

Physics Colloquium

Michigan Technological University

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Room 139, Fisher Hall

The strange and wonderful properties of Gold/Organosilsesquioxane/Gold devices

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Abstract

Negative Differential Resistance (NDR, the decrease in electric current with incremental voltage increase) was discovered in MIM devices more than forty years ago. However, we still do not have a fundamental understanding of what is the root cause of this, and other, unique behaviors in these simple devices. In this talk I will discuss the novel aspects of the phenomena and discuss a new hypothesis as to the fundamental origin of the conduction mechanism.



Biography

Professor Orr's research centers on systems where the properties are controlled by the characteristics of surfaces or interfaces. Specific examples of research interests include: studies of molecules adsorbed on Si and Au surfaces; the molecular origin of negative differential resistance in metal-insulator-metal devices; the mechanism for composition modulation in compound semiconductors grown by molecular-beam epitaxy; and the development of multifunctional nanoparticles as therapeutics for cancer treatment.