177 F. PAUL ANDERSON TOWER• LEXINGTON, KY 40506
PHONE (859) 257-9844 • FAX (859) 323-1929• E-MAIL HILT@ENGR.UKY.EDU

JAMES ZACHARY HILT

ACADEMIC APPOINTMENTS

2004-present **University of Kentucky** **Lexington, KY**
Assistant Professor of Chemical Engineering
Department of Chemical and Materials Engineering

EDUCATION

2003 - 2004 **University of Texas** **Austin, TX**
Ph.D. Chemical Engineering

2000 - 2002 **Purdue University** **West Lafayette, IN**
M.S. Chemical Engineering

1995-1999 **Miami University (OH)** **Oxford, OH**
B.S. Physics and B.S. Chemistry

RESEARCH EXPERIENCE

2003 - 2004 **University of Texas** **Austin, TX**
Thrust Graduate Research Fellow
Biomaterials, Drug Delivery, Bionanotechnology, and Molecular Recognition Laboratories
Thesis Title: Novel Micro- and Nanoscale Diagnostic and Therapeutic Devices Based on Intelligent Polymer Networks
Advisor: Dr. Nicholas Peppas, Fletcher S. Pratt Chair, Chemical Engineering, Biomedical Engineering & Pharmaceutics

2000 - 2002 **Purdue University** **West Lafayette, IN**
NSF IGERT Graduate Research Fellow
Biomaterials and Drug Delivery Laboratories
Thesis Title: A Microsensor based on Microcantilevers Patterned with Environmentally Sensitive Hydrogels
Advisor: Dr. Nicholas Peppas, Showalter Distinguished Professor of Chemical and Biomedical Engineering
Co-advisor: Dr. Rashid Bashir, Associate Professor of Electrical and Computer Engineering

1996 - 1999 **Miami University (OH)** **Oxford, OH**
Research Assistant
Magnetic Material Characterization Laboratories
Research focused on the design, development, and application of a vibrating sample magnetometer (VSM) to characterize the magnetic properties of a variety of thin film samples
Advisor: Dr. Michael J. Pechan, Professor and Department Chair of Physics

1998 **National Institute of Standards and Technology** **Gaithersburg, MD**
Summer Undergraduate Research Fellow
Magnetic Materials Group of the Materials Science and Engineering Laboratory
Research focused on examining the magnetic properties of thin films utilizing VSM, SQUID, DC magnetometers, and Magneto Optical Indicator Film (MOIF) imaging
Advisor: Dr. Robert Shull, Group Leader of the Magnetic Materials Group

TEACHING EXPERIENCE

CME 320 – Engineering Thermodynamics
Sophomore Level Course, University of Kentucky, Spring 2006
Instructor

- The objective is to introduce students to the principles of thermodynamics as they apply to physical and chemical processes.

CME 599/780 – Biomedical Micro- and Nanotechnology
Senior/Graduate Level Course, University of Kentucky, Fall 2005
Instructor

- The objective is to introduce the broad impact of miniature technologies on all fields of science and engineering, while focusing on applications in biological and medical fields.

CME 780 – Special Problems in Chemical Engineering
Graduate Level Course, University of Kentucky, Spring 2005
Instructor

- The objective is to provide an opportunity for first-year graduate students to begin their research. Activities include weekly and monthly progress reports, a final written report, and a final oral presentation.

CME 471 – Seminar
Junior/Senior Level Course, University of Kentucky, Spring 2005; Spring 2006
Instructor

- The objective is to improve your oral presentation and listening skills as applied primarily to technically-oriented material. Activities include the preparation and delivery of a persuasive technical speech and a formal technical presentation, as well as the evaluation of presentations by others.

CME 006 – The Engineering Profession
Junior/Senior Level Course, University of Kentucky, Fall 2004
Guest Instructor

- Taught lectures entitled, "Chemical Engineering Impacts and Opportunities in the Pharmaceutical Industry"

EE 599 – Nano-/Micro-Electromechanical Devices
Senior/Graduate Level Course, University of Kentucky, Fall 2004; Fall 2005
Guest Instructor

- Taught lectures entitled, "Polymers in Nano-/Micro-Electromechanical Devices"

EGR 101 – Introduction to Engineering
Freshman Level Course, University of Kentucky, Fall 2004; Spring 2005
Guest Instructor

- Taught lectures entitled, "Changing the World with Chemical Engineering: The Past, Present, and Future"

ChE 379/384 – Polymerization Reaction Engineering
Senior/Graduate Level Course, University of Texas, Spring 2003
Graduate Teaching Assistant

ChE 306 – Design of Staged Separation Processes
Junior Level Course, Purdue University, Fall 2001
Graduate Teaching Assistant

TEACHING EXPERIENCE (CONT.)

