 50 tree and shrub species belonging to 25 families and 13 orders were identified and recorded. The Gymnosperms included 4 species (8.0%) only, while the Angiosperms was represented by 46 species (92.0%), of which monocots were represented by 5 species (10.0%) and the dicots were by 41 species (82.0%). The Fabales was the biggest order and comprised 7 (14.0%) of the recorded species. It was followed by Lamiales which comprised 6 (12.0%). The families Apocynaceae, Fabaceae, Malvaceae and Moraceae were the biggest families and each comprised 5 species (10.0%). The study recommends the selection of woody species corresponding with the local prevailing environmental conditions in order to ensure the environmental, ecological, recreational and the socio-economical values needed by the Palestinian community in the Gaza Strip.

Keywords: Urban green spaces, public parks, woody components, trees, shrubs, Gaza City.
Antimicrobial Resistance of Staphylococcus Aureus, Fecal Streptococci, Enterobacteriaceae and Pseudomonas Aeruginosa Isolated From the Coastal Water of the Gaza Strip, Palestine

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Objectives: To document the occurrence and distribution of antibiotic resistance of clinically important bacteria in the seawater of Gaza strip-Palestine.

Methods: Seawater samples were collected at 16 location distributed along the coast of the Gaza strip. Sampling was accomplished during 12 months, from March 2014 to June 2015. The microbial composition including Enterobacteriaceae, Staphylococcus aureus, fecal streptococci and Pseudomonas aeruginosa was recorded and tested for their resistance to specific antimicrobial agents according to CLSI using the disc diffusion method.

Results: A total of 816 isolates of Enterobacteriaceae (377), S. aureus (29), fecal enterococci (FS) (369), and P. aeruginosa (29) were recovered and identified. Enterobacteriaceae, P. aeruginosa, FS and S. aureus isolates exhibited the highest rates of resistance against ?-lactam drugs. The isolates also showed resistance to at least one antimicrobial in the range between 99.7 to 78%. Multiple resistance occurred in almost 85% of all isolates, 99.2% of Enterobacteriaceae, 96.6% of P. aeruginosa, 72.1% of FS and 61% of S.aureus. The incidence of multiple resistance of isolates from all sampling locations ranged from 69.2 to 94.1%. Antibiotic resistance indices were found to be highest in P. aeruginos (0.57), followed by E. coli (0.53), FS (0.49), Enterobacter (0.41), S. marcescens (0.40), Klebsiella (0.39) and finally Proteus (0.28). Most of the isolates showed multiple antibiotic resistance (MAR) index value higher than 0.2.

Conclusions: This study demonstrated that the seawater of the Gaza strip is highly contaminated with antibiotic resistant bacteria which can be transmitted to humans through recreational and other activities. Therefore, there is a need to apply appropriate and rationale use of antibiotic to minimize the occurrence of multiple antibiotic resistant bacteria in the marine environment. Proper treatment of sewage before it is discharged to the sea is highly recommended.

Keywords: Multiple antimicrobial resistance, Gaza strip, seawater, fecal enterococci, P. aeruginosa, Enterobacteriaceae, S. aureus.

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Different methods and strategies were followed for water and soil purification, the best one is the one with more efficiency and low cost. Photodegradation is one of the interested methods, and summarized by excitation a suitable semiconductor by light, then it will be able for degradation water and soil organic contaminants. TiO₂ nano- and micro-particles have been used for photo-degradation of widely spread water organic contaminants. Due to its wide band gap (~3.2 eV) TiO₂ photo-catalytic activity is limited to shorter wavelengths only (UV region). As only ~4% of the solar spectrum falls in the UV region, smaller band gap semiconductors (e.g. CdS, with 2.3 eV) are used to sensitize TiO₂ particles. The TiO₂/CdS system has been used as catalyst in water purification by photo-degradation of organic contaminants such as methyl orange and Phenazopyridine (Medically active compound). However, the TiO₂/CdS system is unstable under photodegradation conditions yielding hazardous Cd²⁺ ions. Alternative ZnO nanoparticles naked and substrate to different materials like (clay, sand, and activated carbon) were used in photodegradation, and natural dyes (anthocyanin & Curcumine) were also used as sensitizer of the TiO₂ nanoparticles. The different prepared nano-catalyst systems were used in photo-degradation of different water and soil contaminants like (methyl orange Phenazopyridine, Paracetamol, phenols, and halo-phenols) under solar irradiation. In addition the ZnO nanoparticles were used in water purification from bacteria and organisms by modes of disinfection and complete mineralization under solar light. The studied parameters like (catalytic efficiency, effects of catalyst concentration, catalyst recovery, contaminant concentration, temperature, pH and complete mineralization) will be represented.

Keywords: Photodegradation, nano- and micro-particles, TiO₂/CdS
Post Treatment of Secondary Wastewater Effluent for Irrigation Purposes using Ulva Lactuca Algae

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Background: Due to the continuous population increase and so the quantities of produced wastewater and the failure of treatment plants, huge quantities of raw or semi treated wastewater is discharged into the marine environment. The macroalgae of the genus Ulva can have applications in the wastewater treatment.

Objective: To study the effectiveness of Ulva lactuca whole organism and powder in post treatment of secondary wastewater effluent for irrigation purposes.

Material and method: Each liter of waste water was treated by powder and whole algae. Electrical conductivity (EC) pH, chloride ions and nitrate were measured for treated wastewater.

Biological analyses (bacterial and fungal) were estimated. The treated wastewater with the best results was used for irrigation of Arugula seeds (Eruca sativa) as well as others were irrigated by Medium salinity water and by filter water and some were fertilized with powder of algae.

Results: The treated wastewater with whole algae and powder algae showed increase in EC, Cl, pH and decrease in nitrate concentration. BOD and COD levels decreased after treatment with algae. Heavy metals analysis (Fe, Zn, Pb, Mn, Sr) showed decrease in concentration after algal treatment. Bacteria and fungi count in treated wastewater with algae decreased as well as Coliform bacteria and Salmonella and Shigella spp. Arugula plants samples irrigated with treated wastewater with algae and those that fertilized with powder of algae showed increase in average area of leaves, leaves number as well as average root length.

Conclusion: The treatment of wastewater with the sea weed Ulva lactuca reduce BOD and nitrate level. The use of algal treated wastewater in irrigation and fertilization of Arugula plant could its increase the growth rate.

Keywords: Ulva lactuca, algae, wastewater treatment, Arugula
The Red Palm Weevil – RPW (Rhynchophorus ferrugineus Olivier) (Coleoptera: Curculionidae) has recently become one of the most destructive pests of Date Palms in the Gaza Strip and the Middle East. It is a serious pest threatening the Date Palm health and production, with the larva is the most destructive stage. The current study aims at introducing the visual symptoms and control techniques of the RPW in the Gaza Strip, Palestine. Field surveys and institutional visits were applied to fulfill the purpose of the study. The current study documented that first local infestation of Date Palm trees with the RPW was discovered in late 2011. The introduction of infected offshoots from Egypt through earth tunnel trade and the ability of the adult RPW to fly long distance and cross borders seem to be main causes of the local infestations with the pest. Different control techniques have been adopted by the responsible parties to combat the RPW, with the integrated pest management (IPM) program was tracked and respected. Finally, the study recommends the cooperation of different parties and authorities to adopt appropriate policies to eliminate the RPW and to support farmers with the necessary pesticides and equipment to control this painful pest.

**Keywords:** Red palm weevil, date palm, control, IPM, Gaza Strip, Palestine
Forms of Sleep Habits Changes Resulted from the Noise Pollution in the Middle Area from Gaza Strip-Palestine

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3The Islamic University of Gaza

Problem: Noise pollution is a serious health problem. It affects the life style of population and causes sleep disturbances, nervousness, headache, and other problems.  
Aim: To assess the noise pollution and to investigate its relation with the sleep habits changes among the middle governorate population in Gaza Strip, Palestine.  
Specific Objectives: To measure the noise levels in the middle governorate areas. To identify the most important causes of noise pollution. To examine the relation between the noise and sleep. To determine the forms of sleep habits changes resulted from the noise pollution.  
Methodology: The design of this study is a cross-sectional descriptive analytical one. The study sample included two sub-populations. The first study population was the selected measurement locations. The second study population was all the participants in the selected locations.  
Sample size: The sample size was 368 participants, which were selected from the five areas. Noise pollution levels were measured in the10 selected locations in the Middle governorate. Every area from the five selected areas included two locations (noisy-quiet).  
Tools of the Study: The sound level meter used to measure the noise level in decibel unit. The data was conducted by written questionnaire was divided into seven sections containing 29 items.  
Results: The noise level in the middle governorate is higher than the standard level. Electrical generators and the traffic were the first sources of noise. Forms of sleep habits changes mostly varied between (delay sleep- fit sully sleep- awaking tired- awake late- decreased sleep hours).  
Conclusions: There is a statistical relationship between sleep disturbances and noise. The participants who complained disturbances and agree that the noise affects sleep were (69.3%).  
Recommendations: Increase the attention of noise pollution issues during presenting the environmental topics. Taking seriously the sleep related complains, manage the noise pollution as soon as possible.  

