



Thursday, September 15, 2011  
Oak Ridge Chapter of ASM International's  
*Fellows' Night*

## “Fukushima-Daiichi: Observations on Materials Challenges and Performance”

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On March 11, 2011 a massive earthquake and tsunami struck northern Japan. In addition to the loss of life and property damage, these events also led to the most serious nuclear emergency since the explosion and fire at the Chernobyl Nuclear Power Plant in 1986. Four of the six nuclear power plants at Fukushima-Daiichi experienced significant damage from the initiating events and subsequent loss of cooling water to the reactor cores. The availability of information via internet sources provided an unprecedented ability to closely monitor the evolving situation at each of the reactors in near-real time. This presentation will provide discussion of the events at Fukushima with a specific focus on material challenges imposed by these events. Particular attention will be given to the complications of introducing seawater into the reactor cores for cooling. For example, stainless steel components inside the reactor may see increased susceptibility to stress-corrosion cracking in chloride-bearing solutions while pitting may be also an issue, and for the reactor pressure vessel, general corrosion could increase. The integrity of the reactor pressure vessel and concrete structures will also be discussed.



### Speaker's Bio

Dr. Busby is a Senior Research and Development Staff in the Fuel Cycle and Isotopes Division at Oak Ridge National Laboratory. He received his Master's and PhD from the University of Michigan in Nuclear Engineering, focusing on radiation-damage process and IASCC. In 2004, he joined ORNL in the Nuclear Materials Science and Technology Group in the Materials Science and Technology Division. While at ORNL, Dr. Busby has participated in materials research efforts for space reactors, fusion machines, advanced fast reactors, and light water reactors. Currently, Dr. Busby leads the Materials Aging and Degradation Pathway for the DOE Light Water Reactor Sustainability Research and Development Effort. He also leads the Nuclear Energy Enabling Technologies Materials Cross-cut and a US contribution to the ITER program. Dr. Busby helped to support the US DOE in response to the incident at Fukushima-Daiichi.

### Registration (Guests Welcome!)

<http://www.discoveret.org/orcasm/events.html>

Cost: \$20 for dinner    Season Pass: \$75

Students: Free if RSVP; \$5 if RSVP late

**RSVP by noon on Friday September 9<sup>th</sup>**

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### Rothchild's Conference Center

8807 Kingston Pike

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Thursday, September 15<sup>th</sup> Schedule

5:30 pm– Social Hour

6:30 pm– Dinner

7:30 pm– Awards and Talk