Microscopic Views of a First-Order Phase Transition in a Strongly Correlated Transition Metal Oxide

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Frontiers in Chemical Physics and Analysis Seminar Series

Presented by…

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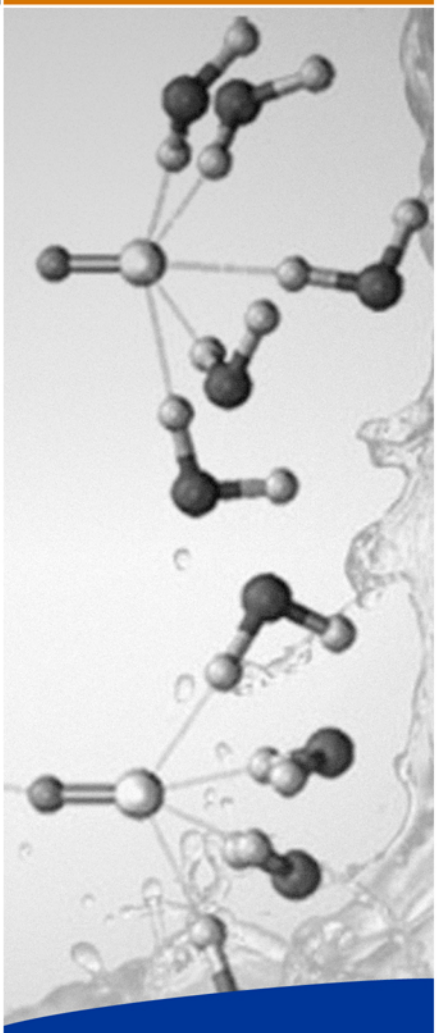
Vanadium dioxide, first synthesized in bulk crystalline form half a century ago, undergoes a first-order phase transition from a semiconductor to a metal at approximately 70˚C that can be triggered electrically, optically or thermally. The mechanism of the phase transition appears to involve both electronic (metal-insulator) and structural (monoclinic-to-tetragonal) components, and the detailed dynamics of the transition depends crucially on the mode of excitation. Recent experiments with time (length) resolution down to tens of femtoseconds (nanometers) are opening up a truly microscopic understanding of the ways in which materials synthesis, sample morphology and dimensionality are interconnected with the kinetics and dynamics of the phase transformation. This understanding, in turn, is opening up interesting applications of vanadium dioxide in plasmonics, metamaterials and silicon photonics.

More info?

See http://www.pnl.gov/cmsd/seminars/



Date: Thursday, February 3rd

Location: EMSL Auditorium

Time: 11:00 am