

## 2008-2009 Researcher of the Year Lecture



Miami University Chapter.  
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### 2008 Researcher of the Year Lecture Dr. Jan Yarrison-Rice Professor of Physics, Miami University

**“Nanotechnology:  
Here, there, everywhere”**

**Tuesday, November 18, 2008, 1 – 2 pm.  
218 Pearson Hall  
Free and open to the public.**

Since 2000 and with 6 graduate and 8 undergraduate students, Jan Yarrison-Rice has developed a strong, diverse research program in the fabrication and optical characterization of nanoscale materials and devices. “Nanotechnology: here, there, everywhere.” What does that mean? What is “nano”? Various nanodevices and materials will be introduced as part of the answer. Her talk will describe nanotechnology research being conducted in the Physics Department, focusing on the bottom-up approach to producing nanomaterials and devices, including the use of nanowires in plasmon-assisted nanowire biosensors. Nanowires are intriguing, new semiconductor materials with nanometer diameters and micron lengths. We explore their basic optical characteristics and interactions, and describe how we utilize them to produce novel and exciting integrated biosensors. We are moving to incorporate plasmonic resonators (Siwei Cao, Erich See, MS Physics) functionalized with carbohydrate ligands with a nanowire photocurrent detector to create a new biosensor for specific detection of pathogens. Two undergraduates, Colin Boyle ('09) and Caroline Scacca ('09), are studying the plasmon resonances of gold nanoparticles both individually and when attached to a CdS nanosheet device structure as a demonstration of feasibility of the approach.

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