NATIONAL SCIENCE CENTRE POLAND

DFG Deutsche Forschungsgemeinschaft

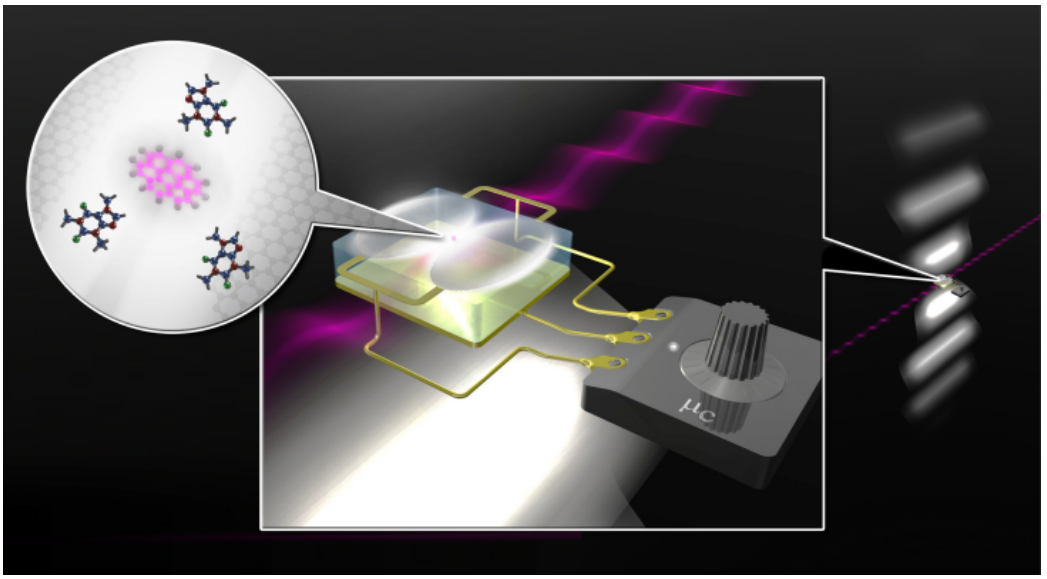
JOB OFFER
in BEETHOVEN 2 grant
(Polish – German collaboration)

Position in the project: PhD student
Scientific disciplines: quantum optics, plasmonics, solid state physics
Job type: stipend
Number of job offers: 1
Stipend amount: 2500 PLN/month (additional stipends available at the host institute)
Maximum period of stipend agreement: 3 years
Position starts earliest on: 1.09.2018.
Institution:

Nicolaus Copernicus University, Torun, Poland
Faculty of Physics, Astronomy and Informatics
Institute of Physics

in collaboration with

Karlsruhe Institute of Technology
Institute of Theoretical Solid State Physics



Project leaders: dr. Karolina Słowik (Poland), prof. Carsten Rockstuhl (Germany)
Project title: GRASP: Graphene Surface Plasmons for Tunable Cavity Quantum Electrodynamics

Project description:
The project aims to explore the potential of graphene -based plasmonics to control and tailor light-matter interactions at nanoscale. With respect to other plasmonic materials, graphene is characterized by heavily suppressed absorption losses for photon energies below a threshold corresponding to the Fermi energy. A suitable level of doping can also shift the Fermi energy on-demand. This results in a wide-range dynamic control of graphene's optical properties. Combined with relatively long plasmonic lifetimes, this renders graphene-based plasmonic nanostructures perfect candidates to implement nanoscale cavity QED systems tunable in time.

Key responsibilities include:

1. Development and application of numerical tools to simulate optical properties of graphene,
2. Development and application of numerical tools to simulate dynamics of quantum systems coupled to electromagnetic fields in proximity of graphene nanostructures,
3. Active collaboration with German partners,
4. Preparation of scientific articles, presentation of research results at seminars and conferences.

Profile of candidates / requirements:

1. MSc (major: physics or related) either already acquired or to be acquired before the position starts
2. documented scientific expertise in one of the following disciplines
    - classical electrodynamics,
    - quantum optics,
    - atomic / molecular physics,
    - quantum solid state theory,
    - or experience in programming and numerical simulations,
3. strong oral and written communication skills in English,.

Required documents:

1. CV,
2. motivation letter,
3. contact details to at least one academic referee,
4. if available: MSc diploma.

Please submit the documents to: karolina@fizyka.umk.pl
(scanned or pdf versions will be accepted)
In case of a successful application, please provide the original documents within a week to the project leader.

For more details please visit the webpage fizyka.umk.pl/~karolina
or contact the project leader by email: karolina@fizyka.umk.pl
or phone +48 56 611 3329.

Application deadline: 30.07.2018.

Please include the following sentence in your application:
"I hereby give consent for my personal data included in my application to be processed for the purposes of the recruitment process under the Personal Data Protection Act as of 29 August 1997, consolidated text: Journal of Laws 2016, item 922 as amended."