Keywords: Assessment, Noise Pollution, Sleep disturbances, Gaza Strip-Palestine.
Forty samples of beach surface sands have been analyzed in the laboratory to find the grain-size distribution, surface exhalation rate of radon gas and the effective radium activity concentration using CR-39. The results showed that the fine grain-size, and radon concentrations in the study area increase towards the north direction. Positive Pearson correlation between the grain-size of the sediments and radon concentration has been observed, where it associated with black fine-grained sediments which were carried from Nile delta by longshore currents generated by approaching breaking waves. On the other hand, the relatively high concentration levels were observed around the wastewater pumping stations which discharge in the beach. The annual effective dose (AED) in surface beach sands around these stations were above the standard international limit, so it is not advisable to use polluted beach sands in this area as building materials.

Keywords: radon, pollution, beach sands, Gaza Strip.
Enhancing Biogas Production from Organic Fraction of Municipal Solid Waste (OFMSW) Pretreated with Microwave and Sodium Hydroxide

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Background: Renewable energy sources received increased interest from the international community with biomass being one of the oldest and the most promising ones. OFMSW is the most solid organic waste material resource for obtaining energy in Gaza Strip. The present study investigates the pre-treatment and biogas fermentation potential of organic fraction of municipal solid waste (OFMSW). Application of alkaline and microwave pretreatment methods assist to break down hard OFMSW for improved degradation of solid organic waste and releasing of biogas.

Methodology: A predetermined concentration of dry OFMSW (13.3, 20 and 25%) pretreated with 2% sodium hydroxide solution and then subjected for anaerobic fermentation for biogas production. Separately, the previous concentrations of OFMSW treated together with 2% sodium hydroxide and microwave (450 W) for different time periods (5, 10, 15 and 25 minutes) and then subjected for anaerobic fermentation. The lab bioreactor used in this work were 500 ml volume and 300 ml working volume. The experiments conducted at controlled 35 °C in a water-bath. The produced biogas collected and measured volume by displacing alkaline water in downward graduated glass bottles. The inoculum purchased from the anaerobic digester of ALSheekhIjleen wastewater treatment plant, Gaza in March 2016. Produced biogas calculated according to accumulative volume, pH taken at the end of the process and the remained undigested mass calculated by dry volume at the end of the process.

Results: Treatment with 2% NaOH improved biogas production when the OFMSW was 13.3% by 1.56 times. When concentration of OFMSW was 20%, improvement was by 1.48 times and when OFMSW concentration was 25%, improvement was by 1.36 times. Application of microwave treatment combined to alkaline treatment improved biogas production and the highest amount obtained when 20% of OFMSW treated with NaOH and microwave (450 W) for 10 minutes. The total biogas in this treatment reached up to 3000 ml, 158 times the control. The results suggest that microwave and microwave-alkali pretreatment can improve total biogas production.

Keywords: Anaerobic fermentation, alkaline pre–treatment, biogas production, microwave irradiation, Organic fraction of municipal solid waste (OFMSW).
Accurate site-specific forecasting of indoor hourly carbon monoxide (CO) concentrations in school microenvironments is a key issue in air quality research nowadays due to its impact on children’s health. This paper investigates the prediction of feedforward backpropagation (FFBP) for predicting indoor CO concentration in Gaza Strip, Palestine. Measurements were carried out in 12 schools from October 2012 to May 2013 (one academic year). The predicted indoor CO concentration values agree strongly with the measured data with high coefficients of determination ($R^2$) 0.89. The results suggested that the model is an effective forecasting tool and, hence, can be applicable for short-term forecasting of indoor CO levels.

**Keywords:** microenvironments, feed forward back propagation, indoor CO, Gaza Strip.
Assessing and Mapping the Coastal Zone Changes in the Gaza Strip, Palestine, using GIS and Remote Sensing Techniques

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Worldwide, coastal zones have become seriously deteriorated because of urbanization and population increase. The Gaza coastal zone is seriously impacted since decades, and as a result, it needs more environmental protection and sustainable development. This study aims at assessing and mapping the changes of land use/land cover (LULC) and shoreline in the Gaza coastal zone using GIS and Remote Sensing techniques. Mapping the bathymetry of the near shore along the Gaza coast based on analysis of Landsat-8 imagery is targeted as well.

The current study is based on three axes: the first axis included the detection of LULC changes from SPOT-5, Landsat and QuickBird for the years 2004, 2009 and 2016. Satellite images were categorized into 6 classes using the maximum likelihood supervised classification in order to detect the LULC changes along the Gaza coastal zone, using the ERDAS. The results showed that the Gaza coastal zone has changed significantly. The built-up area has increased by 3.62 km², the agricultural land increased by 14.42 km² and the area of bare land/sand has also shrunk by 14.52 km².

In the second axis, the analysis was carried out using image processing technique and GIS to detect the shoreline changes of Gaza coastal zone. The variation in the shoreline along the Gaza coastal zone was determined by analyzing satellite images from 1972 to 2014. About 62.8% of the shoreline is estimated to be eroding over the period of 42 years. The northern zone was significantly eroded with an erosion rate of 186.15×10³ m² in period 1998-2007 which represents the highest rate of erosion. There was a growing shoreline in the south of Gaza fishing harbor because of sediments transport, with an estimated 66.72×10³ m² have been added to the shoreline area in the period 2007-2014, which represents the highest rate of accretion.

The third axis involved an attempt to determine the bathymetry mapping of the near-shore in Gaza coastal zone by applying the ratio transform algorithm on the newly acquired multispectral image. The results pointed out that the ratio transform algorithm can retrieve the depth up from -25m to -30m for Landsat-8 imagery. There was a good correlation coefficient between the estimated depth from algorithm and endorsed depth.

Finally, the current study emphasized the importance of GIS and remote sensing techniques in providing time-series information regarding the coastal zone management issues of the Gaza Strip. This, in turn, can offer valuable data for decision-makers and planners to manage the Gaza coastal zone in a sustainable fashion.

Keywords: Coastal zone, Gaza, GIS, remote sensing, land use, shoreline, bathymetric.
The aim of this study was to evaluate the management of medical waste in the operating rooms of the Gaza-European Hospital in terms of separation, storage and occupational safety. The study was based on several methods of collecting information, including taking observations during the field work, using the questionnaire for the hygiene department, the group's focus with the medical staff, and the personal interview with the company's cleaning supervisor. The results showed a lack of implementation of the WHO guidelines for the concept of waste management and the lack of awareness of workers in the field of medical waste and the importance of managing medical waste properly. The results also showed that there is negligence by the cleaners in the use of protective clothing. The study recommended the need to apply the system of sorting between hazardous medical waste and non-hazardous waste in the right way, as well as the use of means of protection of workers in the field of medical waste and raising the level of cooperation between the various participating in the management of medical waste and institutions in order to solve the existing problems for the development of this system.

**Keywords:** Medical waste management, Gaza-European Hospital, Separation of medical waste, Biohazards, Waste storage.
The paper presents a case study on The Islamic University of Gaza (IUG) PV solar system, being located in Gaza Strip. The IUG system is a hybrid off-grid system which includes a PV array, DC to AC inverter, charge controller, battery bank and backup diesel generator. The main target is to optimize the IUG system using HOMER Pro. (Hybrid Optimization of Multiple Electric Renewables) developed by NREL (National Renewable Energy Laboratory). The meteorological data of IUG location is taken from National Aeronautics and Space Administration (NASA). The average daily energy consumption of the electrical loads connected to the system is 574.3 kWh/d. The results give the appropriate size of each component of the system and the lowest net present cost of the optimal configuration. The desired benefit of this paper is to present a comparison between the installed system and the optimized system from electrical and economical aspects.

