Greg Salamo-University of Arkansas

POETS

AN NSF SPONSORED CENTER

NSF

Research Focus

- Growth of III-V semiconductor and oxide nanoscale materials by molecular beam epitaxy (MBE) and characterization of their morphology by high resolution microscopy
- Uncover the underlying photonic, electronic, and magnetic properties of nanoscale materials and the fabrication novel devices.

http://www.uark.edu/misc/salamo/

Unique Growth Facilities

Unique MBE and Scanning Tunneling Microscopy (STM) for oxide & semiconductor growth

Relevance to POETS

- Develop high temperature GaN and SiC sensors to detect “hot” spots and trigger events to re-route heat to prevent failure due to overheating.
- Micro-Hall sensors to measure high current w/o influencing the circuit function and w/ minimal energy consumption.
- Current commercial sensors exist up to ~200°C. We develop electronic devices and sensors which can operate to at least 500-600°C.

Achievements

For example, we were first at demonstrating:

- Nitride based n-p junction using polarization doping, (Applied Physics Letters, 101, 122103 (2012))
- Pulse train optical propagation for communications (Physical Review Letters, 78, 855 1997.).
- Self induced optical interconnects, (Physical Review Letters, 71, 533 (1993).).
- Parity Time Optics, interconnects (Physical Review Letters, 103, 093902, 2009).