

THE WORLD COMES HERE.  
**TMS 2025**  
154<sup>th</sup> Annual Meeting & Exhibition



**March 23–27, 2025**  
MGM Grand Las Vegas  
Hotel & Casino  
Las Vegas, Nevada, USA  
#TMSAnnualMeeting



**SUBMIT AN ABSTRACT FOR THE FOLLOWING TMS2025 SYMPOSIUM:**

**ELECTRONIC, MAGNETIC, AND ENERGY MATERIALS**

**Advances and Discoveries in Non-equilibrium Driven Nanomaterials and Thin Films**

This symposium plans to bring together scientists and engineers in the field of nanostructured materials, functional thin films, polymers, and conducting nanocomposites. With a strong emphasis on optimized synthesis and processing techniques, the symposium will cover a wide spectrum, from zero-dimensional structures like nanodots to complex three-dimensional nanostructures. The focus encompasses both established materials and cutting-edge hybrid organic-inorganic materials. A significant area of interest for this symposium is the integration of these novel functional materials onto industrially relevant substrates, a critical step in developing multifunctional materials for next-generation systems. The symposium will delve into the science behind thin film deposition methods, non-equilibrium processing techniques (including laser/electron/ion irradiations, flash sintering, and mechanical milling), and the crucial role of interfaces and defects in the fabrication of novel non-equilibrium nanostructures and thin film heterostructures. Further emphasis will be on recent breakthroughs in 2D materials, carbon-based nanomaterials, oxide thin films, nanocomposites particularly graphene-copper and other nanostructures created through non-equilibrium processing. These innovations hold the promise to revolutionize a vast array of fields, from energy storage and quantum computing to superhard thermal coatings, high-temperature and high-power electronics, and biomedical applications. Sustainable nanomaterial practices and the synergy between environmental technologies and advanced material science will be key highlights of the symposium. Special attention will be given to the roles of interfaces and defects in crafting diverse nanostructures and composites, particularly focusing on their vast potential in technological applications.

Topics include:

- Non-equilibrium processes for the synthesis of novel nanostructures.
- Advances in pulsed laser deposition and laser processing for diverse materials and composites.
- Structure-properties correlations in complex oxide thin film heterostructures.
- Correlations between structure and properties in oxide thin films, polymers, and conducting composites.
- Atomic scale characterization across all dimensions of nanostructures, including metals, ceramics, polymers, and graphene-copper composites.
- Role of defects and interfaces in properties manipulations in nanostructures.
- Coatings and surface modifications for electronics, biomedical, and environmental applications, highlighting green nanotechnology.

**ORGANIZERS**

**Ritesh Sachan**, Oklahoma State University; **Ashutosh Tiwari**, University of Utah; **Santosh Kc**, San Jose State University; **Shikhar Jha**, Indian Institute of Technology Kanpur

**SYMPOSIUM SPONSORS**

TMS Functional Materials Division, TMS Thin Films and Interfaces Committee

[www.tms.org/TMS2025](http://www.tms.org/TMS2025)

**QUESTIONS?**

Contact [programming@tms.org](mailto:programming@tms.org)