Keywords: Photovoltaic, Hybrid, HOMER Pro, Optimization.
Measuring Possible Impacts of Utilizing Bifacial Solar Modules in Public Buildings: A Case Study for Patient Friends Benevolent Society (PFBS) Hospital in Gaza Strip

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In this paper we will examine the impacts of replacing the installed mono-facial PV solar modules with bifacial solar panels in the Patient Friends Benevolent Society (PFBS) hospital in Gaza city as a partial green solution to the shortage of generated energy in the Gaza Strip. The PFBS was recently retrofitted by about 41kWp Building Applied Photovoltaic (BAPV) system as a hybrid AC-coupled SPV with battery backup. The SPV system is in operation since April 2017. Using the mono-facial traditional modules, the aggregate PV system is expected to generate a total of approximately 60MWh per year contributing to major reductions in diesel fuel consumption and Green House Gas (GHG) emissions. Using the bifacial modules taking into consideration a high ALBEDO factor and the height of the lowest point of the module from the concrete ceiling, it was noticed that the bifacial gain in energy (BGE) was increased by almost 30% while the bifacial gain in power (BGP) was increased by about 20% for the same roof top installation area. Accordingly, the installed bifacial capacity shall be about 50kWp and the expected generated energy shall be approximately 80MWh per year contributing to higher reductions in diesel fuel consumption and Green House Gas (GHG) emissions. From the operational point of view, when the grid is online, the PV system shall supply the balance of current to the system and the protected loads are fed by the PV panels as first priority. Nevertheless, when the grid is offline, the batteries shall supply the balance of current to the system and the protected loads shall be fed by the PV panels as first priority.

\textbf{Keywords:} ALBEDO, global warming, BAPV, GHG emissions, bifacial solar modules.
Assessment of Parasitological Water Quality from Houses Kitchen and Desalination Plants Filters in Gaza Strip

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Background: Waterborne diseases still poses a threat, especially in developing countries. Waterborne diseases occur worldwide and outbreaks caused by the pollution of community water systems have the potential to cause disease for a big number of consumers. According to the bad quality of water in Gaza Strip people tend to use water desalination by reverse osmosis this study has been conducted, to assess of parasitological water quality from house kitchens and desalination plants filters in Gaza Strip.

Methods: During the period from May to December 2015, a total of 420 samples of water and filters were collected for parasitological examination. A total of 300 samples of RO filters, tap water and filtered water were collected randomly from 100 houses in all Gaza Strip. A total of 120 random of samples, cartridge filters, inlet water and outlet water were collected from 40 desalination plants in all Gaza Strip. All Samples were examined using direct wet mount smear, acid fast stain, iron hematoxyline stain and Polymerase Chain Reaction for accurate diagnosis.

Findings: It was found that 1.9% (8/420) of water from different sources were contaminated with Cryptosporidium spp. which identified by using PCR. Only just one sample 0.24% (1/420) was contaminated by C. parvum. However, all of the samples were negative for C. hominis. All negative acid fast stain samples were pooled and every ten samples were re-examined as a one sample. This pooling showed negative PCR results for the two species used.

Interpretation and Conclusion: In our research, the eight positive samples were detected in the RO filter samples. The source of drinking water is coming from the municipalities and is delivered to the houses roof or under the towers tanks. Then this water is connected directly to the home filter for more guarantees to be valid for drinking. This means that the source of water that feeds the filter is stored in these tanks.

The occurrence of Cryptosporidium oocysts in the investigated water supplies may require the water utilities and water authorities in Gaza Strip to apply additional monitoring, treatment and/or watershed controls for safe drinking water.

This research could serve as a base line epidemiological surveillance of waterborne parasites in Gaza Strip. Moreover, this study could further help to create more awareness among public in general and policymakers in particular as water contamination is being a key health issue in the region. Studies with high volume of drinking water samples for analysis should be taken into consideration.
Keywords: Gaza Strip, Cryptosporidium, PCR, water

Fluoridehydrochemistry and Enrichment in the Groundwater of Gaza Strip: Case Study the Urban Area of Khan Younis City, Southern the Strip

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In groundwater, fluorine occurs as fluoride ions (F⁻) which forms complexes with inorganic and organic compounds. Enrichment of F⁻ concentration in groundwater depends on many factors: the geological, chemical and physical characteristics of aquifers (e.g., porosity and acidity of soils and rocks, temperature, depth, etc.). Infiltrated rainwater dissolves F⁻ from its bearing minerals in the bedrock of the groundwater, where the bedrock mineralogy is the primary factor for the variations of its concentration of the groundwater. Presence of excessive F⁻ in groundwater may persist for years, decades or even centuries, so in order to mitigate this excess, it is essential to determine and monitor the causal factors for F⁻ enrichment in the groundwater in time and space. Study by Bosch (1997) indicated that Gazans are exposed to high F⁻ concentrations in their groundwater and also in the fish and the tea that are staple foods, and WHO (1999) indicated that there is a high dental fluorosis index in Gaza Strip.

The aim of this research is to study F⁻ hydrochemistry and enhancement in the groundwater of the urban area of Khan Younis City. Physicochemical data for a total of 200 groundwater samples were analysed. Fluoride concentrations values varied from 0.3 to 6.45 mg/L with average value of 2.87 mg/L were observed. Correlations between fluorides with other ions were relatively observed, negative correlation with Ca²⁺ and the positive correlation with pH, HCO₃⁻ and Na⁺ increase the dissolution/solubility of fluoride bearing minerals, leading to fluoride leaching into the groundwater. Fluoride enrichment in the groundwater of the area is due to water hydrochemistry, mineral–water interaction (mainly calcite and fluorite), fluorite resulted from fluoapatite dissolution. The saturation indexes evaluation indicated that 42% of the samples are over saturated with respect to calcite and 35.5% under saturated with respect to fluorite, while 40.5% approached equilibrium with respect to both calcite and fluorite. At F⁻ concentrations of less than 2.2 mg/L fluorite saturation indexes show under–saturation condition for fluorite and at higher fluoride concentrations show near saturation condition.

Keywords: fluorine, groundwater, Gaza Strip.
Solid Waste Energy in Gaza Strip Cost and Feasibility

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Producing energy from the Solid Waste is a promising technology in regard of waste treatment. Gaza strip with 2.0 million population has big quantities of Municipal Solid West which has been mainly treated by land filling after incineration, while Gaza strip suffers from an electricity deficit.

This paper studies the waste quantities in Gaza Strip and the energy content which can be recovered. The investment cost for a Waste To Energy Power Plant and the actual price of kWh will be estimated.

The energy content of Gaza Solid Waste have been found as 277.7 - 388.6 GWh/year and can be utilized for 11.0 – 15.9MW Electricity Power Plant.

The price of the produced kWh have been found as 0.43 $/kWh(1.5 NIS/kWh)) which is cheaper and economically feasible compared with the more expensive actual cost of the existing Gaza Diesel Power Plant (1.6 NIS/kWh, 0.45 $/kwh).

Waste-To-Energy (WTE) in Gaza Strip can cover a part of electricity deficit by at least 360 MWh/day (131.4 GWh/year) which represents 5.0% of the currently electricity deficit. That is in addition to positive environmental impacts of waste manipulation.

Keywords: Solid Waste, MSW, WTE, Energy, Gaza
EARTH & ENVIRONMENTAL SCIENCES
Part II: Poster Presentations
The date palm (Phoenix dactylifera L.) is considered one of the most important fruit crops in Palestine. It has a major socio-economic importance due to its commercial, nutritional, environmental, social, health and religious values. Because of its importance as a resistant and strategic crop facing serious local threats like pest infestation, underdeveloped marketing and mismanagement, the current study comes to investigate the status of the date palm tree and its uses in the Gaza Strip.

Field surveys and institutional visits were applied to fulfill the purpose of the study. The current study revealed a total number of 250,000 trees of date palm existing in the Gaza Strip, with 40% of the dates is concentrated in the Middle Governorate. At least, 19 cultivars have been recorded locally with the ‘Hayani’, ‘Barhee’ and ’Bentaisha’ being the most common. The average date production in the last few years was 12,000 - 15,000 ton per year. More than 40 industries and uses associated with the date palm tree have been observed in the Gaza Strip, with the handicraft production and food industries are the main creative uses by the Palestinian community. Finally, the study recommends the improvement of the processes of date palm cultivation, production, protection, and marketing. The cooperation of different parties is very essential to ensure good sustainable development and uses of the date palm in the Gaza Strip, Palestine.

**Keywords:** Date palm, cultivars, Hayani, public uses, Gaza Strip, Palestine
Significance of Environmental Isotopes (Deuterium and Oxygen–18 Isotopic) in the Groundwater of Khan Younis City, Southern Gaza Strip (Palestine)

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Over the past 40 years, environmental isotopes such as deuterium and oxygen–18 are widely used in groundwater hydrology. These isotopes are directly influenced by the atmospheric processes and during groundwater recharge. They are also used in addressing the water cycle in nature, such as hydrogeological characteristics of aquifers and aquifer interconnections, water origins, dynamics, interconnection between water sources such as groundwater, surface water and atmosphere. However, the investigation of the $\delta^{2}$H and $\delta^{18}$O values for the groundwater of the Gaza Strip has never been carried out and studied. Now, it is a new field in the research for the groundwater of the Strip.

