

THE MATERIALS SCIENCE AND ENGINEERING DEPARTMENT
FALL COLLOQUIUM SERIES PRESENTS:

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Burn-resistant materials for oxygen-rich turbopumps

Metal fires are a catastrophic single-point failure mode that represent a major hurdle to the successful development of next-generation staged combustion reusable rocket engines. In light of this issue, the MIT Aerospace Materials and Structures Laboratory (AMSL) has been collaborating with Aerospace Corporation and NASA White Sands Test Facility to develop novel materials solutions for high-pressure oxygen environments. This talk will summarize the latest developments from this work, including: improved approaches for selecting oxygen-compatible materials; high-throughput test methods for assessing particle impact ignition; and oxygen-compatible materials that are intrinsically ignition-resistant. The talk will conclude with a perspective on how to transition these developments into industry.

Zack Cordero is the Edgerton Career Development Assistant Professor of Aeronautics and Astronautics at MIT where he leads the Aerospace Materials and Structures Laboratory. He received an SB in physics and a PhD in materials science and engineering from MIT. Prior to joining the MIT faculty, Zack held appointments as a postdoctoral fellow in the Manufacturing Demonstration Facility of Oak Ridge National Laboratory and as an assistant professor in the Materials Science and NanoEngineering department at Rice University. Zack's research at MIT integrates materials processing, mechanics of materials, and structural design to develop new materials and structures for launch vehicles and spacecraft.

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In person only; no Zoom

Questions? Contact allison.macknick@northwestern.edu