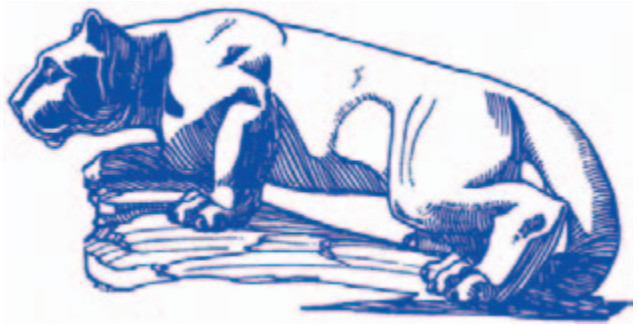
PENNSTATE

Department of Engineering Science and Mechanics



Graduating Seniors

Engineering Science

2004-2005

with thesis title and post-graduate plans

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Engineering Science
The Discipline, Profession and Curriculum at Penn State

Engineering Science

Engineering Science is the discipline devoted to creating and optimizing engineered solutions through enhanced understanding and integrated application of mathematical, scientific, statistical, and engineering principles. Engineering Science provides the knowledge and motivation necessary to merge multidisciplinary resources, and propose enduring solutions that meet the profession's most demanding challenges.

The Engineering Scientist

The Penn State Engineering Science graduate obtains a solid understanding of the analytical, interpretive and extrapolative aspects of engineering. This unique knowledge enables a graduate to bridge the gap between theoretical science and practical engineering. The engineering scientist forgoes specialization in a single discipline for a broader perspective of engineering and the ability to interact with a team of allied professionals.

The Engineering Science Curriculum

At Penn State University, the Engineering Science program is the official engineering honors curriculum, attracting a number of the College of Engineering's brightest, most creative, and most ambitious students. As a curriculum, Engineering Science provides a foundation in mathematics, chemistry, physics, mechanics, and materials. Beyond this, students master the rudiments of electrical and mechanical engineering. In Engineering Science, all senior year students complete a capstone project that integrates the scientific principles of research, design and analysis with the applied art of engineering. Frequently they create or optimize a complex engineered solution while learning the skills necessary to complete an independent research project in a timely manner. In addition, during their senior year, most Engineering Science students select a focus area of study.

As an entry-level engineer, the Engineering Science graduate has the immediate advantage of functioning across disciplines. Over time, these Penn State honors graduates often earn graduate degrees, do multidisciplinary R&D, and establish careers in engineering and management.

Gaelle T. Belot (Spring 2005)

Minor: Engineering Mechanics
Hometown: Hollis, NY

"Measurement of Residual Stress in Thin Films"

Thesis supervised by Dr. Mark W. Horn

Plans: industrial position

David P. Bernstein (Spring 2005)

Minors: Engineering Mechanics and Math
Hometown: Narberth, PA

"Task Dynamics of Aiming at a Target: Goal-Equivalent Manifolds, Stability and Control"

Thesis supervised by Dr. Joseph P. Cusumano

Karen K. Wright (Spring 2005)

Minors: Engineering Mechanics and Japanese
Hometown: Williamsville, NY

"Development of a Web-Based System for Mass Customization"

Thesis supervised by Dr. Tim W. Simpson

Plans: Employment at Northrop Grumman in Baltimore, MD and possible MBA in the future

Katherine E. Weaver (Spring 2005)

Hometown: Rochester, NY

"Theoretical Modeling and Simulation of Contact Lithography with Broadband Illumination and Immersion"

Thesis supervised by Dr. Akhlesh Lakhtakia

Plans: Penn State University for one more semester to finish Master's degree and Graduate School Fall 2006

Paul D. Brugan (Spring 2005)

Minor: Engineering Mechanics

Hometown: Jim Thorpe, PA

"Controlled Fracture of Ceramics Using a Dual-Beam Laser System"

Thesis supervised by Dr. Albert E. Segall

Plans: Employment at Lockheed Martin Corporation, Valley Forge, PA

Jacqueline Dancu (Fall 2004)

Hometown: Holland, PA

"Preliminary Research and Design for the Implementation of a Small Field Scale Anaerobic Digester in Jamaica"

Thesis supervised by Dr. Raymond Regan

Abhay Verma (Fall 2004)

Hometown: Meadville, PA

"Investigation of Sculptured Thin Films on Patterned Topography"

Thesis supervised by Dr. Mark W. Horn

Tamara R. Valinoto (Spring 2005)