This research studied the environmental isotopes such as: deuterium and oxygen–18 isotopic in the groundwater system of Khan Younis City, southern the Gaza Strip. Three isotopic lines for the relationship between $\delta^{2}$H, and $\delta^{18}$O were used. These lines are Global Meteoric Water Line (GMWL), Local Meteoric Water Line (LMWL) and Groundwater Evaporation Line (GEL). The $\delta^{2}$H, $\delta^{18}$O and D–excess values indicate that: deuterium and oxygen–18 isotopes originated in the groundwater from groundwater mixing with rainfall and other water sources, the groundwater recharged from rainfall from distance source that came from the Mediterranean and other sources such as wastewater, irrigation return flow and saline water and the study characterized by semi–arid climate.

\textbf{Keywords:} deuterium, oxygen $\delta^{18}$ isotopic, groundwater, Gaza Strip
The use of reclaimed wastewater and sludge in agriculture can improve the fertility of soil and increase the productivity. The aim of this study was to assess the possibility of reusing both the reclaimed wastewater and the sludge (as fertilizer) produced from Gaza Wastewater Treatment Plant (GWWTP). Corn (Zea mays) seeds were planted in different pots at different sludge/soil mixtures, the plants were irrigated using treated wastewater from GWWTP, and another similar mixture composition were irrigated using brackish water. The experiments were conducted at El Zaitoon area in a plot owned by Ishtawi family, and it involved different percentages of sludge/soil mixture as (0%, 10%, 20%, 30%, and 40%). Results showed that the irrigation with reclaimed wastewater and applications of sludge/soil (30% ratio) contributed to the improvement of the plant yield. 15 heavy metals content of the fruits after harvesting was evaluated using ICP-OES. The results showed that the fruits had a concentration of heavy metals comply with the permissible level for sludge or compost for agriculture use.

**Keywords:** reclaimed wastewater, sludge, fertility, fertilizer, Zea mays.
Effect of Microwave Treated Water on the Growth of Corn (Zea Mays) and Pepper (Capsicum Annuum) Seedlings

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This paper presents the investigation of the influence of microwave treated water on the growth of the plants. For this experiment, four groups of seedlings were used and subjected to the study. We took drinking water and divided it into four parts, each group was given only one part. The first group was given water that had been heated to boiling in a glass cup on a gas stove. The second and third group were given water that had been heated in a microwave to boiling (100°C) and 60°C respectively. The fourth group of seedlings was given water that had not been heated at all and used as control. The growth of seedlings was studied for 30 days. The analysis of the results shows that corn seedlings that exposed to microwaved water show lower growth rate in comparison to the control ones. Corn seedlings when watered with normal water or with water heated on the stove grew faster and have shoot length significantly bigger than the corns which were watered with water heated in a microwave at 60°C/100°C. On the other hand, pepper seedlings watered with either microwaved water or not microwaved water were found with no significant effects on their growth characteristics.

Keywords: Microwave, electromagnetic radiation, Zea mays, Capsicum annuum, microwaved water.
THEORETICAL & APPLIED PHYSICS
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<td>14:15-14:30</td>
<td>Transfer Matrix Method Application on Semiconductor based Solar Cell Characteristics Measurements</td>
<td>Hala El-Khozendar</td>
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<td>14:30-14:45</td>
<td>Anti-reflection Coating Solar Cell Structure Based on Conductive Nanoparticles</td>
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<td>14:45-15:00</td>
<td>Temperature sensor employing a ternary photonic crystal</td>
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<td>15:00-15:15</td>
<td>Krapivsky-Redner Modification of Nonlinear Barabasi-Albert Networks</td>
<td>Muneer A. Sumour</td>
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<td>Transverse electric guided modes in metal-LHM-ferrite slab waveguide structures</td>
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<td>15:30-15:45</td>
<td>Proton Interaction with water And human body parts Calculations of Range and stopping power</td>
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<td>9:00-9:30</td>
<td><em>Keynote Lecture</em> Green Photonics</td>
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<td>9:30-9:45</td>
<td>Optical and magnetic characterizations of zinc substituted copper ferrite synthesized by a co-precipitation chemical method</td>
<td>Talaat Hammad</td>
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<td>9:45-10:00</td>
<td>Investigation of structural parameters and magnetic properties of mixed Li-Ni spinel ferrites</td>
<td>Hussien Dawoud</td>
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<td>10:00-10:15</td>
<td>Comparative performances of dye-sensitized solar cells based on synthesized ZnO nanoparticles via hydrothermal and solution combustion</td>
<td>Husam Musleh</td>
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<tr>
<td>10:15-10:30</td>
<td>An Inexpensive Organic Dyes Sensitized Zinc Oxide Nanoparticles Photoanode for Solar Cells Devices</td>
<td>Samy Shaat</td>
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<td><strong>Coffee Break</strong></td>
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<td>11:00-11:20</td>
<td>Perovskite Solar Cells free of hole transport layer</td>
<td>Jihad Asad</td>
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<td>11:20-11:40</td>
<td>Indoor Radon Concentration Measurements and Its Health risks throughout Rafah city in Gaza strip</td>
<td>Eyad Balawna</td>
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<td>11:40-12:00</td>
<td>Thermal Effect of 1.8 GHz mobile Phone Radiation on Dura Tissu</td>
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<td>12:00-12:30</td>
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ZnO nanoparticles (NPs) were successfully synthesized in air atmosphere using two methods: hydrothermal (HT) and solution combustion (SC). In the HT method zinc acetate dihydrate (Zn(CH$_3$COO)$_2$.2H$_2$O) (ZA) and aqueous solution of sodium hydroxide (NaOH) were used as precipitation agent., where the starting materials in the SC method were ZA and urea. For both methods, X-ray diffraction (XRD) revealed that the products were single wurtzite hexagonal phase of ZnO NPs with no impurities and the determined average particle size (D) using Debye Scherrer’s formula were ranged from 23.5 nm to 25.8 nm for SC and HT, respectively. The Energy Dispersive X-ray spectra exhibited that only two elements, Zn and O were existed in the products, without any traces of other elements were found. UV-Vis calculation showed that the band gap energy (Eg) of ZnO NPs was larger in HT compared to SC method. High resolution transmission electron microscope (HRTEM) micrograph displayed that the morphology was semi-spherical NPs for both methods. Photoluminescence (PL) emission illustrated that the synthesized ZnO NPs via two methods had a comparable PL emission. Six devices of dye sensitized solar cells (DSSCs) were assembled using synthesized ZnO NPs as photoanode, which were sensitized by different dyes such as Eosin Y, Eosin B and Rhodamine B. Photoelectrical measurements were tested under a light intensity of 100 mW/cm$^2$. The measurements showed that, the conversion efficiency (η) of cells with photoanode made using combustion synthesized ZnO NPs have significant improvement 10 times compared with ZnO NPs synthesized with HT. This was attributed to the significant increase of the dye loading over the surface of ZnO NPs made using SC method.

**Keywords:** Solution combustion, hydrothermal, DSSCs, ZnO NPs, HRTEM, photoluminescence.
Organolead halide perovskites have garnered significant interest in recent years in light of their rapid rise in photovoltaic (PV) power conversion efficiency (PCE). Perovskite Solar Cells (PSCs) are a promising generation of high efficient solar cells that attract much work to be developed for getting stable and cost effective solar cells. The high light harvesting in addition to their long diffusion length because of the high charge mobility of the perovskite materials resulted in a high achieved photon to electron conversion efficiency. In this work an easy and simple structured perovskite solar cells were designed, synthesized and characterized. The effort on this structure was to reduce the cost of the used materials, such as by using an aqueous solution of Methyl ammonium as a starting precursor of the perovskite materials. In addition to that the structure is free of the hole transport layer, which more benefit for inexpensive solar cells. The effect of the solvent of the obtained perovskite materials on the performance of the solar cell has been investigated. For both solvents (DMF and DMSO), it was found that the 40% concentration is the optimum concentration that gave the best performance of the cell. The DMF based PSC cell exhibited higher efficiency compares to the DMSO based one. An open circuit voltage of 750 mV, photocurrent density of 12.5mA/cm² with overall photon to electric conversion efficiency of 5.7% was obtained. The higher current density of the DMF based PSC demonstrates efficient charge generation and charge transport of both electrons and holes, which may be attributed to the more ability of the light absorbing material to infiltrate the pores of the mesoporous layer of the TiO₂.

