

The Department of Mechanical Engineering presents:

Distinguished Speaker

Dr. Ram Sheshadri

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**Friday, April 2nd
11:10AM-12:00PM
Bourns Hall A265**

Neutron Studies of Local Structure in Systems with First and Second Order Jahn-Teller Distortions

Abstract: Jahn-Teller distortions -- first or second order, local or cooperative -- play a crucial role in determining the ground states of a number of different functional oxide materials. We have for many years been fascinated by the phenomenon of second order Jahn-Teller distortions in crystalline systems containing ions such as Pb^{2+} and Bi^{3+} , that possess stereochemically active lone pairs. The talk will develop the theme of lone pairs and the role they play in determining structure and dielectric properties. The question of whether certain structural topologies (most notably the pyrochlore structure) can frustrate cooperative ordering of lone pairs (second order Jahn-Teller distortions) will be probed. Finally, the spinel compound $CuMn_2O_4$, which contains two Jahn-Teller active ions, will be probed from a local structure perspective.

Bio: Prof. Seshadri received an MS and PhD degrees from Indian Institute of Science, Bangalore, India. He came to the University of California at Santa Barbara in 2002 where he is now a Professor in the Materials Department and the Department of Chemistry and Biochemistry. At UCSB, his research focuses on composition - structure - property relations in magnetic, optical, catalytic, and polar inorganic materials. His group is also interested in patterned materials, including nanoparticles and porous materials. He has served as Director of the NSF supported ConvEne IGERT Program and as the Associate Director of the Materials Research Laboratory (NSF-MRSEC), at UCSB. He is on the editorial board of several journals including Journal of Materials Chemistry and Annual Reviews of Materials Research. Prof. Seshadri has received many honors and awards including an NSF Career award in 2002.

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