Minor: Engineering Mechanics
Hometown: Stowe, PA

"Comparison of the Dry Sliding Wear Behavior of Cryo-Treated and Untreated Aluminum Alloys Under Simulated Wire-Rope Conditions"

Thesis supervised by Dr. Albert E. Segall

Plans: Employed by Northrop Grumman, Electronics Systems, Linthicum, MD

Stefan F. De Biasi (Spring 2005)

Hometown: Coopersburg, PA

"Electroless Copper Deposition on Multi-Walled Carbon Nanotubes"

Thesis supervised by Dr. Ivica Smid

Plans: Employment at Air Products and Chemicals

Shelby L. Fidler (Spring 2005)

Minor: Engineering Entrepreneurship
Hometown: Leola, PA

"Interference Patterns and Matching Circuit Design for Ultrasound Enhanced Drug Delivery and Testing"

Thesis supervised by Dr. Nadine B. Smith

Plans: Employment at U.S. Patent Office, Alexandria, VA

Brie E. Turso (Summer 2004)

Minor: Bioengineering
Hometown: Harbor Creek, PA

"Finite Element Modeling of Plantar Pressure Distribution on the Foot-Shoe Interface"

Thesis supervised by Dr. Peter R. Cavanagh

Gabrielle Tremblay (Spring 2005)

Minor: Engineering Leadership Development
Hometown: McMurray, PA

"Fluid Mechanics Videos for Use in Undergraduate Education"

Thesis supervised by Dr. Gary S. Settles

Plans: Internship Summer 2005 with General Electric and Graduate School Fall 2005 at University of Michigan, Ann Arbor, in Industrial and Operations Engineering

Gavin Hawk (Summer 2005)

Hometown: Palmerton, PA

"Surface Roughness Effects on Nucleate Pool Boiling"

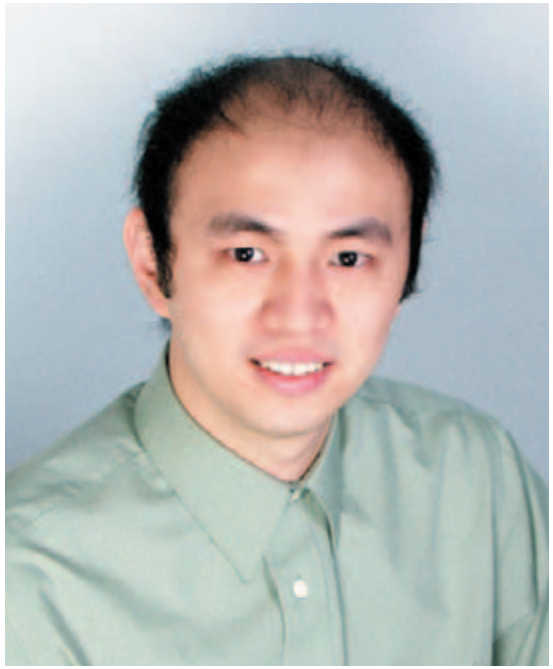
Thesis supervised by Dr. Lawrence Hochreiter

Kimberly G. Love (Spring 2005)

Minor: Bioengineering
Hometown: Davidsonville, MD

"Failure Rates of Rectangular Arrays Used in Noninvasive Insulin Delivery"

Thesis supervised by Dr. Nadine B. Smith



Myo M. Thein (Spring 2005)

Dual Degree: Engineering Science and Electrical Engineering
Hometown: Yangon, Burma

"Modification of the Selectivity of Gold Nanowire Based Mercury Sensors by Self-Assembled-Monolayer Functionalization"

Thesis supervised by Dr. Stephen J. Fonash

Plans: Graduate School at Penn State University in Engineering Science

Rocky K. Styer, Jr. (Spring 2005)

Hometown: Alexandria, VA

"A Technical Evaluation of a Cylindrical Rotary Stirling Engine"

Thesis supervised by Dr. Horacio Perez-Blanco

Thea McSweeney (Summer 2005)

Minor: Bioengineering

Hometown: Sayre, PA

"Effect on Non-Newtonian Rheology in Cardiovascular Flow Fields"

Thesis supervised by Dr. Arnold Fontaine

John Meeker (Spring 2005)

Minor: Engineering Mechanics
Hometown: Sanatoga, PA

"Thermal Stress Intensity Factors Due to an Arbitrary Thermal Shock by an Inverse Method"

Thesis supervised by Dr. Albert E. Segall
Plans: Graduate School

Matthew Stefanski (Spring 2005)

