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MÜNCHEN

DR. TAYEBEH AMERI
DEPARTMENT CHEMIE



PhD Position

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30.01.2018

Topic: Fundamentals of Organic Colloidal Composite Nanoparticles Applicable in Optoelectronics

The use of aqueous / alcohol-based nanoparticulate dispersions in printable optoelectronics offers a promising approach to control the donor: acceptor morphology on the nanoscale with the benefit of environmentally-friendly, solution-based fabrication. In this project, we will focus on the in-depth fundamentals investigation of colloidal organic composite NPs in terms of NPs morphology formation, NPs surface treatment, mesoscale microstructure of NP-incorporated films, and transport dynamics for application in organic electronic devices.

Your Tasks:

- Establishment of a new portable synthesis setup based on stopped-flow apparatus equipped with different optical and structural characterization techniques for the in-situ analysis of the organic colloidal NPs.
- Real time multi-parameter measurements by using the developed setup to gain in-depth fundamental knowledge on the processes and mechanisms controlling the size and nanoscale morphology of nominated donor:acceptor composite nanoparticles.
- Investigation of the mesoscale morphology of the NP-incorporated thin films, employing experimental and theoretical methods.
- Fabrication and characterization of the high performance optoelectronic devices (such as photovoltaics), based on investigated organic colloidal composite NPs.

Your Profile / Interest:

- Motivated, independent, reliable, and accurate
- Colloidal NPs synthesis
- Processing and fabrication of solution-processable thin film devices
- Optical and electrical characterization
- Good command of English in speech and writing

Duration:

36 months, 75% TV-L E13, Available from February 2018

Please send your application with Curriculum Vitae, certificates of school and degree certificates for academic degree, motivational letter, a short summary of previous scientific work and ideally with contact information for two references as a pdf-file to tayebeh.ameri@lmu.de.