New Seed Grants Awarded to Further Efforts on NSF RII Track I Project

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The Mississippi EPSCoR NSF RII Track 1: Center for Emergent Molecular Optoelectronics (CEMOs) is awarding funding in 2020 to three assistant professors as part of a seed funding program designed to foster new, innovative, and transformative research collaborations. Proposals submitted to the funding opportunity were targeted at the four research focus areas within the center: Infrared Organic Optoelectronic Materials & Technologies, Multifunctional Macromolecular Materials with Tunable Electronic Structures, Emergent Materials for Hybrid Organic/Inorganic Interfaces, and NIR-SWIR Emissive Materials for Bioimaging & Sensing.

These research awards will provide opportunities for early career investigators to collaborate with current CEMOs researchers and gain access to CEMOs resources. Each award will receive $25,000 for one year to target research that builds on the foundation of existing research focus areas, extend the breadth of research in the four research areas, and/or establish bridges between the CEMOs focus areas.

The principal investigators for this year's seed funding awards and their project titles are below.

Eden E. L. Tanner, University of Mississippi
Ionic Liquids To Stabilize And Transport Organic Dye Molecules To Monitor Blood Flow

This project seeks to leverage the stabilization capacity of ILs to substantially enhance the utility of organic dye molecules in biologically-adjacent applications, including imaging and sensing, and demonstrate their potential in blood flow tracking by transporting them through skin. We envisage the work that follows to use mouse models to assess the *in vivo* use of these dyes in monitoring blood flow.

Xuyang He, University of Southern Mississippi
Detection of Newly Emerged Synthetic Stimulants Based on Organic Electrochemical Transistor

The overall goal of this research is to develop novel and reliable OECT-based analytical methods for the rapid detection of synthetic stimulants in forensic samples. In recent years, the abuse of synthetic stimulants has been dramatically increased in the US. According to National Forensic Laboratory Information System (NFLIS)-drug 2019 Annual Report, the phenylethylamine-involved cases represented 30% of the total drug reports, highlighting the need for rapid detection of synthetic stimulants in a way that is simple and robust enough for high throughput forensic drug analysis.

Zhe Qiang, University of Southern Mississippi
Rapid Ordering Of Conjugated Polymer Films Via Direct Immersion Annealing For Improving Device Performance

This research proposal aims to build on the foundation of existing research focus (especially under RFA1) and address current technology gap through the development of a direct immersion annealing (DIA) technique for rapidly ordering conjugated donor-acceptor polymers, which directly soaks polymer films into a selected mixture of good and marginal solvents.