Landman Bio

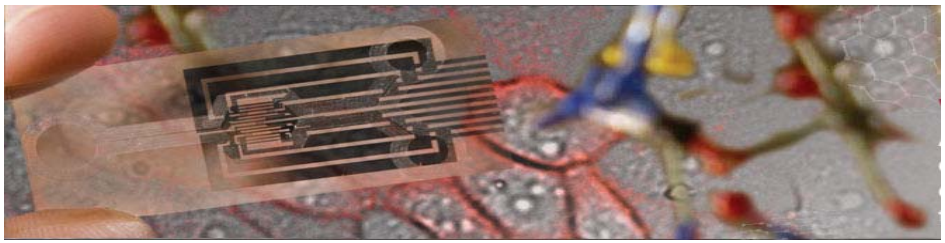
Uzi Landman was born and raised in Israel where he received his education, obtaining a D.Sc. degree from the Israel Institute of Technology. Between 1970 to 1971 he worked at the UC Santa Barbara, the University of Illinois Urbana-Champaign, the Xerox Corporation, and the University of Rochester NY. In 1977 he joined the School of Physics at the Georgia Institute of Technology, in Atlanta, Georgia, where he is currently a Regents' and Institute Professor, holding the Callaway endowed Chair in Physics, and serving as the director of the Georgia Tech Center for Computational Materials Science.

Landman's contributions deepened our insights into the microscopic origins of emergent physical and chemical phenomena in systems of basic and technological significance, focusing on the size-dependent evolution of materials properties. He published close to 350 articles, and for over a decade focused his studies on a broad range of nanoscale phenomena. His book titled "nanocatalysis", coauthored with U. Heiz and published by Springer, will appear this month

Landman is an elected fellow of the American Physical Society and the British Institute of Physics, and he received a number of awards. He presented a plenary lecture at the Nobel Symposium on the Physics and Chemistry of Clusters, was awarded in 1999 the Beams award of the American Physical Society, the 2000 Feynman Prize in Nanotechnology, received the 2002 Materials Research Society Medal

Vanderbilt University
Interdisciplinary Graduate Program in Materials Science
Vanderbilt Institute of Nanoscale Science and Engineering
6506 Stevenson Center
Nashville, TN 37240

Phone: 615-343-6868
Fax: 615-322-3202



7th Annual Nano Day

Nanoscience and Nanotechnology Forum

Wednesday, November 1, 2006

134 Featheringill Hall

A yearly forum for faculty, post-docs, and graduate students engaged in nanoscience and nanotechnology at Vanderbilt and Fisk Universities.

Keynote Speaker: Uzi Landman, Georgia Tech

Vanderbilt Institute of Nanoscale Science and Engineering

Interdisciplinary Graduate Program in Materials Science

SCHEDULE

2:30—3:00	Poster Session A
3:00 - 3:15	*Update VINSE/IGPMS/IGERT* **RICHARD HAGLUND**, Physics and Astronomy
3:15 - 3:35	*"Nanostructures for energy conversion, opto-electronics, and spectral sensing"* **EUGENE COLLINS**, Fisk University
3:35 - 3:55	*"Nanoparticles to seek and destroy tumors based on proteolytic activity*" **LYNN MATRISIAN**, Cancer Biology
3:55 - 4:30	Poster Session B
4:30 - 5:20	*KEYNOTE SPEAKER* *"Small is different: Computational microscopy of emergent phenomena at the nanoscale"* **UZI LANDMAN**, Georgia Tech
5:20 - 6:00	Poster Session C
6:10 - 6:30	"*Microscale modeling of nanostructured hybrid organic-inorganic materials*" **PETER CUMMINGS**, Chemical Engineering
6:30 - 6:50	*"White-light emission from magic-sized CdSe nanocrystals"* **SANDRA ROSENTHAL**, Chemistry
6:50 -	Dinner & Awards

VINSE

KEYNOTE TALK: UZI LANDMAN

UZI LANDMAN

Chair in Computational Materials Science
Director, Center in Computational Materials Science
Regents and Institute Professor
School of Physics, Georgia Institute of Technology

SMALL IS DIFFERENT: COMPUTATIONAL MICROSCOPY OF EMERGENT PHENOMENA AT THE NANOSCALE

Gaining insights into the nature of physical and chemical systems of highly reduced sizes, and developing experimental and theoretical methodologies aimed at probing, manipulating and controlling them on the atomic and molecular level, are among the major challenges of current basic interdisciplinary research. Computationally-based theoretical modeling and simulations play an increasingly important role in modern condensed matter physics, chemistry, materials science, and biology. In particular, such studies, that may be called "computational microscopies", allow explorations of complex phenomena with refined resolution in space and time [1].

Emergent physical and chemical phenomena at the nanoscale regime and the use of atomistic simulations as tools of discovery in this area will be discussed and demonstrated through studies of: nanojets and nano-bridges, the atomic-scale origins of friction, the surprising nanocatalytic activity of gold nanoclusters, mechanisms of hole transport and oxidation damage of DNA, electron attachment to water clusters, and formation of electron and boson-molecules in quantum dots and traps.