Post-Doctoral Research Mentor/Advisor

Dipti Biswal

Post-Doctoral Scientist, University of Kentucky, Summer 2005 - current

- *FTIR Imaging for Spatial Integration and Characterization of Intelligent Polymer Networks*

Graduate Research Mentor/Advisor

Tim Rembold

Graduate Research Assistant, University of Kentucky, Expected Graduation: Fall 2009

- *Moiety Imprinted Polymers for Controlled Drug Delivery Applications*

Hariharasudhan Chirra

Graduate Research Assistant, University of Kentucky, Expected Graduation: Fall 2009

- *Soft Lithography and FTIR Imaging for Spatial Integration and Characterization of Intelligent Polymer Networks*

Nitin Satarkar

Graduate Research Assistant, University of Kentucky, Expected Graduation: Fall 2009

- *Nanocomposite Hydrogels as Intelligent Materials and Devices*

Reynolds A. Fimpong

Graduate Research Assistant, University of Kentucky, Expected Graduation: Fall 2008

- *Materials and Devices based on Magnetic Nanoparticles Functionalized with Intelligent Polymer Networks*

Undergraduate Research Mentor/Advisor

Ramin Ettehadieh

Research Assistant, University of Kentucky, Chemical Engineering Senior, Spring 2006 - current

- *Design and Development of an Imaging System for Hydrogel Swelling Studies*

Michael Irvin

Research Assistant, University of Kentucky, Chemical Engineering Senior, Fall 2005 - current

- *Design and Characterization of PLGA-based Tissue Engineering Devices*

Stew Fraser

Research Assistant, University of Kentucky, Chemical Engineering Junior, Summer 2005 - current

- *Characterization of Magnetically Responsive Nanocomposite Hydrogels*

David Kryscio

Research Assistant, University of Kentucky, Chemical Engineering Junior, Spring 2005 - current

- *Characterization of Moiety Imprinted Hydrogel Systems*

Christin Pramudiati

Research Assistant, University of Kentucky, Chemical Engineering Junior, Spring 2005 - current

- *Characterization of PLGA Polymer Systems for Drug Delivery*

AWARDS

2003 - 2004	**Thrust 2000 Fellowship -** School of Engineering, University of Texas
2003	**Graduate Student Silver Award –** MRS Annual Fall Meeting
2003	**Whitaker Foundation Travel Award** – 4th BioMEMS & NANOtech World Conference
2002	**Graduate Student Award Finalist -** 24th Annual International Conference of the IEEE Engineering in Medicine and Biology Society

AWARDS (CONT.)

2000 - 2002	**NSF Integrative Graduate Education and Research Training Fellowship**
1999	**Graduation with Department Honors -** Physics Dept., Miami University
1999	**Outstanding Undergraduate Research Award –** Physics Dept., Miami University
1998	**Summer Undergraduate Research Fellowship –** NIST, Gaithersburg, MD
1997	**Undergraduate Research Grant Award –** Senate Undergraduate Research Committee, Miami University
1996, 1997	**Culler Prize for Outstanding Performance in Physics -** Physics Dept., Miami University

PUBLICATIONS

N.A. Peppas, **J.Z. Hilt**, A. Khademhosseini, R. Langer. Hydrogels in Biology and Medicine: From Molecular Principles to Bionanotechnology. *Advanced Materials,* in press.

J.Z. Hilt, N.A. Peppas. Intelligent Polymeric Networks in Biomolecular Sensing. In: R. Bashir and S. Wereley, eds., *Handbook of BioMEMS and Biomedical Nanotechnology, Volume IV: Biomolecular Sensing, Processing and Analysis*, Kluwer, Amsterdam, in press.

