



DR. ALBERTO PIQUE

**Materials Science and Technology Division
Naval Research Lab, Washington, D.C.**

NON-LITHOGRAPHIC PROCESSING OF CONFORMAL ELECTRONICS

Non-lithographic processes are ideally suited for the rapid prototyping of micro-electronic devices and other high fidelity micro-components. Laser Direct-Write is an example of non-lithographic processing that offers unique advantages and capabilities. A key advantage of laser direct-write is its compatibility with a wide range of materials, surface chemistries and surface topologies. The Naval Research Laboratory (NRL) has developed various laser-based forward transfer techniques ranging from the non-phase transformative direct printing of complex suspensions or inks to the “lase-and-place” of entire semiconductor devices.

These processes have been applied to the fabrication of a wide variety of micro-electronic elements such as interconnects, passives, antennas, sensors, power sources and for the development, customization, modification, and repair of microelectronic circuits. Overall, these techniques are true enablers of conformal and embedded microelectronics for the development of next generation devices and systems. This talk will provide a brief introduction to laser direct-write and describe several examples of the types of structures and devices fabricated at NRL using laser-based non-lithographic processes.

Dr. Alberto Piqué received a B.S. (Honors) degree in Physics and M.S. degree in Nuclear Physics from Rutgers University in 1987 and 1990, respectively, and a Ph.D. degree in Materials Science and Engineering from the University of Maryland at College Park in 1996. Before joining the Naval Research Laboratory in 1997, Dr. Piqué was a Group Manager at Neocera, Inc., from 1990–1997, where he was in charge of the thin film and coatings group. Dr. Piqué's current interests involve studying laser-material interactions and processing, in particular those relevant to pulsed laser deposition and laser forward transfer as applied for the growth of thin films, multilayers, and mesoporous structures.

**Host:
Professor
Yongfeng Lu
Electrical Eng.**

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**Friday, January 15, 2010
237 West Scott Engineering Center
11:00 a.m.**