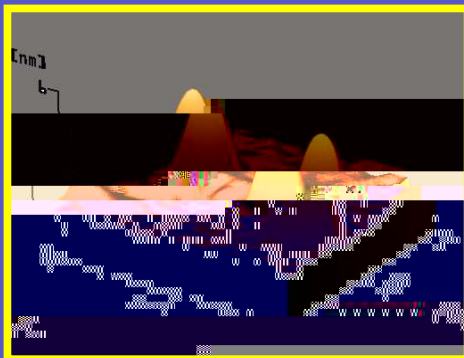


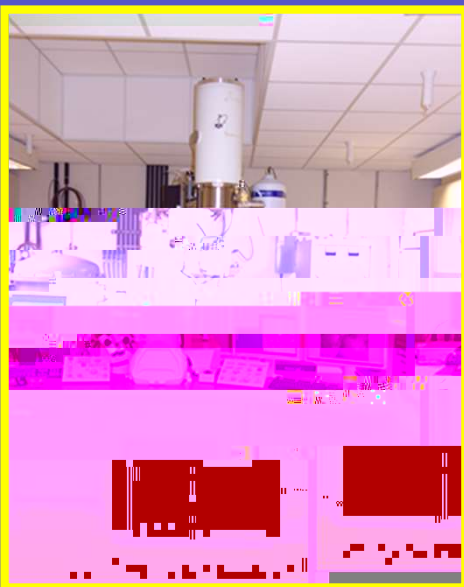
___ HIGHTECHSOLUTIONS ___



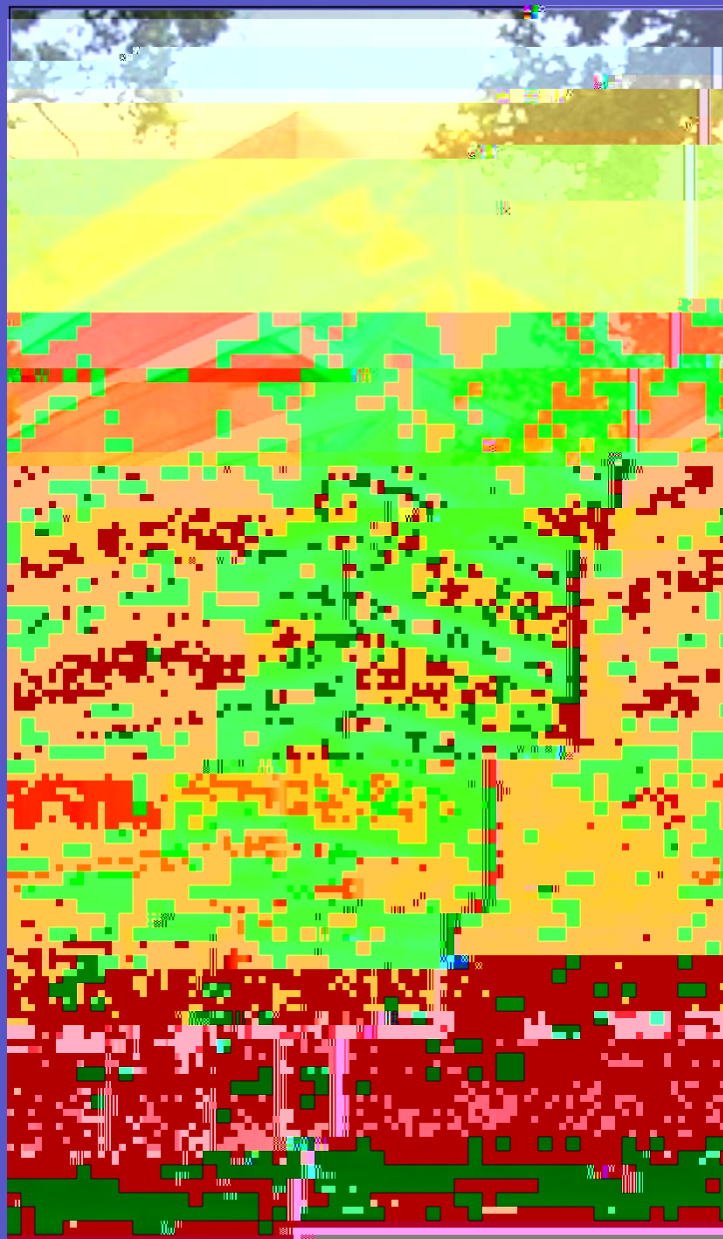
NANO TECHNOLOGY



THIN FILM DEPOSITION



**MATERIALS
CHARACTERIZATION**



**Applied Research Center
Batten College of Engineering & Technology
Old Dominion University
Newport News, Virginia**

Mission

To be the leader in research, development, and education, concentrating on laser and plasma applications and advanced materials.

