Low Activation Materials Development and Analysis Laboratory (LAMDA)

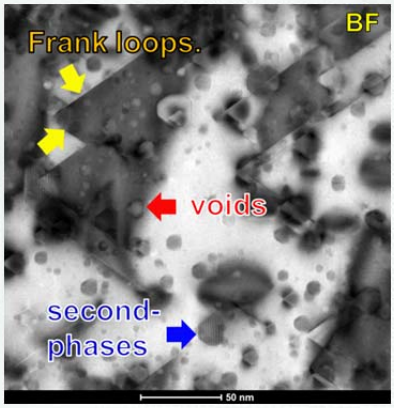
Description

The LAMDA facility is a multipurpose laboratory for evaluation of materials with low radiological threat without the need for remote manipulation. The LAMDA laboratories are equipped for analysis of samples at < 100 mR/hr at 30 cm. This mode of operation allows for more precise and delicate sample handling than in traditional hot cells. LAMDA is also an ideal setting for collaborative work with sponsors and partners.

Work within the thermo-physical properties test suite

The LAMDA laboratory typically utilizes small, compact samples to allow researchers to leverage cutting-edge characterization and test equipment to study materials phenomenon not possible at a hot cell facility. Post irradiation examination capabilities in the LAMDA lab are focused on three main categories: mechanical testing, physical properties and microstructural characterization. The dedicated LAMDA equipment, along with the "open lab" analytical capabilities, provides an unparalleled resource for irradiated materials science.

When combined with the ORNL hot cells, these facilities provide complimentary capabilities for high and low-dose samples. This unique suite of tools allows for "right-sized" post-irradiation examination and provides the most cost and time efficient analysis possible for irradiated materials.

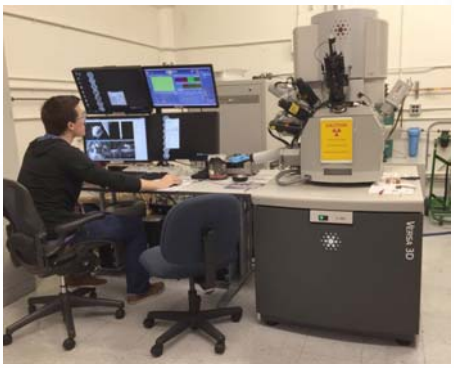


Transmission electron microscopy bright field image of irradiated SiC (9 dpa at 1440℃)

Applications

LAMDA contains a broad set of equipment including testing capabilities for:

- Mechanical testing in multiple configurations and environments
- Measurement of physical properties
- Measurement of electrical and thermal properties
- Specimen cleaning facilities
- High resolution optical imaging
- Scanning electron microscopy
- Transmission electron microscopy
- Cutting, grinding, and polishing capabilities
- CNC milling capabilities
- Annealing and heat treating
- Other capabilities can be introduced on demand



Focused ion-beam preparation of samples

Contact

Josh Schmidlin
LAMDA Manager
Materials Science and Technology Division
865.574.6231
schmidlinje@ornl.gov

Keith Leonard
Technical Advisor, LAMDA
Materials Science and Technology Division
865.576.3687
leonardk@ornl.gov

ornl.gov

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Date: April 2017, R2