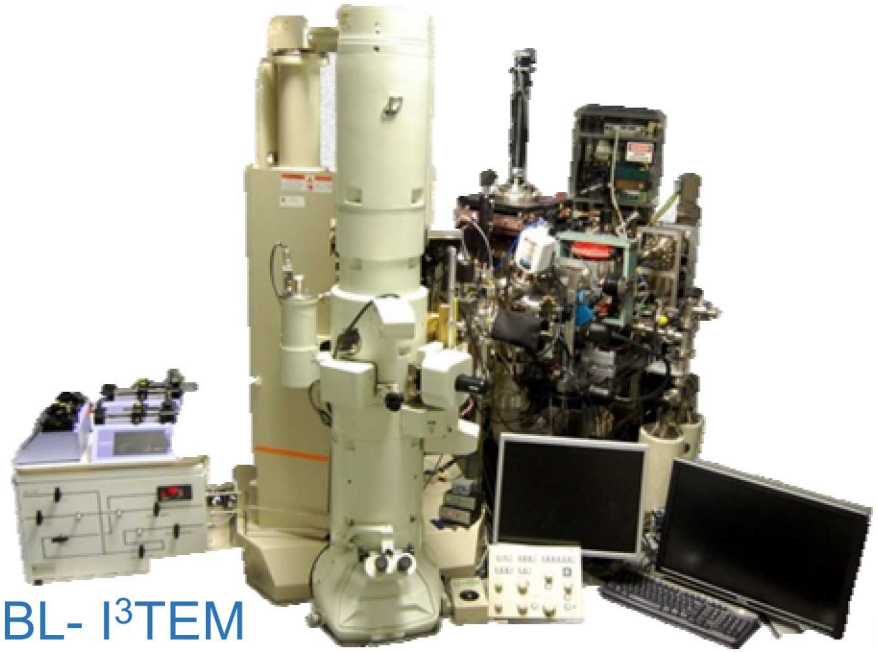
SAND2020-2414C

NSUF at Sandia National Laboratories

ACRR

GIF



IBL- I^{3}TEM

- Located at Albuquerque, NM
- Neutrons
  - Annular Core Research Reactor (ACRR)
  - Pulsed Reactor Critical Experiments
  - D-D and D-T Neutrons
- Gammas
  - Gamma Irradiation Facility (GIF)
- Ions
  - Ex-situ Ion Irradiation
    - Seven ion accelerators (10 eV to 100 MeV)
  - In-situ Ion Irradiation
    - Scanning Electron Microscope (SEM)
    - Transmission Electron Microscope (TEM)
    - Transient Grating Spectroscopy (TGS)

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NSUF at Sandia National Laboratories (TA-V)

Neutrons

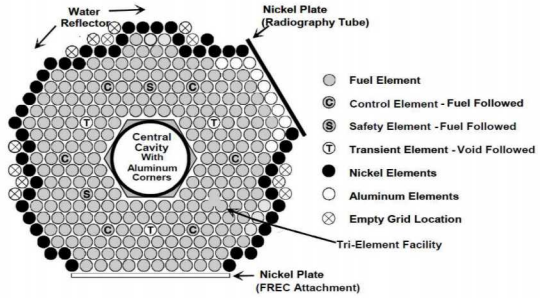
ACRR

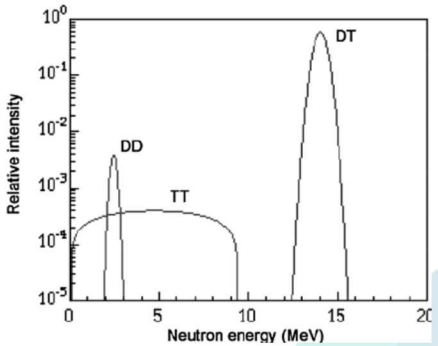
- Irradiations can be performed in steady-state (4 MW) or pulsed power mode (30 GW).

- Configured with 236 UO_2-BeO fuel elements.

IBL

- 2 and 14 MeV neutrons can be used in shielded end station



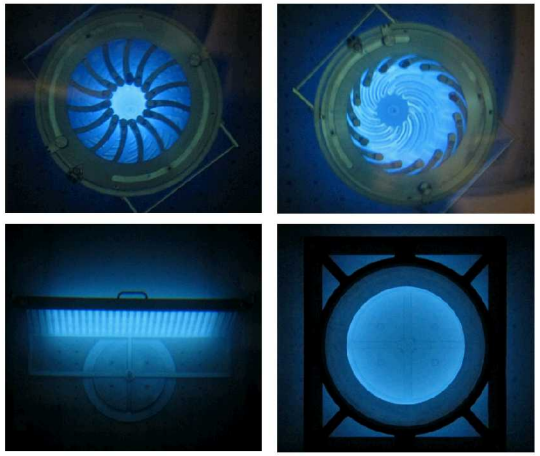


Gammas

- Variety of Co-60 source configurations with gamma dose rates: from 10-3 rad/s to over 1000 rad/s.

- Objects as small as bacteria and as large as an M1 Abrams tank.

- In-cell dry irradiations and in-pool submerged irradiations possible



NSUF at Sandia National Laboratories (IBL)

TEM

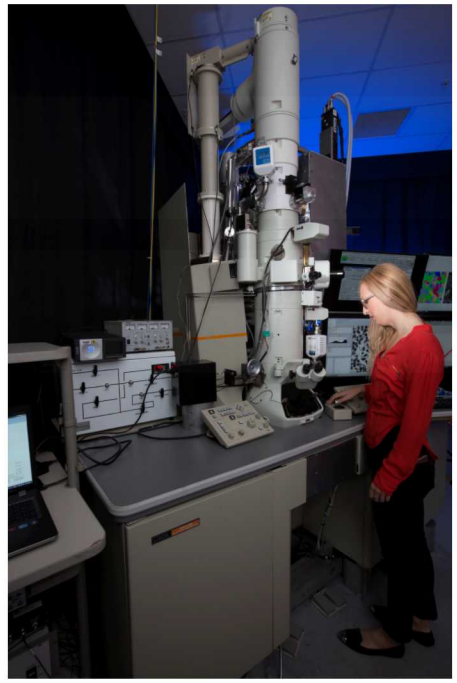
- Combined environments:
  - Triple beam irradiation (D, He, and heavy ion)
  - Thermal greater than 2,000 °C and down to 77 K
  - Quantitative mechanical testing
- 22 in-situ and tomography TEM stages available

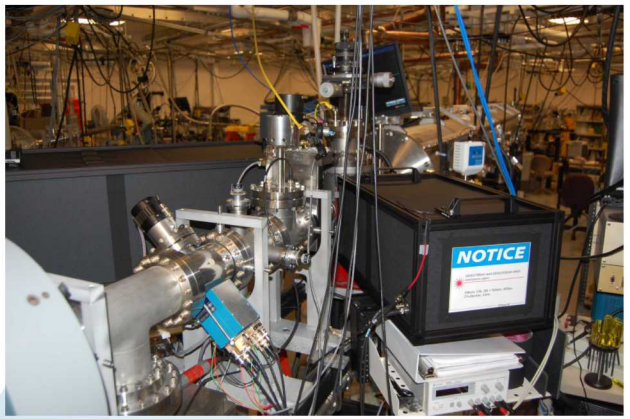
SEM

- Dual beam (6 MV Tandem and 1.2 kV Ion Gun)
- In-situ testing: nanoindentation, heating/straining stage, piezo fatigue stage, cryo stage

TGS

- Laser system coupled with 6 MV Tandem beamline
- Measures thermal and elastic properties, including swelling as a function of damage and temperature.





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