

The Changing Landscape of Nuclear Materials R&D

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The recent renaissance in the deployment of advanced nuclear reactors is changing the landscape of nuclear materials research and design. Many novel materials are being investigated for advanced reactor concepts, but when combined with the desire to deploy advanced reactor designs the experimental needs shift. Many materials that have been of low technical readiness level (TRL) are now being pushed for qualification for use in these reactor designs. The change in R&D paradigm arises in this shift from bringing a material from low TRL meaning they're still in an exploratory phase, up to a high TRL meaning they're ready for use in different technical areas. This seminar will discuss how this changing landscape is fundamentally changing graphite R&D for advanced high temperature reactors. An in-depth example will be presented that shows why qualification efforts are still on-going for graphite, the first nuclear structural and moderating material.

Dr. Anne Campbell is R&D staff in the Advanced Nuclear Materials group within the Materials Science and Technology Division at Oak Ridge National Laboratory. Her research interests are materials for advanced nuclear reactors (fission and fusion) with a focus on nonmetallic structural materials and future waste concerns from these reactors. Much of



her focus is on understanding the effects of extreme environments (irradiation, high temperature, and stress) on the materials properties of graphite, composites, carbon-based materials, and development of novel materials for advanced nuclear applications. She has a Ph.D. and M.S.E in Nuclear Engineering & Radiological Sciences from the University of Michigan, and her B.S.E. in Nuclear Engineering from Purdue University. Outside of work Anne enjoys spending time with her partner, two daughters, and retired greyhound (she's always got pictures to show, just ask).