

Biographical Sketch :**EFTHIMIOS KAXIRAS**

Lyman Laboratory, Department of Physics, Harvard University, Cambridge MA 02138
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Professional preparation :

Massachusetts Institute of Technology

Ph.D. in Physics 1987

B.S. in Physics 1981

National Technical University of Athens, Greece 1977-78

Electrical Engineering (transferred to MIT)

Appointments :

John Hasbrouck Van Vleck Professor of Pure and Applied Physics 2010-

Gordon McKay Professor of Applied Physics and Professor of Physics 1998-09

Associate Professor of Physics and Applied Physics 1995-98

Assistant Professor of Physics and Applied Physics 1991-95

Department of Physics and School of Engineering and Applied Sciences
Harvard University

Director - Institute for Applied Computational Science, Harvard University 2010-

Professor of Materials Science 2009-10

Laboratory for Multiscale Modeling of Materials

Institute of Materials, Swiss Federal Institute of Technology, Lausanne (EPFL)

Director - Initiative in Innovative Computing, Harvard University 2008-09

Director - Biomedical Research Institute, FORTH Ioannina, Greece 2002-04

Acting Department Chair and Visiting Professor 2002-04

Department of Materials Science and Technology, University of Ioannina

Associate Director 2001-02

Materials Research Science and Engineering Center, Harvard University

Consulting Research Physicist 1989-91

Complex Systems Theory Branch, Naval Research Laboratory, Washington

Postdoctoral Research Associate 1987-89

IBM Research Division, T.J. Watson Research Center, Yorktown Heights

Honors :

- IBM Research Division Award (1991)
“*For contributions to the development of a new mechanism for Si/Ge heteroepitaxy*”
- IBM Predoctoral Fellowship (1985-87)
- Chartered Physicist and Fellow of the Institute of Physics (London), since 1999
- Fellow of the American Physical Society, since 2003

Professional Activities :

- Member of: American Physical Society, Materials Research Society, American Chemical Society, Sigma Xi - Scientific Research Society, Institute of Physics, Society of Industrial and Applied Mathematics.

- Editorial Board of : *Modelling and Simulation in Materials Science and Engineering*, *Computational Science and Engineering*, *SIAM Book Series*, *Journal of Computer Aided Materials Design*, *Surface Review and Letters*, *International Journal for Multiscale Computational Engineering*, *Computing in Science and Engineering*

Organization of Scientific Meetings (Co-Organizer) :

- *International Forum on Clean Energy*, University of Science and Technology of China, Hefei, China (August 2010).
- IC4N-2008 “*1st International Conference from Nanoparticles and Nanomaterials to Nanodevices and Nanosystems*”, Halkidiki, Greece (June 2008).
- Conference on “*Synergy Between Experiment and Computation in Nanoscale Science*”, National Nanoscale Infrastructure Network, Harvard Univ. (May 2006).
- Focus Session on “*Steps, Growth and Smoothing*”, American Physical Society March Meeting, Baltimore (March 2006).
- Focus Session on “*Multiscale Simulations in Materials Science*”, SIMU- European Physical Society Workshop on Bridging the Scales, Genova, Italy (August 2004).
- Workshop on “*Multiscale Modeling and Simulation*”, sponsored by ETH-Z Computational Laboratory, Lugano, Switzerland (August 2003).
- Workshop on “*Multiscale Modeling of Materials: Methods, Algorithms and Unsolved Problems*”, sponsored by Centre Europeen pour le Calcul Atomique et Moleculaire (CECAM), Heraklion, Greece (July 2001).
- Symposium on “*New Advances in Materials Prediction*”, Fall 1999 Meeting of the Materials Research Society, Boston.
- Symposium on “*Multiscale Modeling of Materials*”, Fall 1998 Meeting of the Materials Research Society, Boston.
- Workshop on “*Multiscale Modeling and Grand Challenge Problems in Materials Research*”, CECAM, Lyon, France (October 1997).
- Workshop on “*Quantitative Methods in Materials Research*”, Institute of Theoretical Physics, U.C. Santa Barbara (January - June 1997).
- Symposium on “*Epitaxial Growth: Principles and Applications*”, Spring 1997 Meeting of the Materials Research Society, San Francisco.
- Symposium on “*Materials Theory, Simulations and Parallel Algorithms*”, Fall 1995 Meeting of the Materials Research Society, Boston.

Research Interests:

The research of Prof. Kaxiras encompasses computational materials and condensed matter physics, and has covered a wide range of topics; examples include: the electronic properties of crystalline and amorphous solids and their dependence on the atomic structure; the physics and chemistry of covalently bonded nano-clusters; growth and catalytic behavior of nano-structured surfaces and interfaces; the nature of electronic states in biomolecules and the function of enzymes; the microscopic origin of brittle or ductile response of solids; the physics of dislocations in metallic and covalent solids and their interaction with chemical impurities; blood flow dynamics in realistic arterial geometries, incorporating cell motion and the effect on endothelial shear stress. A core theme is a multiscale point of view, which aims to realistically capture the behavior of complex physical systems by starting at a fundamental level, with a first-principles quantum mechanical description, and reaching to macroscopic scales.