



**Birck Nanotechnology Center**

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*Electronics  
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Derek Lengacher is a Failure Analyst with the NSWC Crane Failure Analysis Laboratory where he has served for over 10 years and led numerous investigations into failures of various components and systems. He began his career in the automotive industry with Kimball Electronics Group where he served as a product engineer for Antilock Brake System (ABS) electronic control modules; responsible for the integrity of the entire module from selection of system components for qualification to failure analysis of modules returned from the field. Derek then transitioned to NSWC Crane where he was initially responsible for the construction and repair of SONAR transducers used on various Navy vessels before his transition to the Failure Analysis Laboratory.

**Microelectronics Failure Analysis: Overview  
of a Unique Discipline**

Tuesday, April 9  
11:00 am – 12:00 pm  
BRK 2001

Every day, electronic systems become more integrated into basic human existence. Some of these systems (including health care, transportation, and defense) require high reliability operation due to the potential catastrophic consequences of failure. When one of these high reliability systems experiences failure, it is imperative to understand why the system failed so that future failure can be averted. Failure analysis of these systems, and their underlying electronic components, is a unique discipline requiring diverse skills and tools for success. This presentation will explore the basics of failure analysis including what it is, the reasons for performing it, and the tools and techniques used to successfully complete an investigation. Some interesting findings will also be presented and briefly discussed.