

**Westinghouse Electric Company Accident Tolerant Fuels Development**

Kathryn Metzger

Westinghouse Electric Company, 5801 Bluff Road, Hopkins, SC 29061 USA

\*metzgeke@westinghouse.com

The Westinghouse EnCore® fuel program is developing advanced technology fuel pellets and claddings with the capability of improving nuclear plant safety and reliability. The EnCore® program offers a suite of both a near-term pellet and cladding technology as well as a more advanced “game changing” pellet and cladding system. ADOPT™ pellets provide a near term advanced fuel pellet option; they are high density doped UO<sub>2</sub> pellets that enable higher U<sub>235</sub> assembly loading, have lower fission gas release during transients and less washout from secondary failures. A next generation chromium coated zirconium alloy cladding technology has also been developed which provides improved corrosion resistance under normal operating conditions and in accident scenarios. High density and high thermal conductivity U<sub>3</sub>Si<sub>2</sub> pellets are being developed in support of the SiC ceramic matrix composite (CMC) cladding, which increases the fuel margin during loss of coolant accidents (LOCAs) and provides added margin for beyond design basis accidents. Irradiation testing programs for each of these concepts is underway, with intent to study irradiation effects on both the microstructure and mechanical properties of these advanced fuel and cladding concepts. The status of these irradiation tests will be discussed in the invited presentation. In addition to experimental data collection, Westinghouse is leveraging advanced modeling and simulation to inform material and microstructural development. Areas of synergy and examples of this approach within the Westinghouse Accident Tolerant Fuel program will be discussed.

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