Working to Innovate

What we are doing

MATERIALS FABRICATION & PROCESSING

Atomic layer deposition (ALD)
RF/DC sputtering
Pulsed laser deposition (PLD)
E-beam evaporation
Thermal evaporation
Sol-gel
Spin coating
Multicharged ion (MCI) system for ion implantation
Electron beam lithography (EBL)
Photolithography
Rapid thermal processing (RTP)
Reactive ion etching (RIE)
Laser micromachining
Laser surface treatment
Laser/materials interaction

MATERIALS CHARACTERIZATION

High resolution transmission electron microscope (HRTEM)
Scanning electron microscope (SEM)
Energy dispersive spectroscopy (EDS)
Atomic force microscope (AFM)
Scanning tunneling microscope (STM)
X-ray diffraction (XRD)
Nanoindentation
Lifetime fluorescence spectroscopy
UV-Vis spectroscopy
Probe station for electrical device testing & semiconductor device analyzer
Optical microscope
Time-resolved electron diffraction
Reflection high energy electron diffraction (RHEED)

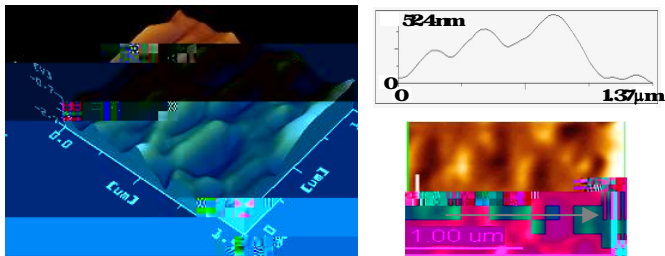
LASERS

Femtosecond Ti:sapphire laser
Q-switched Nd:YAG laser
Excimer laser

FABRICATION AND ANALYSIS

Laser MCI System

IrP on GaAs(100) by PLD



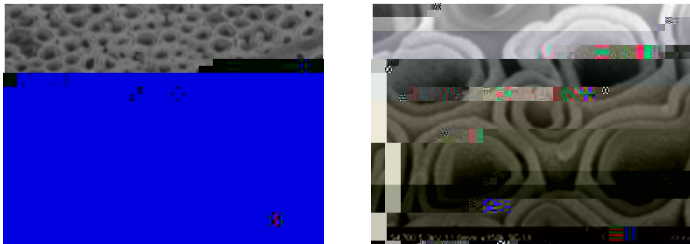
Atomic Layer Deposition (ALD) System



HfO₂ Thin film on Si by ALD

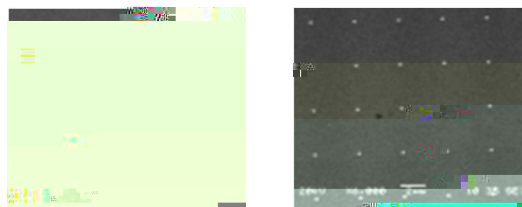


HfO₂ tube in tube structure by ALD



JEOL 6060LV SEM Equipped with Raith EBL System

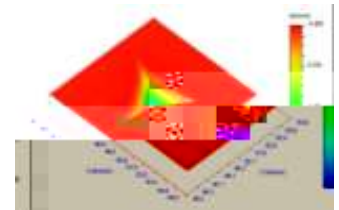
Ag Nanoparticles by EBL



Nano Indenter XP from MTS

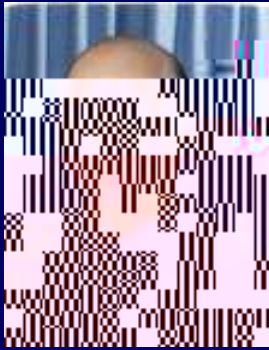


A triangular Berkovich diamond tip impression



Probe Station and Agilent B1500A Semiconductor Device Analyzer

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