S. Venkatesh, M.E. Byrne, N.A. Peppas, **J.Z. Hilt**. Applications of Biomimetic Systems in Drug Delivery. *Expert Opinion on Drug Delivery*, 2, 1085-1096, 2005.

J.Z. Hilt, N.A. Peppas. Microfabricated Drug Delivery Devices. *International Journal of Pharmaceutics*, 306, 15-23, 2005.

J.Z. Hilt. Nanotechnology and biomimetic methods in therapeutics: Molecular scale control with some help from nature. *Advanced Drug Delivery Reviews*, 56, 1533-1536, 2004.

J.Z. Hilt and M.E. Byrne. Configurational biomimesis in drug delivery: molecular imprinting of biologically significant molecules. *Advanced Drug Delivery Reviews*, 56, 1599-1620, 2004.

J.Z. Hilt and M.E. Byrne. Nanoscience and Nanotechnology in Tissue Engineering, Therapeutic devices, and Diagnostic Systems. In: J.A. Schwarz, C. Contescu, K. Putyera, eds., *Dekker Encyclopedia of Nanoscience and Nanotechnology*, 247-261, 2004.

J.Z. Hilt, A.K. Gupta, R. Bashir, and N.A. Peppas. Ultrasensitive bioMEMS sensors based on microcantilevers patterned with environmentally responsive hydrogels. *Biomedical Microdevices*, 3, 177-184, 2003.

M.E. Byrne, E. Oral, **J.Z. Hilt**, and N.A. Peppas. Networks for recognition of biomolecules: molecular imprinting and micropatterning poly(ethylene glycol)-containing films. *Polymers for Advanced Technologies*, 13, 798-816, 2002.

R. Bashir, **J.Z. Hilt**, O. Elibol, A. Gupta, and N.A. Peppas. Micromechanical cantilever as an ultrasensitive pH microsensor. *Applied Physics Letters*, 81, 3091-3093, 2002.

J.Z. Hilt, A.K. Gupta, R. Bashir, and N.A. Peppas. A microsensor based on a microcantilever patterned with an environmentally sensitive hydrogel. In: Lee LP, Borenstein JT, Manginell RP, Okandan M, Hesketh PJ, eds., *BioMEMS and Bionanotechnology*, 173-178, MRS, Pittsburgh, PA, 2002.

PUBLICATIONS (CONT.)

J. Mejia-Lopez, R. Ramirez, M. Kiwi, M.J. Pechan, **J.Z. Hilt**, S. Kim, H. Suhl, and I.K. Schuller. Coercivity of a percolative magnetic system. *Physical Review B-Condensed Matter*, 63, 060401/1-4, 2001.

M.J. Pechan, N. Teng, J.D. Stewart, **J.Z. Hilt**, E.E. Fullerton, J.S. Jiang, C.H. Sowers, S.D. Bader. Anisotropy determination in epitaxial Sm-Co/Fe exchange springs. *Journal of Applied Physics*, 87, 6686-6688, 2000.

J.Z. Hilt, J.J. Picconatto, A. O'Brien, M.J. Pechan, and E.E. Fullerton. Symmetry influence on interlayer coupling in epitaxial Co/Cr trilayers grown on MgO(100) and (110) substrates. *Journal of Magnetism & Magnetic Materials*, 198-199, 387-390, 1999.

T. Charlton, J. McChesney, D. Lederman, F. Zhang, **J.Z. Hilt**, and M.J. Pechan. Magnetic properties of Co/Re hcp(1010) superlattices. *Physical Review B-Condensed Matter*, 59, 11897-11908, 1999.

PROCEEDINGS AND ABSTRACTS

J.Z. Hilt, "Nanoscale Synthesis and Characterization of Biomaterials", in *N.A. Peppas and J.Z. Hilt, eds., "Advances in Bionanotechnology"*, pp. 7-8, AIChE, New York, NY, 2005.

R. Frimpong, **J.Z. Hilt,** " Synthesis and Characterization of Magnetically Responsive Hydrogel Composites ", in *N.A. Peppas and J.Z. Hilt, eds., "Advances in Bionanotechnology"*, pp. 210-213, AIChE, New York, NY, 2005.