Keywords: Perovskite solar cell, free HTM, cost effective, solvents
Inexpensive Organic Dyes-Sensitized Zinc Oxide Nanoparticles Photoanode for Solar Cells Devices

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Zinc oxide nanoparticles (ZnO NPs) were synthesized using a hydrothermal route. The prepared ZnO NPs were characterized by x-ray diffraction (XRD), high-resolution transmission electron microscopy (HR-TEM), UV–vis spectroscopy, and photoluminescence (PL) spectroscopy. The XRD patterns confirmed the standard hexagonal wurtzite structure of ZnO NPs, and the calculated value of the average particle size was 23.34 nm. HR-TEM micrographs of ZnO NPs showed semispherical particle morphologies and their sizes lie between 10 and 40 nm. The estimated average size distribution of ZnO NPs was 21.35 nm. UV–vis spectrum of ZnO NPs revealed the highest absorption band at 360.5 nm, and the Eg was 3.70 eV. The PL spectrum emission was deconvoluted by eight peaks into two regions [near-ultraviolet (NUV) and visible that caused from the defects]. Two groups of dye-sensitized solar cells (DSSCs) thin film devices based on ZnO NPs were sensitized in different concentration solutions of 0.1, 0.32, and 0.5 mM of eosin B (EB) and eosin Y (EY) dyes. The sensitized DSSCs device with 0.32-mM dye of EY displayed higher efficiency and its performance parameters are much better among all other fabricated DSSCs devices. The short current density (J_{sc}) increased from 1.59 to 4.97 mA/cm² and the Voc enhanced from 0.36 to 0.46 V. The conversion efficiency from light to electricity showed a significant improvement from 0.29% to 0.94%. The transient open circuit photovoltage decay (TOCPVD) was measured to estimate the apparent electron lifetime or response time (τ_n) or the electron recombination rate (k_{rec}), using the double exponential function for first time to fit the experiment data of TOCPVD. The results revealed that the EY dye can be used as an efficient and an inexpensive dye for DSSCs.

Keywords: Eosin DSSCs, defects, photoluminescence, transient open circuit photovoltage decay, lifetime.
Investigation of Structural Parameters and Magnetic Properties of Mixed Li-Ni Spinel Ferrites

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The solid state method was used to synthesize the mixed $Li_{0.5(1-x)}Ni_x^2+Fe_{2.5-0.5x}^3+O_4^{2+}$ spinel ferrites where $x$ was the increments of Ni content. The net magnetization ($M_{\text{net}}$) was, theoretically, calculated according to suggested cations distribution $(Fe_{3+}^{3+})_T(Li_{0.5(1-x)}Ni_x^{2+}Fe_{0.5(1-x)}^{3+})_O^{4+}O_4^{2+}$. The magnetization of octahedral $(O_h)$ site $(M_O)$ and $M_{\text{net}}$ decreased, while the magnetization of tetrahedral $(T_d)$ site $(M_T)$ unchanged due to increasing $Ni^{2+}$ ions. The measured values of $M_{\text{net}}$ showed the same behavior as the theoretical calculations, which decreased exponentially with increasing of the $Ni$ concentrations. In addition, $M_{\text{net}}$ increased with increasing of applied magnetic field ($H$), which indicated the normal behavior for the ferrites system. The relative permeability increased with increasing of the filed $H$ and decreased with the increase of $Ni^{2+}$ ions. The ratio of $Fe_T/Fe_O$ indicated that the relative number of the $Fe^{3+}$ ions on $O_h$ sites decreased with increasing $Ni$ content. The ionic radii of $T_d$ sites ($R_T$) unchanged where the radii of $O_h$ sites ($R_O$) increased with increasing of the $Ni^{2+}$ ions. The values of the average ionic radii $R_{av} = (R_T + R_O)/2$ increased with increasing in composition $x$. The estimated values of lattice parameters ($a_{th}$) increased with increasing of $Ni$ content. The values of oxygen parameter $u^{3m}$ and $u^{3m}$ decreased with more incorporation of $Ni$ content. All the interionic distances (bond lengths (BLs)) changed due to increasing of $Ni$ contents. The bond angles $\theta_1$, $\theta_2$, $\theta_3$, $\theta_4$ and $\theta_5$ were calculated. The values of $\theta_1$, $\theta_2$ and $\theta_5$ increased and $\theta_3$ the $\theta_4$ decreased with increasing of $Ni^{2+}$ ions. Substitution of the $Ni^{2+}$ ions has a tremendous influence on the properties of $Li$-spinel ferrite such the magnetic properties.

Keywords: Spinel ferrite, relative permeability, cations distributions, Neel’s model, jump length, hyperfine magnetic field.
Optical and Magnetic Characterizations of Zinc Substituted Copper Ferrite Synthesized by a Co-Precipitation Chemical Method

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Nano-sized Cu$_{1-x}$Zn$_x$Fe$_2$O$_4$ ($x$=0.0, 0.2, 0.4, 0.6, 0.8 and 1) ferrites were synthesized by a co-precipitation chemical method. The structural, morphological, optical, and magnetic properties of the products were determined and characterized in detail by X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FT-IR), transmission scanning electron microscopy (TEM), energy dispersive X-ray spectroscopy (EDX) and superconducting quantum interferometer device (SQUID). X-ray analysis showed that all compositions crystallize with a cubic spinel-type structure with an average crystallite size in the range of 11–13 nm. The lattice parameter increased from 8.331 to 8.400 Å with increasing Zn content. The optical properties of the nanoferrites were investigated by UV–vis spectroscopy and photoluminescence (PL) spectra. UV–vis absorption spectra show that the energy band gap ($E_g$) of Zn-doped copper ferrite decreases from 3.64 to 3.10 eV with increasing the particle size. The broad visible emission band is observed in the entire PL spectrum. The Cu$_{1-x}$Zn$_x$Fe$_2$O$_4$ nanoferrites exhibit superparamagnetic behavior at room temperature (RT). The saturation magnetization ($M_s$) varies considerably with Zn content to reach a maximum value for Cu$_{0.4}$Zn$_{0.6}$Fe$_2$O$_4$ composition, i.e.74.65 emu/g. The high $M_s$ and magnetic moment values are attributed to cation distribution change.

Keywords: Nanostructures, Optical properties, Magnetic properties, Ferrites
Indoor Radon Concentration Measurements and Its Health Risks throughout Rafah City in Gaza Strip

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Passive diffusion Radon dosimeters containing CR-39 solid state nuclear track detectors of good quality were used to measure Radon and its daughters concentrations throughout Rafah city. Our sampling strategy was to distribute the dosimeters in houses in Rafah city (Tal El Soltan, Balad(Rafah camp) and El Genena) at different geographic parts of the region. These dosimeters were randomly distributed in bedroom, living room and kitchen. The (150) detectors were left for about three months during the period from June to August of 2016. The collected detectors were chemically etched by using NaOH of (6M) concentration at temperature 700°C, then the average number of tracks/mm² detected at all the regions was 73.8 Bq/m³ (1.99 pCi/l) with a range of values between 16.5 and 150.4 Bq/m³ (0.44 and 4.06 pCi/l), with a maximum value of 180.7 Bq/m³ (4.88 pCi/l) and average standard deviation of 15.1 Bq/m³. The average indoor radon concentration obtained was below the indoor radon concentration action level (148 Bq/m³) recommended by Environmental Protection Agency (EPA). The results obtained in this work are quite limited and should only be considered as indicative of the variability in radon concentration that expected in normal building in Rafah. This gives a wider frame work for natural radiation measurement in Gaza strip that provide data especially from environmental point of view.

Keywords: CR-39 detectors, $^{222}$Rn concentration levels, Dosimeter, Exposure
In growing Barabasi-Albert (BA) networks, a new node randomly selects an existing target node and attaches to it randomly with a probability $r$ proportional to the number $k$ of neighbors already attached to the target node. Krapivsky and Redner use, also for different networks: "a new node randomly selects an existing target node, but attaches to a random neighbor of this target." In nonlinear BA networks, $r$ is made proportional to with $\alpha=1$ for the standard BA case. We simulate here nonlinear Barabasi-Albert-Krapivsky-Redner (BAKR) networks, where $r$ is applied either to the selection of the target or to the selection of the target neighbor. We also use both directed and undirected Barabasi-Albert networks. For the maximum number of neighbors we find no effect of values of $\alpha$, while the distribution $n(k)$ of the number of neighbors had a normal power law in $nk\log$ and there is no strong peak in number of neighbors $k(i)$.

