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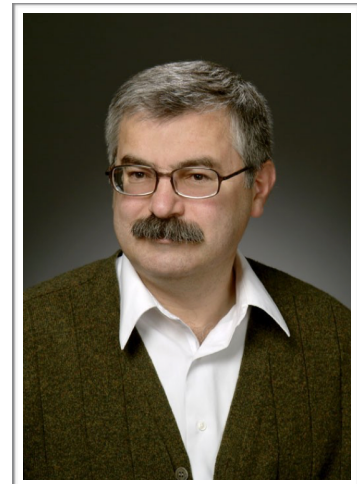
**Dr. Raul Rebak**

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*Addressing 2011 Fukushima Reactor Failure through  
Engineering Material Selection*

Following the Fukushima accident of 2011, the US Department of Energy (DOE) partnered with fuel vendors to study alternatives to the current UO<sub>2</sub> – zirconium alloy system. The proposed fuels with enhanced accident tolerance should better tolerate the loss of cooling in the core for a considerably longer time while maintaining or improving the fuel performance during normal operation conditions. General Electric and Oak Ridge National Laboratory are proposing to replace zirconium based alloy cladding in current commercial power reactors with a FeCrAl cladding such as APMT. For the last four years, extensive testing has been conducted to determine the suitability of the FeCrAl concept under normal operation conditions and under accident conditions. Results show that APMT may perform better in high temperature water than zirconium alloys under normal operation conditions and it is several orders of magnitude more resistant to degradation by steam under accident conditions, generating less heat and lower amount of combustible hydrogen. The use of FeCrAl cladding is a direct path to improve the safety of commercial light water reactors.



**Host:  
Professor Bai Cui**

**Department of  
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**Tuesday, January 10, 3:30 pm  
110 Jorgensen Hall**