J. Z. Hilt, M. E. Byrne and N.A. Peppas, "Biomimetic Polymers in Drug Delivery and Sensing Applications: Effect of Network Molecular Structure on Recognition Properties", in *N.A. Peppas, K. Anseth, A.K. Dillow and C.E. Schmidt, eds., Advances in Biomaterials, Bionanotechnology, Biomimetic Systems and Tissue Engineering*, 41-43, AIChE, New York, NY, 2004.

N.A. Peppas, N.M. Bergmann, E.H. Lauten and **J.Z. Hilt**, "The Future of Intelligent Therapeutics", in *N.A. Peppas, K. Anseth, A.K. Dillow and C.E. Schmidt, eds., Advances in Biomaterials, Bionanotechnology, Biomimetic Systems and Tissue Engineering*, 87-89, AIChE, New York, NY, 2004.

J.Z. Hilt, M.E. Byrne, and N.A. Peppas. Novel Biomimetic Polymer Networks: Development and Application as Selective Recognition Elements for Biomolecules at the Micro-/Nanoscale. *AIChE Nanoscale Science and Engineering Topical Conference Proceedings*, 879-882, AIChE, New York, NY, 2003.

J.Z. Hilt, M.E. Byrne, and N.A. Peppas. Micropatterning of Biomimetic Recognitive Hydrogels for Microsensing Applications. *Abstracts of the Annual Houston Conference on Biomedical Engineering Research*, 20, 21, 2003.

J.Z. Hilt, N.A. Peppas, and R. Bashir. Integration of Environmentally Responsive Hydrogels with Silicon Microcantilevers for Biosensor Applications. *Bulletin of the American Physical Society*, 48, 560, 2003.

J.Z. Hilt, A. Gupta, R. Bashir, and N.A. Peppas. A bioMEMS sensor platform based on a cantilever with a precisely patterned environmentally sensitive hydrogel. *24th Annual Engineering in Medicine and Biology Conference and the Annual Fall Meeting of the Biomedical Engineering Society, Proceedings of the Second Joint EMBS/BMES Conference*, 2, 1650-1651, 2002.

M.E. Byrne, **J.Z. Hilt**, R. Bashir, K. Park, and N.A. Peppas. Biomimetic Materials for Selective Recognition and Microsensing of Biologically Significant Molecules. *Transactions of the Society for Biomaterials*, 28, 78, 2002.

J.Z. Hilt, A.K. Gupta, R. Bashir, and N.A. Peppas. Environmentally Sensitive Hydrogels Patterned on Silicon Microcantilevers. *Bulletin of the American Physical Society*, 47, 926, 2002.

PROCEEDINGS AND ABSTRACTS (CONT.)

M.J. Pechan, **J.Z. Hilt**, S. Kim, J.M. Choi, and Schuller IK. Dramatic Suppression of Magnetic Coercivity in Thin Ni Films: Role of Morphology and Epitaxy. *43rd Annual Conference on Magnetism and Magnetic Materials*, 173, 1998.

A.V. O'Brien, J.J. Picconatto, **J.Z. Hilt**, and M.J. Pechan. Symmetry Influence on Interlayer Coupling in Epitaxial Co/Cr Trilayers Grown on MgO (100) and (110) Substrates. *3rd International Symposium on Metallic Multilayers (MML '98) held jointly with the EMRS Symposium on Magnetic Ultrathin Films and Ultrathin Film Nanostructures*, 159, 1998.

T. Charlton, D. Lederman, F. Zhang, **J.Z. Hilt**, and M.J. Pechan. Strong In-Plane Magnetic Anisotropy in Co/Re Superlattices. *Bulletin of the American Physical Society*, 43, 1998.

J.J. Picconatto, A. O'Brien, **J.Z. Hilt**, M.J. Pechan, and E.E. Fullerton. Magnetic Anisotropy and Coupling in Epitaxial Co/Cr Trilayers on MgO (100) and (110) Substrates. *Bulletin of the American Physical Society*, 42, 1997.

INVITED PRESENTATIONS

J.Z. Hilt. Intelligent Hydrogels in Micro- and Nanodevices. *Air Force Research Laboratory, MLBP*, Wright Patterson AFB, OH, February 10th, 2006.

J.Z. Hilt. Nanoscale Synthesis and Characterization of Biomaterials. *2005 American Institute of Chemical Engineers Annual Meeting, Topical Conference on Biomedical Applications of Nanotechnology (Bionanotechnology): Tutorial Session I*, Cincinnati, OH, October 30 - November 4, 2005.