Minor: Engineering Mechanics
Hometown: Verona, NJ

"A Study on Chiral Reflector-Based Microcavity Light Emitting Devices"

Thesis supervised by Dr. Jian Xu

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Shaun F. Stasik (Fall 2004)

Hometown: Ballston Spa, NY

"Fabrication and Preparation of Iron Sculptures Thin Films of Various Morphologies for Biological Reduction Studies"

Thesis supervised by Dr. Mark W. Horn

Ryan M. Melnychuk (Spring 2005)

Minor: Engineering Mechanics
Hometown: Bloomsburg, PA

"Laser Beam Absorption in Metallic Powder Beds"

Thesis supervised by Dr. Richard Martukanitz and Dr. Judith Todd

Plans: Attending Graduate School at PSU in Industrial Engineering

Ryan M. Melsert (Fall 2004)

Minor: International Studies
Hometown: Burnt Hills, NY

"Hydrogen Combustion Dynamics and its Applications as a Transportation Fuel"

Thesis supervised by Dr. Joel Anstrom

Brett Shapiro (Spring 2005)

Minors: Engineering Mechanics and Spanish
Hometown: Philadelphia, PA

"Semi-Active Damping Using a Fiber Wound Elastic Tube"

Thesis supervised by Dr. Christopher Rahn

Plans: Graduate School at MIT

Jed Schober (Summer 2005)

Hometown: Lititz, PA

"Design and Analysis of a Flexing Bicycle Suspension Device"

Thesis supervised by C. E. Bakis

Brian A. Murtha (Spring 2005)

Minor: Math

Hometown: State College, PA

"Modeling Heat Transfer Characteristics of Multi-Layered Structures"

Thesis supervised by Dr. Anil K. Kulkarni

Plans: Graduate School at Penn State University in Engineering Science

Ryan W. Pfaff (Spring 2005)

Hometown: Strongsville, OH

"Fiber Reinforced Elastomers: Fatigue and Microbuckling Behavior"

Thesis supervised by Dr. Charles E. Bakis

Plans: Graduate School — Penn State University

Donald A. Sampson (Fall 2004)

Minor: Engineering Mechanics

Hometown: Knox, PA

"Examination of Adaptive Reconfigurable Control Methods Problems and Solutions"

Thesis supervised by Dr. David Spencer

Alexander J. Robinson (Spring 2005)

Minor: German
Hometown: Purcellville, VA

"Molecular Dynamics Simulations of Impinging Nitrogen Atomization"

Thesis supervised by Dr. Michael Micci

Plans: Travel Abroad

Brian E. Piccione (Spring 2005)

Minors: Engineering Mechanics and Physics
Hometown: Langhorne, PA

"Application of Atomic Force Microscopy to the Study of Bio-Cells"

Thesis supervised by Dr. Bernhard Tittmann

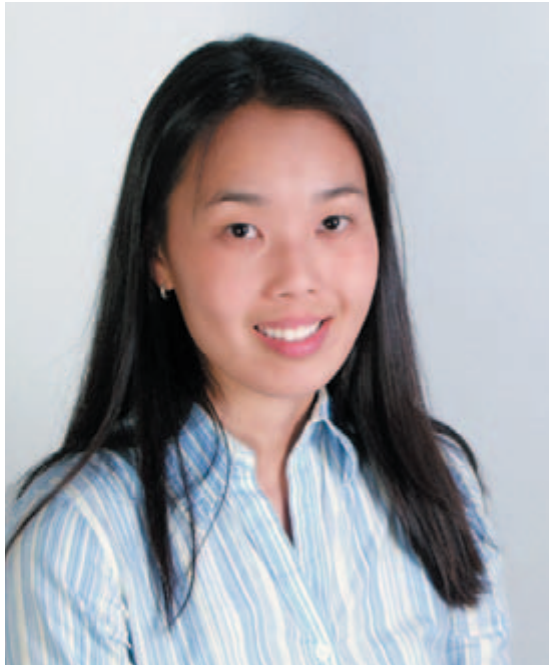
Plans: Graduate School at Purdue

Sean M. Pursel (Summer 2005)

Minor: Engineering Mechanics
Hometown: Catawissa, PA

"Investigation of Polymeric Sculptured Thin Films"

Thesis supervised by Dr. Mark W. Horn



Caitlin A. Roberts (Fall 2004)

Minor: Bioengineering
Hometown: Allentown, PA

"Oligonycleotide-Directed Patterning of Microstructures through Microcontact Printing"

Thesis supervised by Dr. William Hancock and Dr. Jeffrey Zahn