LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

DR. TAYEBEH AMERI

DEPARTMENT CHEMIE

PhD Position

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Topic: Non-Fullerene Based Ternary Organic Solar Cells

Promisingly, some new non-fullerene acceptors (NFAs), such as perylene diimide monomers, dimers and polymers, and indacenodithieno thiophene core small molecules have been demonstrated to outperform fullerenes in comparative devices. The motivation to replace fullerene acceptors in BHJ OPVs stems from their synthetic inflexibility, leading to constraints in manipulating frontier energy levels, as well as poor absorption in the solar spectrum range, and an inherent tendency to undergo post-fabrication crystallization, resulting in device instability. In this project, we will focus on fabrication of the high efficiency long-lived non-fullerene based ternary solar cells by understanding and controlling the nanomorphology as well as transport mechanisms.

Your Tasks:

- Fabrication of the high efficiency non-fullerene based ternary devices by finding the most proper NIR sensitizer classes.
- Fundamental study of nanomorphology and transport mechanisms.
- Empirical investigation of the tunable V_{OC} origin in the ternary devices.
- Investigation of devices' lifespan and detailed study of the degradation processes influencing the device lifetime.

Your Profile / Interest:

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

Duration:

50% 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.