**Keywords:** Barabasi Albert network, probability, number of neighbors, nodes.
Anti-reflection Coating Solar Cell Structure Based on Conductive Nanoparticles

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2Department of Physics, Islamic University, Gaza P. O.Box 108, Gaza Strip, Palestine
Email:mohab7070@yahoo.com

In this paper, we investigate for the first time antireflection coating structure for silicon solar cell where CNPs (conductive nanoparticles) film layer is sandwiched between a semi-infinite glass cover layer and a semi-infinite silicon substrate. The transmission and reflection coefficients are derived by the transfer matrix method and simulated for values of unit cell sizes, gab widths in visible and near-infrared radiation. In addition, the absorption, reflection coefficients are examined for several angles of incidence of the TE (transverse electric) polarized guided waves. Numerical results provide an extremely high absorption, if nanoparticles are suitably located and sized. The absorptivity of the structure achieves 100% at gab width of 3.5 nm and CNP layer thickness of 150 nm.

Keywords: Solar cells, nanoparticles, antireflection, transfer matrix method, silicon.
Temperature Sensor Employing a Ternary Photonic Crystal

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Email: staya@iugaza.edu.ps

Photonic crystals are structures with modulation of the refractive index. They have received much attention in the last two decades due to their significant applications. Photonic crystals can be used efficiently in omnidirectional reflectors, filters, optical switches, light-emitting diodes, waveguides etc. When an electromagnetic wave is incident on a photonic crystal, it is faced with a number of dielectric layers with different refractive indices. This difference between each two adjacent layers causes a reflectance and transmittance at the interfaces between the layers. In the transmitted spectrum of a photonic crystal, a photonic band gap can be observed. An electromagnetic wave with a wavelength lying in a specific range cannot propagate in the photonic crystal.

Photonic crystals can be classified according to the number of layers in one period into binary, ternary, quaternary and so on. Ternary photonic crystals have shown many features over the binary ones. In this work, we employ ternary photonic crystal as a temperature sensor. We propose a ternary photonic crystal consisting of the structure silicon / polymer / silicon dioxide (Si/polymer/SiO$_2$). The reflection and transmission coefficient are derived for the proposed structure. The transmission spectrum is plotted for different temperatures. Due to thermo-optic and thermal expansion coefficients of the materials there is a clear shift in the transmission spectra. Inspection of a particular peak in the transmission spectrum, we observe an obvious shift towards higher wavelengths. It is found that the temperature sensitive transmission peak shift is considerably enhanced due to the insertion of the polymer layer between Si and SiO$_2$ to constitute a ternary photonic crystal.

Keyword: Ternary photonic crystal, Temperature sensor, Si, SiO$_2$
Transverse Electric Guided Modes in Metal-LHM-Ferrite Slab Waveguide Structures

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Email: kelwasife@iugaza.edu.ps

TE Guided modes at microwave frequencies in metal-left handed-ferrite waveguide structures are studied numerically. The effect of ferrite layer parameters on the dispersion properties of the waveguide structure is investigated in details. It is found that the modal index of the guided mode is negative as if the overall structure is left-handed material. A considerable effect of the gyromagnetic ferrite layer on the dispersion properties of the structure is observed. The power propagating in each layer is also evaluated.

Keywords: waveguide, TE guided modes, Microwave, Ferrite layer
In this work, numerical and simulation based on Transfer Matrix Method have been presented to investigate a model solar cell structure. New four layered structure containing different types of semiconductor has been presented, analyzed and discussed. The reflectance, transmittance and the average reflectance in the visible light are derived and displayed versus the operating wavelength for different physical parameters. The obtained results show that the proposed structure is a promising candidate to be used for design future solar cell structures.

**Keywords:** Transfer Matrix, model solar cell structure
In this work I studied interaction of protons with matter, I calculated the stopping power (in MeV cm²/g) and the Range. This has been done for different target materials and biological human body substances such as water, bone, muscle and tissue and different energies for protons. All these calculations were done using different programs, STAR and Matlab. The stopping power of protons in some biological compounds for protons was calculated over the energy range from \(10^{-2}\text{MeV}\) to \(10^3\text{ MeV}\). Total stopping power was obtained by summing the electronic (collisional) and radiative stopping power of the target materials, and then employing the continuous slowing down approximation (CSDA) to calculate the path length (Range). The total stopping power is proportional to \(Z^2\), \(Z/A\) and \(I\), increases rapidly at low energies, reaches a maximum and decreases gradually with increasing energy, the data were fitted to a suitable empirical formula as shown in the figures. Also fitting techniques for the calculation where employed, the results of stopping power vs energy, and range vs energy will be shown and discussed.

**Keywords:** proton, water, human body, stopping power, Range
Several recent studies have indicated mobile phone radiation on cells of human body. Thermal effects have been investigated, via experimentation or simulation in many research. This paper deals with thermal electromagnetic radiation produced from mobile phone with frequency 1.8GHz effects on human Dura tissue by use of the finite-difference time-domain method. This study focuses on the thermal effect response of a semi-infinite biological tissue. Maxwells equations and transient bioheat transfer equation were numerically calculated to predict the effects of thermal physics properties on the transient temperature of Dura tissue. Electric and magnetic field simulation are also evaluated. This prediction of the temperature evolution in biological bodies can be used as an effective for thermal diagnostics in medical practices. Modeling the electromagnetic field distribution in the human body allows to provide a good answer to the worried persons. This analysis and results can be used during the design process for the new mobile phones, and also help for determining the biological effects due to exposure to the electromagnetic waves irradiated from the mobile phone.

**Keywords**: 1.8GH electromagnetic waves, human Dura tissue, mobile phone
Quantum Mechanics with Non-Hermitian Potentials

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In recent years, two types of non-Hermitian potentials have retained attention: energy dependent potentials and complex potentials having real eigenvalues. Beyond the solution of the corresponding Schrödinger equations, modification of the scalar product and a proper definition of the observables are necessary to obtain a coherent quantum mechanics. We shall sketch the situation and present few simple examples.

Keyword: non-Hermitian potential, coherent quantum mechanic
PURE & APPLIED MATHEMATICAL SCIENCES
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<td>Prof. Dr. Hisham B. Mahdi</td>
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<td>11:15-11:28</td>
<td>Generating relations by using some classes of near open sets</td>
<td>Mohammed Iqelan</td>
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<td>11:28-11:41</td>
<td>On rough and near rough membership functions in topological spaces</td>
<td>Nashaat Rajab</td>
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<td>11:41-11:54</td>
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<td>Ismail Shbair</td>
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<td>11:54-12:07</td>
<td>Duadic codes over some finite commutative chain rings</td>
<td>Mohammed M. AL-Ashker</td>
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<td>12:07-12:20</td>
<td>On graded n-primaly ideals</td>
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**19/3/2018 First Day Second Session Hall (2) 12:30-14:01**

Chairperson: Prof. Dr. Ayman H. Sakka

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<td>Symmetrized Nearest Neighbor Kernel Estimator of the Conditional Quantiles</td>
<td>Raid B. Salha</td>
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<td>12:56-13:09</td>
<td>Characterizing The Exponential Distribution by M-Spacings</td>
<td>Mohamed I. Riffi</td>
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<td>13:22-13:35</td>
<td>A new procedure for detecting outliers in meta-regression</td>
<td>Enas A. Abed</td>
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<td>13:35-13:48</td>
<td>On the Combinatorial geometry of flag domains of SO(p, q) and SP(p, q) in the Grassmanian</td>
<td>Faten Said Abu-Shoga</td>
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<td>13:48-14:01</td>
<td>Lie-theoretic generating relations of modified hypergeometric polynomials</td>
<td>Marwan Elkhazendar</td>
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<td>14:01-14:15</td>
<td><strong>Coffee Break</strong></td>
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### Second Day  Third Session  Hall (2)  12:30-14:01

**Chairperson:** Prof. Dr. Tariq O. Salim

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<td>Some Extensions on Cerone's Generalizations of Steffensen Inequality</td>
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<td></td>
<td>Numerical Solution of Two-Dimensional Linear Integral Equations using Orthogonal Polynomials</td>
<td>12:43-12:56</td>
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<td>Using F-transform to remove image noise</td>
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<td>On certain subclass of analytic univalent functions defined by convolution</td>
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<td>Inclusion results and differential subordination and superordination for an operator associated with the generalized Bessel functions</td>
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<td>Subordination properties of a certain subclass of multivalent analytic functions involving the Wright generalized hypergeometric function</td>
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<td></td>
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### Fourth Session  Hall (2)  14:15-15:45

**Chairperson:** Prof. Dr. Hisham B. Mahdi

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<td>14:15-14:30</td>
<td>Symmetries and Exact Solutions of Conformable Fractional Partial Differential Equations</td>
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<td>14:30-14:45</td>
<td>Analytical Solution for The Katugampola Fractional Differential Equations</td>
<td>Mohammed S. El-Khatib</td>
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<td>14:45-15:00</td>
<td>A Note on Gegenbauer Matrix Polynomials in Two Variables</td>
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<td>Approximate controllability of fractional nonlinear differential systems via sectorial operators</td>
<td>Hassan Abu Ghalwa</td>
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<td>15:15-15:30</td>
<td>On stability of fractional differential equations of order ( \alpha \in (1, 2) )</td>
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<td>15:30-15:45</td>
<td>Existence of solutions of non-periodic coupled fractional differential equations</td>
<td>Iman Abo Amra</td>
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**Lunch and closing ceremony**
Generating Relations by Using Some Classes of Near Open Sets

Mohammed Iqelan* and Nashaat Rajab

Department of Mathematics, Al-Azhar University-Gaza, Palestine,
Email: moiqelan@yahoo.com

The purpose of this paper is to introduce some definitions of relations generated by using some classes of near open sets in topological spaces. Proved results and examples are provided.

