

Subject: MSD Colloquium, Thurs, Sept. 14, 11am, 212, A-157
From: Janice Coble <coble@msd.anl.gov>
Date: Fri, 01 Sep 2006 16:00:31 -0500
To: msd@anl.gov

SPEAKER: DR. IGOR BELOBORODOV
Argonne National Laboratory

TITLE: "Electron Transport in Artificial
Nanosolids"

DATE: Thursday, September 14, 2006

TIME: 11:00 a.m.

PLACE: Building 212, Room A157

HOST: Maria Iavarone

Refreshments will be available at 10:45 a.m.

Abstract: Artificial materials composed of metallic nanoparticles have emerged as the next frontier of new materials where quantum phenomena can be tailored to generate novel bulk materials behavior. These nanosolids can have programmable electronic properties arising from the fact that the interaction strength and degree of disorder in these materials can be controlled by varying the size and composition of the granules. Each building block of these new materials can be viewed as a tiny cluster of atoms of metallic or semiconducting elements. These clusters are not as small as molecules but not as large as macroscopic samples. I will review our progress made in the last several years in understanding the properties of artificial nanosolids. In particular, I will discuss the following topics:

- 1) Introduction to physics of artificial nanosolids;
- 2) Novel transport regimes;
- 3) The phase diagram of artificial nanosolids;
- 4) Future opportunities