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TMS 2026

155th Annual Meeting & Exhibition

March 15–19, 2026
San Diego Convention Center
and Hilton San Diego Bayfront
San Diego, California, USA
#TMSAnnualMeeting

SUBMIT AN ABSTRACT FOR THE FOLLOWING SYMPOSIUM

DATA-DRIVEN AND COMPUTATIONAL MATERIALS DESIGN

Materials Aging and Compatibility: Experimental and Computational Approaches to Enable Lifetime Predictions

The interplay between a materials fundamental aging behavior and its compatibility within a system can have significant impact on highly complex and expensive technologies found in aerospace, satellite and space exploration, nuclear weapon programs, etc. However, the understanding of a material's behavior over its entire service life and that material's compatibility within its system during that time is limited and difficult to predict. Emerging advanced manufacturing industries add to the aging and compatibility knowledge gaps by introducing completely new materials or fabricating legacy materials with techniques that allow for new design capabilities causing them to age differently than their traditionally manufactured counterpart (example: additively manufactured (AM) metals vs. wrought metals). Therefore, it is highly desirable to explore and discuss materials aging and compatibility by establishing their scientific basis and developing modeling/predictive tools. This symposium provides a platform for scientists, researchers, and engineers to present and discuss recent research advances on experimental and computational modeling on fundamental materials behaviors and their compatibility under real and accelerated environments.

Topics of interest for abstract submission include (but not limited to):

1. Scientifically informed accelerated aging methodologies.
2. Experimental results and computational approaches to predict lifetimes of materials with individual or some combination of stressors such as mechanical, corrosive, thermal, etc.
3. Studies on materials bonding: brazing, adhesives, welding and soldering
4. Long life system compatibility of two or more different materials.
5. Discussions of experimental and modeling/lifetime prediction similitude.
6. Machine learning approaches to predict material/component lifetime.

SPONSORED BY:
TMS Structural Materials Division; TMS Mechanical Behavior of Materials Committee

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