

FY 2019

IMR Kickstart Facility Grants Awards



THE OHIO STATE
UNIVERSITY

INSTITUTE FOR
MATERIALS RESEARCH

Fourteen new research projects were awarded funding through the IMR Kickstart Facility Grant Program for a total investment of \$20,000 in support of innovative materials research in fiscal year 2020. These projects support 14 principal investigators from the departments of Biomedical Engineering, Chemical and Biomolecular Engineering, Chemistry and Biochemistry, Environmental and Geodetic Engineering, Electrical and Computer Engineering, Evolution, Ecology and Organismal Biology, Integrated Systems Engineering, Mechanical and Aerospace Engineering, and Materials Science and Engineering, as well as the Nuclear Engineering Program.

High-power High-brightness Mid-Wave Infrared Diode Lasers above 3 μm

– Principal Investigator: Shamsul Arafin, Electrical and Computer Engineering

Joining of Internally Clad X65 Pipes using Low Alloy Steel Filler Metal

– Principal Investigator: Boian Alexandrov, Materials Science and Engineering

Applying materials in new and complex systems: Using hydrogels and Quantum Dot fluorophores to measure fungal nutrient uptake

– Principal Investigator: Alison Bennett, Evolution, Ecology and Organismal Biology

Scalable Manufacturing of Catalytic Nanomaterials

– Principal Investigator: Nicholas Brunelli, Chemical and Biomolecular Engineering

Spatial Distribution of Mixture- and Curing-Dependent Phases and Void Space in Calcium Sulfoaluminate Cements

– Principal Investigator: Lisa Burris, Civil, Environmental and Geodetic Engineering

Interfacial Characterization of Li-ion and Na-ion All-Solid Li-ion Batteries

– Principal Investigator: Vicky Doan-Nguyen, Materials Science and Engineering, and Mechanical and Aerospace Engineering

Texture Control in Laser Powder Bed Fusion

– Principal Investigator: Michael Groeber, Integrated Systems Engineering

Fabrication and Programming of Digitalized Neuronal Circuits

– Principal Investigator: Liang Guo, Electrical and Computer Engineering, and Neuroscience

XRD investigation of type and size of Rhodium-based composites in aged Rhodium-Alumina (Rh/Al₂O₃) catalysts

— Principal Investigator: Joerg Jinschek, Materials Science and Engineering, and the Center for Electron Microscopy and Analysis

Micro-physiological approach to study blood vessel barrier and function

— Principal Investigator: Jonathan Song, Materials Science and Engineering

4D Multi-functional Architected Materials triggered by Ultrafast Laser

— Principal Investigator: Alok Sutradhar, Mechanical and Aerospace Engineering;

Characterization of Nanoparticles and Microdevices for Controlled Release

— Principal Investigator: Katelyn Swindle-Reilly, Biomedical Engineering, and Chemical and Biomolecular Engineering

Coupled Mechano-magnetic Failure of Magnetic-responsive Soft Material

— Principal Investigator: Ruike Zhao, Mechanical and Aerospace Engineering

A neutron flux sensor fabricated with additive manufacturing technology for liquid metal cooled fast reactors

— Principal Investigator:

Praneeth Kandlakunta, Nuclear Engineering Program, and Mechanical and Aerospace Engineering