RESEARCH SUPERVISION

PROFESSOR K. KOMVOPOULOS

A. Presently Advised Graduate Students and Postdoctoral Fellows

B. Sattari Baboukani (Postdoctoral fellow), In Situ Metal-Catalyzed Synthesis of Graphene Using Amorphous Carbon Films as Precursors; Molecular Dynamics of the Thermal Stability and Oxidation Behavior of Ultrathin Amorphous Carbon Films.

J. Cen (PhD), Deformation and Damage Evolution in Elastic-Plastic Media due to Oscillatory Contact Loading.


A. Spyromilios (MS), Contact Deformation of Elastic-Plastic Semi-infinite Media with Hard Inclusions.

B. Graduated MS and PhD Students

**B1. MS Students**

F. Camacho, Contact Stress Analysis of Layered Solids (Department of Mechanical and Industrial Engineering, University of Illinois at Urbana-Champaign, 1987)

S. A. Erpenbeck, A Study of the Metal Cutting Process and the Wear of a Three-Layer Ceramic-Coated Tool (Department of Mechanical and Industrial Engineering, University of Illinois at Urbana-Champaign, 1989)

P. J. Lubinski, An Experimental and Analytical Study of the Sliding Behavior of Layered Media (Department of Mechanical and Industrial Engineering, University of Illinois at Urbana-Champaign, 1989)

H. Li, Wear Mechanisms of Sliding Ceramics (Department of Mechanical and Industrial Engineering, University of Illinois at Urbana-Champaign, 1990)

A. K. Murthy, Tribological Properties of Plasma-Sprayed Ceramic Coatings (Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, 1990)

D. A. Spence, A Thermal Elastic-Plastic Finite Element Model of Orthogonal Metal Cutting (Department of Mechanical Engineering, University of California at Berkeley, 1994)

P. A. Mai, Microstructure and Tribological Properties of Laser-Modified Steel Surfaces (Department of Mechanical Engineering, University of California at Berkeley, 1998)

A. Choy, Fatigue of Polycrystalline Silicon in MEMS Devices (Department of Mechanical Engineering, University of California at Berkeley, 1999)
S. Kim, *Friction and Wear Characteristics of Steel Surfaces Lubricated with Base and Formulated Lubricants at Ambient and Elevated Temperatures* (Department of Mechanical Engineering, University of California at Berkeley, 1999)

I. Lee, *A Fractal Analysis of Adhesion and Friction in Micromachined Systems* (Department of Mechanical Engineering, University of California at Berkeley, 2000)

N. Jamali, *Mechanical Testing of MEMS Devices* (Department of Mechanical Engineering, University of California at Berkeley, 2001)

C. D. White, *Multi-Axial Fatigue Testing of Polysilicon MEMS Devices* (Department of Mechanical Engineering, University of California at Berkeley, 2003)


V. Do, *Effect of Sulfur- and Phosphorus-Containing Additives and Metal Deactivator on the Tribological Behavior of Boundary-Lubricated Steel Surfaces* (Department of Mechanical Engineering, University of California at Berkeley, 2003)

A. Lumbantobing, *Basic Study of Electrical Contact Resistance and Static Friction at the Contact Interfaces of Microelectromechanical Systems* (Department of Mechanical Engineering, University of California at Berkeley, 2003)

S. J. Timpe, *An Experimental Study of Sidewall Adhesion in Microelectromechanical Systems* (Department of Mechanical Engineering, University of California at Berkeley, 2004)


H. Zhang, *Phase Transformation Studies of TiNi and Cu-Al-Ni Shape-Memory Alloys* (Department of Mechanical Engineering, University of California at Berkeley, 2005)

G. Pennecot, *Antiwear Properties of Blends Containing Mixtures of Zinc Dialkyl Dithiophosphate and Different Detergents* (Department of Mechanical Engineering, University of California at Berkeley, 2007)

A. Tsai, *Formation of Antiwear Tribofilms from Engine Oils Blended with Zinc Dialkyl Dithiophosphate Additive and Different Dispersants* (Department of Mechanical Engineering, University of California at Berkeley, 2009)

A. Poulizac, *Antiwear Properties of Blends Containing Mixture of Zinc Dialkyl Dithiophosphate and Different Succinimide Dispersants* (Department of Mechanical Engineering, University of California at Berkeley, 2009)

A. Lee, *Finite Element Analysis of Dynamic Indentation of an Elastic-Plastic Medium by a Rigid Sphere* (Department of Mechanical Engineering, University of California at Berkeley, 2010)

N. Wang, *Molecular Dynamics Study of the Carbon Atom Deposition Process* (Department of Mechanical Engineering, University of California at Berkeley, 2012)

J. M. Matlak, *Nanofriction Properties of Ultrathin Amorphous Carbon Films* (Department of Mechanical Engineering, University of California at Berkeley, 2014)
A. Roy, *Investigating the nanostructure, diffusion barrier characteristics and thermal stability of ultrathin amorphous carbon overcoats with a SiNₓ underlayer* (Department of Mechanical Engineering, University of California at Berkeley, 2020)

**B2. PhD Students**


K. Nagarathnam, *Processing and Characterization of Laser-Synthesized Overcoats for Surface Engineering* (Department of Mechanical and Industrial Engineering, University of Illinois at Urbana-Champaign, 1994)

H. Li, *Study of Tribological Behavior of Thin-Film Magnetic Hard Disks Using Scratch Tests and Acoustic Emission* (Department of Mechanical Engineering, University of California at Berkeley, 1994)

