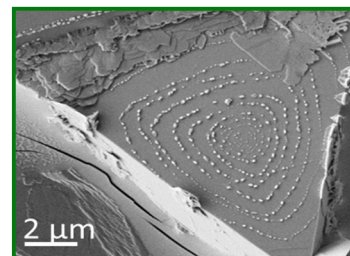




The University of Jordan
School of Science
Department of Physics



Workshop on "Materials Science and Technology", April 8-9, 2018

in connection with the

**Seminar Activities of the Dept. of Physics, JU, Amman, Jordan
Surface Science Course at the Dept. of Physics, JU, Amman, Jordan**

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**"International Conference on Current Nanotechnology and its Applications (ICCNA 2018)"
Jordan University of Science and Technology (JUST) April 10-12, 2018**

[<https://www.just.edu.jo/Conference/iccna2018>]

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in cooperation with Jordanian Club of Humboldt Fellows

Workshop Scope

This workshop primarily aims at providing training in scientific communication for Masters and Doctoral students. It will also provide (for some participants) training in how to analyze and interpret the experimental work in field electron emission. It is being organized as part of the seminar activities of the Department of Physics of the University of Jordan. These form an integral part of the training for the Surface Physics course run for PhD students at the Department. In addition, this workshop is a related activity of the International Conference on Current Nanotechnology and its Application, to be held at the Jordan University of Science and Technology (JUST) immediately following the workshop, on 10–12 April 2018.

A workshop of this kind generally takes place once a year at the University of Jordan, Department of Physics. Last year's workshop was organized in cooperation with the Jordanian Club of Humboldt Fellows and ten other universities and institutions in Jordan, prior to the Fourth International Conference on Materials in Jordan (titled "Jordan's' Life Sciences for Sustainable Development"). Last year's workshop was held from April 24 –26, 2017, and was organized and tutored by Prof. Hans-Heinrich Limbach (FU-Berlin), with the help of Jordanian colleagues Profs. Marwan Mousa (Mu'tah University), Sami Mahmood, Hani Khoury, Mahmoud Al-Hussein and Mousa M. Jafar (The University of Jordan). The workshop was sponsored by the Gesellschaft Deutscher Chemiker (GDCh). The organizers succeeded in selecting and recruiting 11 participants, (8 female, 3 male) from different MENA countries and scientific areas. Two came from Egypt, one from Tunisia/Dortmund, one from Egypt (and Dortmund), one from Syria, one from Gaza, one from Amman (and Dortmund/Germany), and others from various universities in Jordan. Topics presented included Solid State Physics, Organometallic and Pharmaceutical Chemistry, Environmental Geochemistry, Microbiology, Medicine, Genomics and Cell Biology.

Each student presented a 10-minute talk about their research work. After that, each slide was discussed by the audience for about 1 h. That format helped the participants to ask simple questions of understanding, as well as scientific questions. The end result was usually constructive criticisms, and suggestions on how the presentation could be improved. In this way, the presenter got feedback about what the attendees understood from his/her presentation. It showed the presenter how to think, before a presentation, about the audience present and their background. The students participated intensively in the discussion, assisted by remarks of the senior scientists.

The format of this year's workshop will be broadly similar, but there is less time available per student. Thus, this year, each participating student is asked to prepare a 10-MINUTE powerpoint talk, and there will be 20 minutes discussion after his/her talk, both about the content, and about the clarity of the presentation, and how this might be improved.

On the first day, the late-afternoon training session on the interpretation of Fowler-Nordheim plots is a practical session, NOT another lecture. Students planning to attend are asked to bring with them a laptop computer, and also a ruler, a pencil and an eraser.

