

Graduate education in the 21st century must address the challenge of educating Ph.D. scientists and engineers with the multidisciplinary knowledge and state-of-the art technical, personal, and professional skills required for tomorrow's varied careers.

The NSF IGERT program in the "Science and Engineering of Laser Interactions with Matter" (SELIM) combines novel multidisciplinary learning experiences in academe, a national laboratory, and industry to meet the challenge of producing broadly skilled Ph.Ds in the many rapidly growing fields enabled by progress in the SELIM.

Students use University ultrafast lasers and the world's most powerful free electron laser at the Thomas Jefferson National Accelerator Facility in fundamental and problem-oriented research on the modification of matter under novel regimes of high laser intensity and short pulse duration. Unusual hands-on familiarity with industrial science is gained by student participation in semi-annual Laser Processing Consortium Workshops and opportunities for industrial internships.

• Optics • Lasers • Photonics

Science and Engineering of Laser Interactions with Matter

For more information please visit our website,

<http://faculty.virginia.edu/igert/selim/>

or contact,

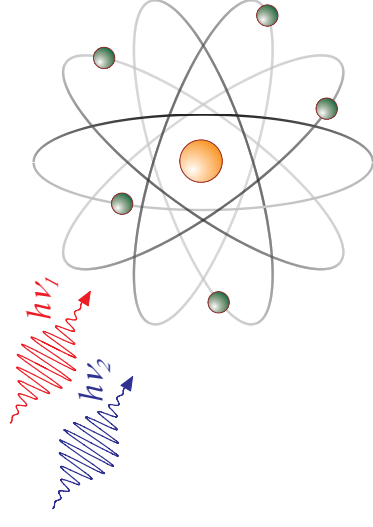
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NSF Integrative Graduate Education & Research Training Program

The Science and Engineering of Laser Interactions with Matter



University of Virginia

Norfolk State University

Thomas Jefferson

National Accelerator Facility

Participating Faculty

University of Virginia

Chemistry

W. Lester Andrews--Spectroscopy of Matrix Isolated Species using Laser Ablation

James N. Demas--Fluorescence Probes and Sensors: Transition Metal Complexes

Sergei Egorov--Theoretical Chemistry: Supercritical Fluids, Condensed Matter

Cassandra Fraser--Metal-containing Polymer Synthesis

Ian Harrison--Surface Reaction Dynamics/Photochemistry/STM

James Landers--Lab-on-a-Chip BioAssay Development and Analytical Chemistry

Brooks H. Pate--Intramolecular Dynamics: Infrared/ μ wave/Ultraviolet Spectroscopy

Lin Pu--Chiral Polymer Synthesis

Frederick S. Richardson--Chiral Recognition: Optical Spectroscopy, Lanthanides

Carl Trindle--Theoretical Chemistry: Ab Initio Electronic Structure

Physics

Louis A. Bloomfield--Magnetic and Electronic Properties of Clusters

Thomas F. Gallagher--Rydberg Atom Dynamics

Robert R. Jones--Ultrafast Phenomena in Atomic Systems

Eugene Kolomeisky--Solid State and Surface Statistical Mechanics

Blaine E. Norum--Accelerator Physics and Short Wavelength Free Electron Laser Development

Olivier Pfister--Quantum Optics and Quantum Information

S. Joseph Poon--Novel Materials Development and Characterization

Charles Sackett--Bose-Einstein Condensation and Quantum Entanglement

University of Virginia

Chemical Engineering

Robert J. Davis--Heterogeneous Catalyst Development and Characterization

Andrew C. Hillier--Interfacial Chemistry: STM, AFM & SECM

Matt Neurock--Surface & Materials Theory: DFT Methods, Simulations

Materials Science/Engineering

Physics

Raul A. Baragiola--Director, Atomic and Surface Physics Laboratory

Jim Fitz-Gerald--Laser Synthesis and Processing of Nanoscale Materials

Haydn N.G. Wadley--Director, Center for the Intelligent Processing of Materials

Robert E. Johnson--Theory of Particle & Photon Surface Interactions, IR-MALDI

Leonid Zhigilei--Theory of Laser Induced Phenomena, Computer Simulations

Mechanical & Aerospace Eng.

Gabriel Laufer--Laser & Optical Engineering

Pamela Norris--Femtosecond Laser Studies of Material Properties, Aerogels

Norfolk State University

Center for Materials Research

Carl E. Bommer, Jr.--Ultrafast Laser Spectroscopy, Nonlinear Optics

Edward Gillman--Surface Science, Laser Enhanced Chemical Vapor Deposition

George Loutts--Optical Crystal Growth and Development; CMR Director

Mikhail Noginov--Laser Spectroscopy

Rakim Rakimov--Electron Spin Resonance Spectroscopy of Optical Materials

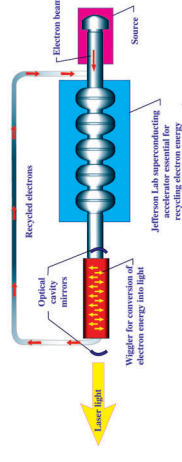
Thomas Jefferson National Accelerator Facility (Jefferson Lab)

Free Electron Laser Program

Fred Dylla--Program Manager, Jefferson Lab Free Electron Laser

Michael J. Kelley--Chairman, Laser Processing Consortium

FREE ELECTRON LASER SCHEMATIC



UVa Ultrafast Laser Facility

(<http://faculty.virginia.edu/camos/>)