B. Wei, *Friction and Wear Micromechanisms of Carbon-Coated Thin-Film Magnetic Rigid Disks and Application of Ion Beam Technology in Head/Media Tribology* (Department of Mechanical Engineering, University of California at Berkeley, 1994)

S.-S. Cho, *Experimental and Analytical Investigation of Multi-Layer Ceramic Coated Cemented Carbide Tool Wear* (Department of Mechanical Engineering, University of California at Berkeley, 1995)

W. Yan, *Micro- and Nano-scale Surface Adhesion and Contact Mechanics Studies* (Department of Mechanical Engineering, University of California at Berkeley, 1997)

W. Lu, *Sputtering Deposition and Characterization of Ultrathin Amorphous Carbon Films* (Department of Mechanical Engineering, University of California at Berkeley, 1999)

C. Klapperich, *Mechanical, Chemical and Biological Evaluation of Energetically Treated Polymer Surfaces for Biomedical Applications* (Department of Mechanical Engineering, University of California at Berkeley, 2000)

N. Ye, *Contact Mechanics of Elastic-Plastic Layered Media with Smooth and Rough Surfaces* (Department of Mechanical Engineering, University of California at Berkeley, 2002)

Z.-Q. Gong, *Analytical and Numerical Contact Analyses of Semi-Infinite Media with Patterned and Rough Surfaces* (Department of Mechanical Engineering, University of California at Berkeley, 2004)

J. Yang, *Dynamic Contact and Friction Study of Homogeneous and Layered Media* (Department of Mechanical Engineering, University of California at Berkeley, 2004)

D. Wan, *Deposition and Characterization of Amorphous Carbon and TiNi Shape-Memory Alloy Thin Films Synthesized by Low-Pressure Radio-Frequency Discharge* (Department of Mechanical Engineering, University of California at Berkeley, 2004)

A. M. Chakravartula, *Nano-scale Mechanical Properties of Biomedical Polymers and a Case Study of the Medical Device Approval Process* (Department of Mechanical Engineering, University of California at Berkeley, 2005)

X. Ma, *Nanocontact Characterization of Shape-Memory Titanium-Nickel Films* (Department of Mechanical Engineering, University of California at Berkeley, 2005).

J. Zhou, *Surface and Interface Mechanics of Polymeric Materials* (Department of Mechanical Engineering, University of California at Berkeley, 2006)

S. Tajima, *Plasma-Assisted Surface Modification of Biopolymers* (Department of Mechanical Engineering, University of California at Berkeley, 2006)

S. J. Timpe, *Experimental Examination of the Tribological Properties of Microelectromechanical Systems* (Department of Mechanical Engineering, University of California at Berkeley, 2007)

H.-S. Zhang, *Surface Modification by Filtered Cathodic Vacuum Arc and Nanomechanical Properties of Thin-Film Media, Cu-Al-Ni Shape-Memory Alloy, and Surface-Textured Silicon* (Department of Mechanical Engineering, University of California at Berkeley, 2009)


Q. Cheng, *Polymer Surface Modification for Bioengineering Applications* (Department of Mechanical Engineering, University of California at Berkeley, 2011)

H. Xu, *Asperity-Scale Surface Mechanics - Implications to Adhesive Contacts and Microscale Deformation Behavior of Rough Surfaces* (Department of Mechanical Engineering, University of California at Berkeley, 2012)


H. Xiang, *Experimental Studies of the Tribological Behavior of Microelectromechanical Systems* (Department of Mechanical Engineering, University of California at Berkeley, 2013)

T. Jee, *Mechanical and Tribological Properties of Skin Studied by Microscale Indentation and scratching Techniques* (Department of Mechanical Engineering, University of California at Berkeley, 2013)

N. Wang, *Synthesis, Characterization, and Molecular Dynamics Analysis of Ultrathin Amorphous Carbon Films* (Department of Mechanical Engineering, University of California at Berkeley, 2013)


J. Xie, *Synthesis and Characterization of Amorphous Carbon Films for Magnetic Storage Technology* (Department of Mechanical Engineering, University of California at Berkeley, 2015)
F. Shi, *Electrochemical and Mechanical Processes at Surfaces and Interfaces of Advanced Materials for Energy Storage* (Department of Mechanical Engineering, University of California at Berkeley, 2015)

A. A. Maich, *Fretting Wear Mechanisms of A216 Plain-Carbon Steel* (Department of Materials Science and Engineering, University of California at Berkeley, 2015; co-chair: Prof. R. Gronsky)

J. Pu, *Mechanical, Biological and Electrochemical Investigations of Advanced Micro/Nano Materials for Tissue Engineering and Energy Storage* (Department of Mechanical Engineering, University of California at Berkeley, 2016)


S. Wang, *Thermomechanical, Electromagnetic and Material Issues in Heat-assisted Magnetic Recording Technology* (Department of Mechanical Engineering, University of California at Berkeley, 2020)

**C. Postdoctoral and Industry Fellows and Visiting Faculty**

M.-Y. Chu (post-doctoral student; co-advisor Prof. D. B. Bogy), *AFM and STM Surface Imaging* (1990-1991)


T. Kano (visiting industry fellow), *Head-Tape Contact Mechanics* (1992-1993)


P. Gu (visiting faculty, Department of Modern Mechanics, University of Science and Technology, People’s Republic of China), *Anisotropic Adhesion of Patterned Carbon Nanotube Arrays* (2012-2013)

