

# RESEARCH SUPERVISION

## PROFESSOR K. KOMVOPOULOS

### 1. 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)

J. Zhou, *Friction and Wear of Ultra-High Molecular Weight Polyethylene Used in Total Joint Replacements* (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)

S. A. Pernama, *Friction Reduction and Antiwear Capacity of Engine Oils Containing Zinc Dialkyl Dithiophosphate and Molybdenum-Complex Additives* (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 SiN<sub>x</sub> underlayer* (Department of Mechanical Engineering, University of California at Berkeley, 2020)

A. Spyromilios, *Elastic inclusion effects on deformation behavior of indented elastic-plastic solids* (Department of Mechanical Engineering, University of California at Berkeley, 2024)

## 2. PhD Students

E. R. Kral, *Hardness of Ultra-Thin Layers: Experiments and Finite Element Modeling* (Department of Mechanical Engineering, University of California at Berkeley, 1993)

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)

R. Xu, *Fatigue Analysis of Micro-Electro-Mechanical Systems (MEMS) Resonators* (Department of Mechanical Engineering, University of California at Berkeley, 2005)

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)
- X. Yin, *Nanoscale Surface and Interface Mechanics of Elastic-Plastic Media with Smooth, Patterned, and Rough Surfaces* (Department of Mechanical Engineering, University of California at Berkeley, 2011)
- 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)
- Z. Song, *Contact Mechanics Modeling of Homogeneous and Layered Elastic-Plastic Media: Surface Roughness and Adhesion Effects* (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)
- M. Tartibi, *A Global Finite Element Reverse Approach for Identifying the Material Elasticity and Current State of Stress* (Department of Mechanical Engineering, University of California at Berkeley, 2015; co-chair: Prof. D. J. Steigmann)
- 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)
- J. Matlak, *Synthesis and Characterization of Amorphous Carbon Films for Heat-Assisted Magnetic Recording* (Department of Mechanical Engineering, University of California at Berkeley, 2017)

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

J. Cen, *Finite Element Analysis of Cyclic Normal and Sliding Contact of Elastic-Plastic Homogeneous and Layered Half-Space Media – Effects of Interfacial Properties and Topography on Deformation Behavior* (Department of Mechanical Engineering, University of California at Berkeley, 2024)

D. Papadimitriou, *Constraint Inference in Control and Reinforcement Learning* (Department of Mechanical Engineering, University of California at Berkeley, 2024)

M. I. Echeverria Molina, *Fabrication, Characterization, and Testing of Fibrous Polymeric Membranes for Scaffold Engineering* (Department of Mechanical Engineering, University of California at Berkeley, 2025)

### 3. Postdoctoral Students, Visiting Faculty and Industry Fellows

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

D.-H. Choi (post-doctoral student), *FEM Modeling of Rough Surfaces* (1990-1991)

S. Wang (post-doctoral student), *Surface Fractal Characterization and Contact Mechanics Analysis* (1991-1996)

Z. Feng (post-doctoral student), *CVD Growth of Thin Diamond Films* (1992-1995)

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

E. R. Kral (post-doctoral student), *FEM Modeling for the Head-Disk Interface* (1993-1994)

S.-S. Cho (post-doctoral student), *Design of Friction/Scratch Tester* (1995-1996)

S. Niederberger (visiting student; co-advisor: Prof. G. A. Somorjai, Chemistry), *Nano- and Micro-scale Properties of Polyethylene and Silicon* (1997-1998)

B. Mailhot (visiting faculty; co-advisor: Prof. G. A. Somorjai, Chemistry), *Nano- and Micro-scale Mechanical Properties of Polyurethane* (2000)

E. Amitay-Sadovskii (post-doctoral student; co-advisor: Prof. G. A. Somorjai, Chemistry), *AFM and SFG Spectroscopy Studies of the Nanomechanical Properties and Surface Chemical Characteristics of Thin Polymer Membranes* (2001-2003)

L. Kogut (post-doctoral student), *Contact Electromechanics and Adhesion in MEMS* (2002-2004)

C. P. Neu (post-doctoral student; co-advisor: Prof. H. A. Reddi, Center for Tissue Regeneration and Repair, Sacramento, Department of Orthopaedic Surgery, UCD), *Biotribology of Synovial Joints* (2005-2008)

C. Aliaga (post-doctoral student; co-advisor: Prof. G. A. Somorjai, Chemistry), *Nanoparticle Catalysis Studied by Sum Frequency Generation Vibrational Spectroscopy and Gas Chromatography* (2009-2010)

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)

E. Rismaniyazdi (post-doctoral student), *Carbon Film Synthesis by Filtered Cathodic Vacuum Arc Deposition and Radio-Frequency Sputtering* (2013-2014)

Z. Song (post-doctoral fellow), *Finite Element Analysis of Ultrasonic Wire Bonding* (2017-2018)

Y. Wu (visiting faculty), *Synthesis and Characterization of Graphene Layers* (2018-2019)

B. Sattari Baboukani (post-doctoral fellow), *In Situ Metal-Catalyzed Synthesis of Graphene Using Amorphous Carbon Films as Precursors* (2022-2023)