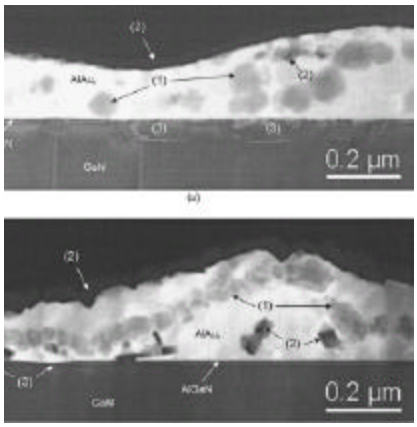
NANOHOUR

Wednesday, September 27, 2006
3:00 PM
Beckman Institute - Room 3269

Ohmic Contacts for AlGaN/GaN HEMTs

Fitih M. Mohammed – Graudate Student in Materials Science and Engineering

AlGaN/GaN high electron mobility transistors (HEMTs) have tremendous potential for application in high frequencies, high temperatures and microwave power amplifications. Fabrication of Ohmic contacts for such devices that meet the stringent low-resistance, high thermal stability and smooth surface morphology requirements has been challenging. In the cases where Ohmic behavior can be achieved, a full scientific understanding of the mechanism(s) through which Ohmic behavior is achieved is yet to emerge. This talk details attempts made at the characterization of conventional multilayer schemes and implementation of unconventional design approaches to enable the identification, control and optimization of the role constituent components play in the formation of Ohmic contact on AlGaN/GaN HEMTs. Results on the development of contacts with excellent characteristics and insights gained on the physics of Ohmic contact formation and the relationship between electrical properties and structure in contact/AlGaN/GaN systems will also be discussed.

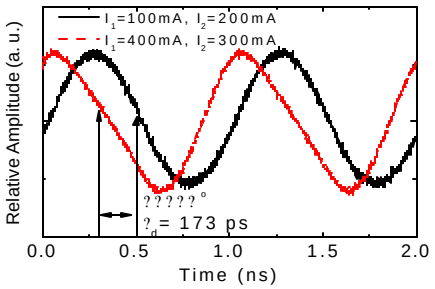


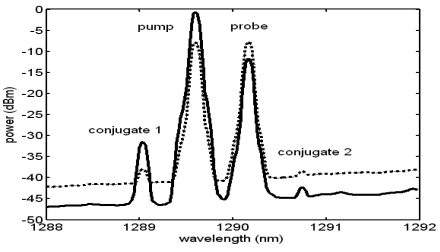
- AND -

Tunable Slow Light, Fast Light, and All-Optical Wavelength Conversion in Quantum Dots

David Nielsen – Graduate Student in Physics

Optical communication networks rely heavily on the manipulation of light. Two necessary components are optical buffers and wavelength converters. For high speed applications all optical techniques are advantageous. In this talk I will discuss all optical techniques to dynamically control the speed of light, and to transfer high-speed optical signals from one wavelength to another. The underlying physical phenomenon including, electromagnetically induced transparency, coherent population oscillation, and spectral hole burning will be presented, including recent experimental and theoretical results that show the advantages of utilizing semiconductor quantum dots.





Coffee and cookies will be served.

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