1. U. Landman, "Materials by Numbers: Computations as Tools of Discovery", perspective article in Proc. Nat. Acad. Sci. (USA) **102**,

VINSE

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Poster Session A	
1	*"Dendrimer Biomimetics"* Presented by: Sarah Sewell (Wright)
2	*"A Novel Application of Nanodiamond in Tungsten/Copper Breaker Contacts"* Presented by: Lane Donoho (Davidson/Kang)
3	*"Characterization of the Substrate-film Interface for Thin Films of CdSe Nanocrystals"* Presented by: Saad Hasan (Dickerson)
4	*"Lubrication schemes for N/MEMS (Nano/Microelecromechanical Systms) using SAMS (self-assembled monolayers)"* Presented by: Angeline Cione (Jennings)
5	*"Modeling of Thermoelectric Properties of Nanofilms and Nanowires"* Presented by: Anuradha Bulusu (Walker)
6	*"Synthesis of CdSe Nanocrystals and Characterization of TiO_2 for Solar Cell Components"* Presented by: Rachael Hansel (Rosenthal)
7	*"Pump-probe Spectroscopy of Exciton Dynamics in (6,5) Carbon Nanotubes"* Presented by: Zipeng Zhu (Hertel)
8	*"Molecular Dynamics Simulation of a Nanoscale Device for Fast Sequencing of DNA"* Presented by: Christina Payne (Cummings)
9	*"Total Dose Radiation Response of Nitrided and Non-nitrided SiO_2/4H-SiC MOS Capacitors"* Presented by: Sriram Dixit (Feldman)
10	*"Characterization of CdTe Nanoparticles Fabricated by Pulsed Electron Deposition Technique at Different Ablation Parameters"* Presented by: Enrique Jackson (Mu)
11	*"Calibration of Chemical Bonding between Benzenedithiolate and Gold: The effects of Geometry and Size of Gold Clusters"* Presented by: Peter Dyer (Cummings)
12	*"Structural Modification of Carbon Nanotubes Film on SiC by CO_2 Gasification"* Presented by: April Collins (Lu)
Poster Session B	
13	*"Microstructure and Magnetic Properties of FePt/MgO Multilayers"* Presented by: Yang Fu (Wittig)
14	*"Exciton Delocalization in Structurally Sorted Single-walled Carbon Nanotube Ropes"* Presented by: Jared Crochet (Hertel)
15	*"Cadmium Selenide Nanocrystals as White-Light Phosphors"* Presented by: Jon Gosnell (Weiss)
16	*"A Flexible Nanocrystal-Labeled "Bed of Nails" for Studying Cellular Microforces"* Presented by: Kweku Addae-Mensah (Wikswo)
17	*"Electro-Osmotic Flow Through Surface-Modified Nanochannels"* Presented by: Manoj Sridham (Feldman)
18	*"Multiwalled Carbon Nanotube-PDMS Composite Systems for Electronic Applications"* Presented by: Melissa Harrison (Getty/NASA)

19	*"Determining Thermodynamic Solubility Parameters for Nanoscale Building Blocks"* Presented by: Patrick Redmill (Cummings/McCabe)
20	*"Stepwise Self Assembly of Nanocrystals and Nanoneedles"* Presented by: Sameer Mahajan (Dickerson)
21	*"SiO_2 coated Porous Anodic Alumina Membranes used for High Flow Rate Electro-osmotic Pumping"* Presented by: Saumitra Vajandar (Li)
22	*"Polymer-Drug Conjugates as Targeted Chemotherapeutic Nano-Medicines"* Presented by: Randy Scherer (Matrisian/Giorgio)
23	*"Fluorescence Determination of Endothelial Cell Binding Properties for Nanoparticulate Polyelectrolyte Complexes"* Presented by: Sean Hartig and Rachel Greene (Prokop and Jeffrey Davidson)
24	*"Thermal Stable Oxygen-Carbon Compounds During Metal Free Carbon Nanotube Growth"* Presented by: Calissia Britton (Lu)
Poster Session C	
25	*"Resonant Non-Thermal Photodesorption of Hydrogen from Silicon and Diamond"* Presented by: Travis Wade (Davidson/Tolk)
26	*"Ex situ Ellipsometric Investigation of Carbon Nanotubes Formed by SiC Decomposition"* Presented by: Jeremy Harrison (Lu)
27	*"Molecular Dynamics Simulation Study of Inorganic Salts In PEO Aqueous Solution"* Presented by: Zhi Tao (Cummings)
28	*"Piezoelectric Ink-Jet Printing of Biomaterials"* Presented by: Leila Deravi (Wright)
29	*"Molecular Dynamics Simulation of Ion Distribution in the Nanochannel"* Presented by: Dongyan Xu (Li)
30	*"Molecular Simulation and Theoretical Modeling of Polyhedral Oligomeric Silsequioxanes"* Presented by: Yun Peng and Shannon Capps (McCabe)
31	*"Investigation of Leveraging Nanoparticles for Thermoelectric Devices"* Presented by: Ebonee Walker (Walker/Mu)
32	*"pH-Responsive Polymer Films with Carboxylic Acid and Amine Side Chains"* Presented by: Dongshun Bai (Jennings)
33	*"Durability of Carbon Nano/Microfiber Reinforced Cement-Based Materials During Exposure to Chemical Attack"* Presented by: Aniket Borwankar (Sanchez)
34	*"Epitope Mapping of the Protective Antigen of B. Anthracis Using Nanoclusters Presenting Conformational Peptide Epitopes"* Presented by: Aren Gerdon (Wright/Cliffel)
35	*"Nanodiamond Reinforced Polymer Matrix Composites"* Presented by: Blake Branson (Davidson/Kang)
36	*"Iron Oxide Core/Polymer Shell Nanoparticles: MRI Contrast Agents and Drug Delivery Vehicles"* Presented by: Chinmay Soman (Giorgio)
37	*"The Design of Self-Organizing Ionomer Electrode Interfaces"* Presented by: Brad Berron and Evan Graybill (Jennings)