Keywords: Topologized approximation space, membership function, lower and approximation.
On Rough and Near Rough Membership Functions in Topological Spaces

Mohammed Iqelan* and Nashaat Rajab

Department of Mathematics, Al-Azhar University-Gaza, Palestine. Email: moiqelan@yahoo.com

In this paper we introduce some results on rough membership and near rough membership functions in topological spaces.

Keywords: Topological space, Rough set, Membership function
In this paper we study the concept of rough continuity in topologized approximation spaces with general binary relations. We introduce several types of rough continuous functions as minimal rough continuous function, maximal rough continuous function, minimal rough irresolute function and maximal rough irresolute function.

**Keywords**: rough continuous functions, topologized approximation spaces
Duadic Codes over Some Finite Commutative Chain Rings

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Duadic codes are a generalization of quadratic residue codes. We obtain in this paper quadratic residue codes over the chain ring $F_3 + uF_3, u^2 = 0$ and then obtain duadic codes for this ring. Also, we give a construction of duadic codes over the rings $Z_4$ and $F_2 + uF_2, u^2 = 0$. We give specific constructions of these codes over finite fields and extend this construction to finite commutative chain rings $F_q + uF_q + u^2F_q + \ldots + u^{s-1}F_q$ with $u^s = 0$ where $q = p^r, p$ is a prime number and $r \in Z$.

Keywords: Duadic codes, quadratic residue codes, finite commutative chain rings.
On Graded $n$-primaly Ideals

*Arwa Eid Ashour*

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Let $G$ be an abelian group, $R$ be a $G$-graded commutative ring and $I$ be a graded ideal of $(R, G)$. In this paper, we introduce the concepts of $G$- $n$-adjoint, not $G$ -$n$-primary and uniformly not $G$ -$n$-primary sets for $I$, for any positive integer $n$. We show that $G$- $n$-adjoint sets of $I$ are not necessarily graded ideals. Thus we define a graded ideal to be graded $n$-primaly if $G$- $n$-adjoint set of $I$ is graded ideal. We also introduce the concept of $n$-graded radical of $I$ and study the relation between graded ideal $I$, $G$- $n$-adjoint sets of $I$, $n$-graded radical of $I$ and graded radical of $I$. Also we investigate the relation between graded prime ideal or graded primary ideal on one hand and graded $n$-primaly ideals on the other hand, and study all the previous concepts in details illustrated by several examples.

**Keywords:** $G$- $n$-adjoint sets of a graded ideal, not $G$ -$n$-primary sets of a graded ideal, uniformly not $G$ -$n$-primary sets of a graded ideal, graded radical of a graded ideal, $n$-graded radical of a graded ideal, graded $n$-primaly ideal.
Stute (1986) has introduced the symmetrized nearest neighbor (SNN) kernel estimator to estimate the conditional quantiles in the univariate case. This estimator is here extended to the multivariate case. Two methods were proposed for the derivation of the asymptotic normality of the proposed estimators. The first method considers two different quantiles estimated at the same conditional point. In the other one, the conditional quantile estimated at \( k \) different conditional points is considered. The construction of the confidence bands as well as the problem of bandwidth selection to avoid the boundary effects were discussed. Empirical studies are performed to assess the performance of the SNN kernel estimator in finite samples. Simulation results attested a reasonably good performance of the proposed estimator.

**Keywords:** Nearest Neighbor estimator, conditional quantile, asymptotic normality, confidence bands, bandwidth.
Generalized Order Statistics from Generalized Burr III Distributions

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The generalized order statistics was introduced by Kamps (1995) to formalize some related concepts such as order statistics, record values and sequential order statistics. Recurrence relations for single and product moments of generalized order statistics of Burr III distribution are derived. The Joint Distribution of all Generalized Order Statistics for Burr III distribution is derived and used to have some special cases. In addition, the probability density function of the conditional distribution of the generalized order statistics from those distributions are given. Furthermore, some special cases are presented and discussed.

Keywords: Generalized order statistics, order statistics, Burr III distribution, joint distribution.
This paper is concerned with characterizing the exponential distribution by a property of the exponential m-spacings. We prove that an m-spacing of the order statistics of an exponential distribution is equal in distribution to a finite sum of independent heterogeneous exponential distributions. We use this characterization to prove some useful related identities.

*Keywords*: characterization, exponential distributions.
On The Statistical Modeling of Shape for Dental Maxillary Arch

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The shape of the dental arch has gained special interest due to its important applications in many aspects such as prosthetic dentistry and forensic dentistry. Different mathematical functions were proposed to estimate the arch shape, but the lack of scientific statistical basis motivates researches to work on alternative statistical methods with certain level of confidence as well as combining the knowledge of the shape of a dental arch and each tooth location.

In this paper we present a set of advanced statistical methods to model the features of dental maxillary arch assuming multivariate normal and multivariate complex distributions. Furthermore, cluster analysis and discrimination are considered. For illustration, the proposed and discussed methods are applied on a real data set of 47 dentate Malaysian adults.

Keywords: Cartesian coordinates, Digital images, Hoteling $T^2$. 
A New Procedure for Detecting Outliers in Meta-Regression

Ali H. Abuzaid and Enas A. Abed *

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2Applied Statistics Department, Al Azhar University-Gaza, Palestine
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Meta-analysis is the statistical analysis of effect sizes obtained from a large collections of empirical studies. Meta-regression is a tool used in meta-analysis to examine the impact of moderator variables on study effect size using regression-based techniques. Similar to other types of data, it is common to observe extreme effect size values when conducting a meta-analysis and the presence of outliers may affect the validity and strength of meta-analysis results. There are few procedures to detect outliers were extended from multiple regression.

This paper proposes a new procedure for detecting suspicious outliers in meta-regression, based on the penalized maximum likelihood method with smoothly clipped absolute deviation (SCAD) penalty function. Parameter estimates are obtained by applying coordinate descent algorithm, and the cross-validation criterion is used to determine the tunning parameter which controls the tradeoff between the likelihood and the penalty. For illustration purposes, the proposed procedure is applied on a real data set of the effectiveness of writing-to-learn interventions on academic achievement based on 26 different studies. The results show a consistent performance of the proposed procedure with other procedures.

Keywords: Diagnostics, numerical solutions, residuals.
On the Combinatorial Geometry of Flag Domains of $SO(p,q)$ and $SP(p,q)$ in the Grassmanian

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Let $G$ be a complex semisimple Lie group and $Q$ a parabolic subgroup. The compact algebraic homogeneous space $Z = G / Q$ is called a complex flag manifold. A real form $G_0$ of a complex semisimple Lie group $G$ has only finitely many orbits in $Z = G / Q$ where the open orbits exist and called flag domains. A maximal compact subgroup $K_0$ of $G_0$ has special orbits $C$ which are complex sub-manifolds in the open orbits of $G_0$. These are referred to as cycles. The cycles intersect Shubert varieties $S$ transversely in finitely many points. This intersection gives much of the topological, complex geometric and representation theoretical properties of the flag domain. Our work here is devoted to the real forms of $SP(2n,C)$ and $SO(2n,C)$ for the manifold $Z = G / Q$ where $Q$ is a maximal parabolic subgroup defined by the dimension sequence $(k,n-k)$ which is the Grassmanian of $k$ planes in $C^n$. We describe the points of intersection in $S \cap C$ and the number of these points is computed.

Keywords: Combinatorial geometry, Grassmanian
Lie-Theoretic Generating Relations of Modified Hypergeometric Polynomials

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In this paper we derived several generating relations involving the modified hypergeometric polynomials \( _2F_1(a, b; c + n; x) \) by the group theoretical method known as Wisner's method. We have considered a three parameter Lie group by giving a suitable interpretation to the index \( n \) of the modified hypergeometric polynomials and obtained some known as well as some new generating relation for modified hypergeometric polynomials. Some particular cases of these relations are also investigated.

