

DEPARTMENT OF MECHANICAL ENGINEERING

WILLIAM MAXWELL REED SEMINAR SERIES

FUNDAMENTAL STUDIES OF MATERIAL RESPONSE IN ATMOSPHERIC ENTRY ENVIRONMENTS

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Abstract: Thermal protection systems (TPSs) for atmospheric entry environments react with boundary gases, with atomic oxygen being of particular interest. In addition to gas-surface interactions, certain TPS materials, such as phenolic impregnated carbon ablator (PICA), are pyrolyzed as they become very hot. This presentation will highlight two sets of laboratory experiments, one focused on atomic-oxygen interactions with model carbon surfaces at high temperatures and the other focused on the temperature-dependent yields of the pyrolysis products from PICA. The molecular-level information from both studies is contributing to the development and validation of models that are relevant to gas-surface interactions and material response during atmospheric entry.

Bio: Timothy K. Minton is a Professor of Chemistry in the Department of Chemistry and Biochemistry at Montana State University. He earned his B.S. in Chemistry from the Univ. of Illinois in 1980 and his Ph.D. in Chemistry from UC Berkeley in 1986. Following two post-doctoral positions, at the Univ. of Illinois and at the Univ. of Zürich, Switzerland, he became a Member of Technical Staff at the Jet Propulsion Laboratory in Pasadena, CA in 1989. In 1995, he joined the faculty at Montana State. His current research projects include studies of gas-surface energy transfer and reactions on liquid and solid surfaces, oxidation of carbon at high temperatures, decomposition of ablative heat shield materials, and the development of new and more durable materials for use on spacecraft in low Earth orbit.

Date: November 11, 2016

Place: CB 106

Time: 3:00 to 4:00p

Contact: Dr. Alexandre Martin 257-4462

Meet the speaker and have refreshments
Attendance open to all interested persons



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