



Glenn T. Seaborg Center Seminar

Structural Materials in Nuclear Environments: A Challenge and Driving Force for New Techniques and Materials Concepts

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4:00 pm – 5:00 pm

54-Perseverance Hall

Nuclear-based energy solutions have been deployed for decades while new concepts are developed which are tailored to address current concerns of climate change, pollution, safety and proliferation. Most nuclear applications however, provide challenging conditions for engineers due to the unique environment that components and structures are exposed to while a comprehensive view of related issues is needed. As for most engineering applications, the materials available limit the design and subsequent deployment of a concept. No single factor poses this unique challenge but rather the combination of temperature, stress, time, environment and dose, which provide fascinating conditions not found easily anywhere else.

In this presentation the approach of the UC Berkeley materials group towards nuclear materials related unique challenges is presented with specific examples of recent research results. Advanced materials concepts as well as light water reactor materials and their response to radiation are discussed utilizing new tools which only have become available in recent years to the community. In fact it is the development of these new tools which accelerated materials testing and evaluation, significantly enhancing our knowledge and rapidly improving the understanding of microstructure-property relationships.

In addition corrosion issues found in heavy liquid metal cooled reactors will be outlined and discussed providing a path forward to more corrosion resistant structural materials.