Keywords: Lie algebra, generating relations, hypergeometric functions.
Some Extensions on Cerone's Generalizations of Steffensen’s Inequality

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Inequalities are at the heart of mathematical analysis. Since its appearance in 1918, Steffensen's inequality has been applied to a wide range of topics in mathematics and statistics. It lies in the core of integral inequalities, which can be used for dealing with the comparison between integrals over a whole interval \([a, b]\) and integrals over a subinterval of \([a, b]\).

In this paper, we provide more extensions on Cerone's generalizations of Steffensen’s inequality with bounds involving any two subintervals. Moreover, we introduce some applications for integral mean.

*Keywords*: Steffensen inequality, monotonic functions, integral mean.
Numerical Solution of Two-Dimensional Linear Integral Equations Using Orthogonal Polynomials

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In this paper we investigate Galerkin method using two dimensional orthogonal polynomials for solving two dimensional linear Volterra and Fredholm integral equations of the second kind. The method is based upon replacing the unknown function by a truncated two dimensional shifted Chebyshev or Legendre series which in turn converts the integral equation into a linear system of algebraic equations that can be easily solved. This method is effective and can be applied with low cost of computing operations. Two illustrative examples are given and the computational results obtained by using two dimensional Chebyshev polynomial are compared with that obtained by Legendre polynomials and it is shown that they are approximately equivalent.

Keywords: Chebyshev polynomials, Legendre polynomials, two dimensional integral equations
We apply the Taylor Differential Transform Method (TDTM) to the first Painleve equation
\[ u'' = 6u^2 + t \] (1)
subject to the initial conditions
\[ u(0) = u_0, u'(0) = u_1, \] (2)
where \( u_0, u_1 \in \{0, 1\} \). We use the deviation \( |E(t, u, u')| = |u'' - 6u^2 - t| \) to calculate the accuracy of the solutions and the results are compared with the known results.

**Keywords**: Taylor Differential Transform Method, First Painleve equation.
Using F-Transform to Remove Image Noise

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This paper is devoted to investigate fuzzy transform from the approximation point of view and to incorporate it as a technique to remove image noise. It will be applied to remove random variation Impulsive Noise. The Numerical Algorithm based on fuzzy transform will be implemented as a user-subroutine in the mathematical code MATLAB. The algorithm will be simulated to remove different ratios of Random Variation Impulsive Noise. An example will be given to show the efficiency of applying F-transform to data processing and results will be compared with Adaptive Wiener Filter.

Keywords: F-transform, Numerical Algorithm, Image processing, Random Variation Impulsive Noise.
On Certain Subclass of Analytic Univalent Functions Defined By Convolution

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In this present paper, we introduce the classes $S_\alpha(f, g; A, B; \alpha, \beta)$ and $\tilde{S}_\alpha(f, g; A, B; \alpha, \beta)$ of convex and starlike functions defined by convolutions. We obtain coefficient estimates, distortion Theorems, extreme points, radii of close-to-convexity, starlikeness and convexity for function belonging to the class $S_\alpha(f, g; A, B; \alpha, \beta)$, and the modified Hadamard product of several functions belonging to it. Also, we investigate several distortion inequalities involving fractional calculus. Finally, we obtain integral means for functions belonging to this class.

Key words: univalent functions, starlike functions, convex functions, convolutions, fractional calculus, modified Hadamard product
In the present paper, several new classes of analytic functions are introduced and investigated. These classes are defined using a new operator $B_{p,q,s}^{\alpha,\beta}(\alpha_1;\beta_1)$. By making use of the principle of subordination between analytic functions, results of inclusion relationships, many subordination and superordination results, these results are obtained by investigating appropriate class of admissible functions, Sandwich-type results are obtained.

**Keywords:** Analytic function, Generalized Bessel functions, Univalent function, Convex univalent function, Hadamard Product, Subordination
Subordination Properties of a Certain Subclass of Multivalent Analytic Functions Involving the Wright Generalized Hypergeometric Function

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Using the Wright generalized hypergeometric function, we introduce a new subclass of multivalent analytic functions. We study some properties of this subclass such as subordination and superordination properties, convolution properties, inequality properties and other interesting properties of this subclass are also investigated.

Keywords: Multivalent Function, Subordination, Superordination, Convolution.
Lie group analysis is used to investigate invariance properties of nonlinear fractional partial differential equations with conformable fractional time derivative. The analysis is applied to Korteweg-de Vries, modified Korteweg-de Vries, Burgers, and modified Burgers equations. For each equation, all of the vector fields and the Lie symmetries are obtained. It is evident that the Lie group analysis can be used successfully to study conformal fractional partial differential equations. It is worth to note that the number of the generating vector fields for each of the four time-fractional equations is the same as that of the classical equation and the generating vector fields of each of these equation reduce to that of the corresponding classical equation when $\alpha = 1$. Using the obtained Lie symmetries, the equations under consideration can be transformed to ordinary differential equations with classical derivative. More precisely, the time fractional Korteweg-de Vries equation can be transformed into the first and second Painleve' equations. For the time fractional modified Korteweg-de Vries equation, a solution in terms of the second Painleve' equation can be obtained. In the case of Burgers equation, solutions in terms of Riccati equations can be derived.

However, each of these equations with Riemann-Liouville fractional derivative can be transformed to a nonlinear ordinary fractional differential equations. The fractional derivative in the reduced equations is turned out to be the Erde'lyi-Kober fractional derivative.

**Keywords:** Fractional derivative, conformable fractional derivative, vector field, Lie symmetry.
In this paper, we discuss the solution of time and space fractional diffusion differential equations by using Katugampola Fourier-Laplace transforms and Katugampola Sine-Laplace transforms. Also we present the solution of the time-fractional telegraph equation "TFTE". The fundamental solution for "TFTE" in a whole-space domain and "TFTE" in a half-space domain are obtained by using Katugampola Laplace-Fourier transforms. On other hand, the solution in the form of a series for "TFTE" in a bounded-space domain is derived by the Sine-Laplace transforms methods.

**Keywords:** Katugampola fractional derivative, Laplace transform, Fourier transform, Diffusion Equation, Time-Fractional Telegraph Equation.
A Note on Gegenbauer Matrix Polynomials in Two Variables

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The main aim of this paper is to define a new kind of the two variable of Gegenbauer matrix polynomials. The matrix differential recurrence relations, matrix partial differential equation of two variable of Gegenbauer matrix polynomials and double generating functions are established. Furthermore, expansion of two variable of Gegenbauer matrix polynomials as series of Hermite matrix polynomials has been presented.

Keywords: hypergeometric matrix function, Gegenbauer matrix partial differential equation, differential matrix recurrence relation, Hermite matrix polynomials of two variables.
Approximate Controllability of Fractional Nonlinear Differential Systems via Sectorial Operators

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In this article, we obtain sufficient conditions for the approximate controllability of the fractional integro-differential system

\[
\begin{align*}
\frac{d^\alpha}{dt^\alpha} x(t) &= -Ax(t) + Bu(t) + I_{0}^{1-\alpha} f(t, x(t)), \\
x(0) &= x_0,
\end{align*}
\]

where \(0 < \alpha < 1\), \(A: D(A) \subseteq X \rightarrow X\) is the infinitesimal generator of a solution operator \(S_\alpha(t), t \geq 0\), \(B: U \rightarrow X\) is bounded linear operator, \(u \in L^2(J, X)\), \(X\) and \(U\) are two real Hilbert spaces, and \(f : J \times X \rightarrow X\) is a continuous function. The results are obtained by using Schauder’s fixed point theorem.

Keywords: approximate controllability, sectorial operator, analytic resolvent, fractional differential equation.
On Stability of Fractional Differential Equations of Order $\alpha \in (1, 2)$

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In this article, we study the Mittag-Leffler and class-K function stability of fractional differential equations with order $\alpha \in (1, 2)$. We also investigate the comparison between two systems with Caputo and Reimann-Liouville derivatives. Some examples are introduced to illustrate the results.

Keywords: Stability, Mittag-Leffler, Class-K function, Comparison theory, Caputo, Reimann-Liouville.
Existence of Solutions for Non-Periodic Coupled Fractional Differential Equations

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We obtain sufficient conditions for existence and uniqueness of solutions of coupled fractional differential equations using Schauder's and Banach's fixed point theorems. An application is introduced to explain the applicability of the obtained results.

**Keywords:** Coupled differential equations, Fixed point Theorem, Caputo derivative.