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Jeffrey Giglio

Chief Scientist, NSUF

NSUF Instrument Scientist Program

Background

- The NSUF has not historically operated using a traditional User Facility funding model.
- In the current model, funding is provided to Instrument Scientists (ISs) only to accomplish specific, narrowly defined tasks.
 - Virtually no time is allocated for capability development
 - This model does not effectively address the underlying scientifically relevant issues associated with nuclear energy, including those related to the materials science of nuclear fuels and materials performance.
 - It also results in instrument capabilities that remain largely static rather than increasing in the ability to produce impactful scientific results over time
- Started in FY 2018, the IS Project was designed to provide additional funding to NSUF ISs to continuously improve instrumentation, enhance data collection methods and improve experimental methods in support of NSUF awarded work at the INL.
 - NSUF hopes to get 1 publication in refereed journal per NSUF IS award

How NSUF IS Process Works

- Until FY 2024, all of the NSUF ISs were from INL
 - A call was sent out for proposals to potential NSUF ISs
 - The NSUF management team would evaluate each proposal
 - NSUF management team consists of principle investigator (Giglio), NSUF Director, NSUF Deputy Director, NSUF Chief Scientists, NS&T Chief Scientist
 - Based on scoring that is related to relevancy of the research to NSUF, originality, capability, risk, NSUF specific needs and funding allotted, the proposals were awarded
- For FY 24 the NSUF ISs proposal solicitations were opened up to NSUF Partner Facilities (25 total proposals received)
 - Received proposals from PNNL, LANL, ORNL, ANL and BNL
 - Proposals were evaluated together with the INL proposals, using the same judging criteria

FY 23 Awarded Proposals (FY 23 Funding 850K)

Instrument Scientist	Title	Hours Invested
Jeffrey Giglio	Project Management/Monthly Reporting/Mid-Year & Final Report Preparation	89
Trishelle Copeland-Johnson*	Creating a Data Collection and Processing Workflow for Three-Dimensional Slice-By-Slice Reconstruction of Nuclear Structural Materials Using Focused Ion Beam Microscopy	225
Chuting Tan Tsai	High Temperature Portable PAS Operation (HiPPO) Sample Chamber	298
David Frazer	Elevated Temperature Electron Backscatter Diffraction (EBSD) of Irradiated Fuel	218 (Includes NSUF Presentation)
Narayan Poudel	Upgrade of Measurement Capability in PPMS by Installing Sample Rotator and Perform Magneto-transport Study in Plutonium Hexaboride (PuB6) Single Crystal Under Rotation	176
Kaustubh Bawane	Electron Energy Loss Spectroscopy at High Energy Losses to Study Chemical Interactions in Nuclear Materials	216
Mukesh Bachhav*	Correlative Atom Probe and TEM to Gain a Better Understanding of Materials	167
Karen Wright	Oxygen: Metal Analysis in Irradiated Oxide Fuels Using Electron Probe Microanalyzer (EPMA)	255 (Includes NSUF Presentation)
William Chuirazzi	Data Acquisition and Analysis Techniques for X-ray Computed Tomography	156
Daniel Murray	Development of FIB-TOF-SIMS Methods for Irradiated Fuels and Material	83

* Started mid-year