



MECHANICAL & MATERIAL COLLOQUIUM

Materials Aging and Compatibility at the KCNSC

by Holly Weber (Kansas City National Security Campus)

The KCNSC, an advanced engineering and manufacturing facility within the US Nuclear Security Enterprise, is dedicated to ensuring the safety, security, and dependability of the US nuclear deterrence. To meet in-application requirements, materials selection and longevity are critical. Over the past 7 years, the KCNSC greatly expanded its materials aging capabilities to evaluate a wide range of traditionally and additively manufactured materials (i.e., cushions, pads, adhesives, and high temperature thermoplastics), developing and implementing robust, repeatable test methods to assess aging-induced changes in mechanical properties. Additionally, KCNSC also implemented semi-quantitative cryo-focusing gas chromatography-mass spectrometry to analyze outgassed species from materials to identify potential incompatibilities and gain insight into the effects of polymer formulation, processing, and degradation. An overview of KCNSC's materials aging and compatibility capabilities, along with study results, will be presented.

Dr. Holly Weber joined the Kansas City National Security Campus, managed by Honeywell FM&T, in 2005 with a Bachelor's Degree in Chemistry from Northeast Missouri State University (now Truman State) and a Doctorate in Organic Chemistry from the University of Iowa. Since 2017 she's led KCNSC's Materials Aging and Compatibility effort, focusing on expanding KCNSC's materials aging capabilities and collaborating with academia and Lawrence Livermore, Sandia, and Los Alamos national labs to understand the aging behavior of materials that are vital to fulfilling the mission of the Nuclear Security Enterprise. Prior to her Materials Aging role, Holly spent 13 years as a Lead Scientist in the



Analytical Sciences Laboratory specializing in chromatographic analysis and polymer characterization, advancing organic analysis technologies, and interfacing with many departments to address production issues. Holly had 15 years of industrial experience before joining KCNSC, ranging from characterizing nutraceuticals, prototyping a hazard-response mobile laboratory, and working in a chemical manufacturing setting. As a dedicated mentor, Holly is focused on empowering others to reach their personal and career goals, and firmly believes that success is achieved through fostering collaborative relationships.

Place:
EC 1113

Time:
2:00-3:15 PM
Jan 21, 2025

<https://mme.fiu.edu/seminar-schedule>

For questions, comments and suggestions, contact Colloquium Organizers Dr. Benjamin Boesl (bboesl@fiu.edu) or Dr. Jiuhua Chen (chenj@fiu.edu)