TECHNISCHE UNIVERSITÄT CHEMNITZ

CALL FOR APPLICATIONS

For the NANO-TECH Summer School

Chemnitz, 25th September – 1st October2016
Amman, 8th - 13th October 2016

The NANO-TECH Summer School offers MA and especially PhD students an advanced training in the field of nanosciences with focus on the synthesis, physical and chemical characterization and applications of nanomaterials. The objective of the summer school is to bring together scientists and young researchers from different disciplines (natural sciences, material sciences, and engineering) to qualify the participants to take part in international and trans- as well as interdisciplinary oriented research projects.

Accommodation and board will be covered. Travel expenses for Jordanian participants coming to Chemnitz and for German participants going to Amman will be partly covered. Costs for visa acquisition have to be covered individually.

2-Month Research Internship in Germany: Following the Summer School 3 two-month research Internships at Technische Universität Chemnitz are offered for the most successful Jordanian participants (1 MA and 2 PhD students). The participants are chosen during the summer school according their performance at sight. The Internship includes a scholarship covering travel and subsistence costs (lump sum).

Venues of the Summer School: Technische Universität Chemnitz, Germany and University of Jordan, Amman, Jordan

Terms of Application:
Application is open to Master and PhD students from Jordan (University of Jordan, Jordan University of Science and Technology, Mutah University, The Hashemite University, German Jordanian University, Yarmouk University) and from Technische Universität Chemnitz.

Applicants from Technische Universität Chemnitz submit their application to heinrich.lang@chemie.tu-chemnitz.de and antje.pfeifer@zfwn.tu-chemnitz.de
Applicants from Jordan submit their application to d.taher@ju.edu.jo and antje.pfeifer@zfwn.tu-chemnitz.de:

Please provide the following documents to apply for the NANO-TECH Summer School **as one** PDF-file:
☐ Properly completed application form
☐ **Letter of motivation** stating the reasons for application and the scientific relevance of the summer school for the own education/research (1 page)
☐ Curriculum vitae (max. 1 page)
☐ Confirmation of enrolment
☐ Bachelors certificate (and Masters certificate if at hand)
☐ Transcript of results from Bachelors and Master programme
☐ For PhD-students: Abstract of the exposé (max. 1 page)

Deadline for Applications is the **15/07/2016.**

GEFÖRDERT VOM Bundesministerium für Bildung und Forschung DAAD

Promoted by the German Academic Exchange Service and funded by the Federal Ministry for Education and Research

Content: Following topics will be covered within the summer school:

1) Introduction to the field of nanomaterials

- Generation and Characterization of nanostructured surfaces, SAMs (self-assembled monolayers), metallic and ceramic nanoparticles, polymeric- and organic molecule-based nanostructures etc.
- Theoretical and computational simulation methods for nanomaterials and nanostructured surfaces
- Relationship between particle sizes and properties.

2) Synthesis

- Physical and chemical methods for the generation and stabilization of nanoparticles and -materials
- Preparation and structuring of surfaces
- Generation of self-assembled monolayers (SAMs)
- Supramolecular nanoaggregates of, *i. e.* dendrimers
- Deposition techniques for the generation of ultra-thin films, quantum dots or nano-membranes

3) Analytics

- Introduction to analytical methods with high lateral resolution
- Scanning probe methods / optical microscopy / nano-tomography
- Introduction to optical and electron spectroscopy
- Magneto-optical methods and the determination of mechanical properties of nanomaterials

4) Theory

- Introduction to *ab-initio*, semi empirical and DFT methods to describe nanomaterials
- Computation possibilities of optic, electronic, magnetic and transport properties of nanomaterials
- Comparison of the results of different methods to the experimental data
- "How can theory help in the design of new experiments and new materials?"

5) Application

- Overview of different applications, *e. g.* data storage, optoelectronics, spintronics, catalysis, sensing, fabrics, pharmaceuticals, cosmetics etc.