Workshop Tutorial Team, 2018

International:

Dr. Richard Forbes (University of Surrey, UK) (Leader of International Team)

Dr. Mark Hagmann (Newpath Research & University of Utah, USA)

Dr. Alexander Mayer (Universite De Namur, Bruxelles, Belgium)

Dr. Ahmed Tabach (Al-Nahrain University, Baghdad, Iraq)

Local:

Prof. Mahmoud Al-Hussein (Chairman of the Workshop, JU)

Prof. Marwan S Mousa (Co-Chairman of the Workshop, JU, Mu'tah University, JPS, and JCHF)

Dr. Muneeb Shatnawi (Physics Seminars Co-Organizer, JU)

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Prof. Dr. Sami Mahmoud (Dean of School of Sciences, JU)

WORKSHOP PROGRAMME

Day 1: Sunday, 8 April 2018

Moderator: Dr. Richard Forbes

9:30-11:00 Opening Session:

9:30-10:00 Welcome address and Introduction of Participants

10:00-11:00 Richard Forbes
Introductory Tutorial Lecture:
Field Electron Emission & the Interpretation of Fowler-Nordheim Plots

11:00-11:30 Coffee Break

11:30-13:00 Training Session 1

11:30-12:00 Samer Daradkeh, Marwan S. Mousa
Effect of Relaxation and Cooling Process on Field Electron Emission from Single-Walled Carbon Nanotube Embedded in Glass

12:00-12:30 Alaa Al-Qudah, Zarqa, Jordan

12:30-13:00 Emad Bani Ali, Jarash, Jordan
Field Emission from Carbon Nanotubes and its Potential Application as an Electron Source

13:00-14:00 Group Photo
Lunch

14:00-15:20 Training Session 2

14:00-14:30 Ayman Masri, Marwan S. Mousa
Cold Field Emission from Carbon Fiber Coated by Epoxy-resin

14:30-15:00 Hatem Braikat, Marwan S. Mousa
Field electron emission from Carbon black Nanotips: characterization and analysis

15:00-15:20 Amat el Rahman presenting her team of 6 undergraduate students working on learning the metallic sample preparation, its coating with dielectric material and EM techniques.

15:20-15:40 Tea Break

15:40-17:00 Training Session 3

15:40-16:50 Exercise on the Analysis of Fowler-Nordheim Plots

16:50-17:00 Discussion

Workshop Programme

Day 2: Monday 9 April 2018

Moderator: Prof. Dr. Mahmoud Al-Hussein

09:00-12:30 Scientific Talks Session

- 09:00-09:30** Ahmed Al-Tabbach
Fowler-Nordheim plot behaviour for semiconductor emitter arrays
- 09:30-10:00** Mark Hagmann
Analysis of generating a microwave frequency comb in laser-assisted scanning tunnelling microscopy with a semiconductor sample
- 10:00-10:30** Ahmed Al-Tabbach
Elimination of geometrical enhancement factor and extraction of effective emission area from a Fowler-Nordheim plot
- 10:30-11:00** Coffee Break
- 11:00-12:00** Alexandre Mayer
Numerical testing by a transfer-matrix technique of standard models used in electronic field emission
- 12:00-12:30** Discussion
- 12:30-13:30** Lunch
- 13:30-17:00** Training Session 4
- 13:30-14:00** Abeer Abd AlMajeed AlAjaleen, Humam Ghassib
The Transition from the Classical to the Quantum Regime for Rubidium-87 in Terms of the Second Virial Coefficient and the Scattering Length
- 14:00-14:30** Remah Yasin Al-Masarweh, Humam Ghassib
A New Approach for the Equation of State of Nucleonic Matter from the Quantum Second Virial Coefficient
- 14:30-15:00** Emad Nafez Mustafa, Humam Ghassib
Interaction of Backflow Patterns in various Dimensions with Applications, Specifically in Helium Systems
- 15:30-16:00** Murad Ghanem, Mahmoud Al-Hussein
Morphological control of Bulk Heterojunction Organic Solar Cells
- 16:00-16:30** Ali Jaffal, Mahmoud Al-Hussein
Carbon Nanotubes / High Density Polyethylene Nano Composites
- 16:30-17:00** Malak Elshareef, Sameh Akel, Mahmoud Al-Hussein
Ternary Bulk Heterojunction Organic Solar Cells
- 17:00-17:10** Closing Remarks
Prof. Dr. Sami Mahmoud (Dean of School of Science, JU)

End of the workshop