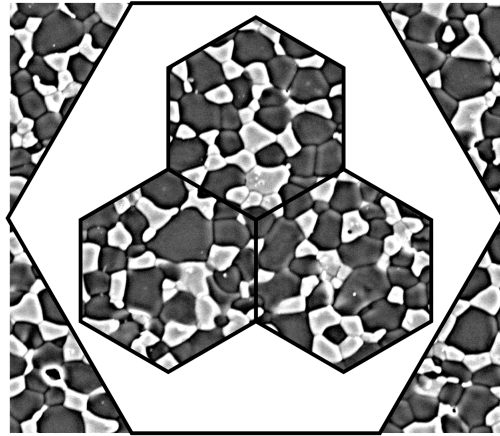


Radiation Stability of Complex Microstructures

**Tuesday, September 2 –
Thursday, September 4, 2008
Santa Fe, New Mexico, USA**

The purpose of this workshop is to explore the physical principles governing microstructure stability in extreme environments, such as high radiation fields and high temperature. Our goal is to develop a scientific and technical framework to facilitate the design of materials that exhibit high radiation, temperature, and corrosion resistance.



The researchers hosting this workshop are particularly interested in the development of radiation stable advanced nuclear fuels. However, for the purposes of this workshop, our objective is to assemble a broader range of experts in nuclear materials R&D, as well as leading authorities on general issues relating to materials performance under extreme conditions. We will examine universally the scientific and technical issues associated with microstructural stability in extreme environments. We will evaluate what drives microstructural evolution and explore how complex microstructures (multi-phasic, nano-structured, etc.) may be used to arrest spatial and temporal changes in structure.

The workshop will highlight a variety of plenary lectures by invited specialists on topics including:

- Fundamentals of radiation stability (swelling resistance, etc.)
- Fundamentals of thermal stability (grain growth, etc.)
- Fundamentals of corrosion resistance
- Fundamentals of high temperature creep resistance
- Complex composite microstructures
- Design of stable nanostructures
- Interaction between interfaces and point defects
- Interfacial segregation – pros and cons
- Grain boundary diffusion, sliding
- Defect, phase nucleation at interfaces
- Relationships between thermodynamics and microstructure stability
- High-temperature and radiation-induced phase transformations
- Transmutation-induced compositional evolution
- Creep resistance by microstructural design
- Swelling resistance by microstructural design

The product of the workshop will be a review paper summarizing the scientific and technical challenges associated with the design of radiation stable microstructures. The journal for this publication is yet to be determined. Invited participants will be asked to contribute to this report.

Special Workshop Announcement

Contributed presentations are welcomed.

This workshop has the following sponsors:; (1) a United Kingdom EPSRC Grant entitled “Multiscale modelling and experimental investigation of radiation effects in oxides and heavy metals” (Grant coordinators: Prof. Roger Smith, Loughborough University, and Prof. Robin Grimes, Imperial College); (2) the Computational Materials Science Network (CMNS) which is funded by the DOE Office of Basic Energy Sciences (OBES); and (3) Los Alamos National Laboratory (LANL). There will be no registration fee. Participants will be responsible for their own travel and hotel expenses. Some financial assistance may be provided to certain invited speakers (negotiated on a case-by-case basis).

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[Logo microstructure courtesy of Samantha Yates, U. of Florida.]

Website for Workshop: <http://www.complexmicrostructures.org>

The venue, hotel, and registration information is forthcoming.