J.Z. Hilt. Synthesis, Characterization and Applications of Bioinspired Nanomaterials. *ACS 79th Colloid and Surface Science Symposium,* Clarkson University, Potsdam, NY, June 12-15, 2005.

J.Z. Hilt. Micro- and Nanoscale Application of Intelligent Polymers in Diagnostic and Therapeutic Devices. *University of Louisville, Chemical Engineering Department Seminar,* Louisville, KY, January 28, 2005.

J.Z. Hilt. Micro- and Nanotechnology in Medicine. *2004 American Institute of Chemical Engineers Annual Meeting, Advances in Biomaterials, Bionanotechnology, Biomimetic Systems and Tissue Engineering: Tutorial Session I*, Austin, TX, November 7-12, 2004.

J.Z. Hilt. Micro- and Nanotechnologies: Innovations in Medicine. *University of Kentucky, Paducah, AIChE Student Chapter Seminar,* Paducah, KY, September 21, 2004.

J.Z. Hilt. Nanotechnology: Innovations in Medicine. *2003 Health Science Technology Summer Professional Development Conference*, Austin, TX, July 23, 2003.

PRESENTATIONS

M.A. Bell, **J.Z. Hilt**, D. Kryscio, P.M. Sathe, M. Jay. Spreadability Assessment of Topical Formulations by the Vane Method. *2005 AAPS Annual Meeting and Exposition,* Nashville, TN, November 6-10, 2005.

R. Frimpong, **J.Z. Hilt**. Synthesis and Characterization of Magnetically Responsive Hydrogel Composites. *2005 American Institute of Chemical Engineers Annual Meeting,* Cincinnati, OH, October 31 – November 4, 2005.

D. Kryscio, M. Jay, **J.Z. Hilt**. Rheological Methods for the Bioequivalence Determination of Pharmaceutical Topical Formulations. *2005 AIChE Annual Meeting,* Cincinnati, OH, October 31 – November 4, 2005.

PRESENTATIONS (CONT.)

R. Frimpong, **J.Z. Hilt**. Temperature Response Analysis of Magnetically Responsive Hydrogel Composites. *2005 Eastern Regional Chemical Engineering Graduate Symposium,* Morgantown, WV, September 16 – 18, 2005.

J.Z. Hilt, M.E. Byrne, and N.A. Peppas. Biomimetic Polymers in Drug Delivery and Sensing Applications: Effect of Network Molecular Structure on Recognition Properties. *2004 American Institute of Chemical Engineers Annual Meeting,* Austin, TX, November 7-12, 2004.

J.Z. Hilt, M.E. Byrne, and N.A. Peppas. Novel Biomimetic Polymer Networks with Tailored Recognition Properties: Functional Components in Diagnostic and Therapeutic Devices. *Research, Technologies, and Applications in BIODEFENSE*, Washington, D.C., August 18-19, 2004.

J.Z. Hilt, M.E. Byrne, and N.A. Peppas. Novel Biomimetic Polymer Networks with Tailored Recognition Properties: Functional Components in Diagnostic and Therapeutic Devices. *Fifth Annual BioMEMS & NANOtech World 2004*, Washington, D.C., August 16-17, 2004.

J.Z. Hilt and N.A. Peppas. Development and Application of Intelligent Polymer Networks as Recognition Elements for Novel Biomedical Microdevices. The 7th US-Japan Symposium on Drug Delivery Systems, Maui, Hawaii, December 14-19, 2003.

J.Z. Hilt, M.E. Byrne, R. Bashir, and N.A. Peppas. Development and Application of Intelligent Polymer Networks as Recognition Elements for Novel Microdevices. *Materials Research Society Fall Meeting 2003*, Boston, MA, December 1-5, 2003. (*****Graduate Student Award Finalist Session)*

J.Z. Hilt, M.E. Byrne, R. Bashir, and N.A. Peppas. Intelligent Polymer Networks As Sensing Elements: Enabling Technologies for Novel Biosensor Platforms. *2003 American Institute of Chemical Engineers Annual Meeting*, San Francisco, CA, November 16-21, 2003.

J.Z. Hilt, M.E. Byrne, and N.A. Peppas. Novel Biomimetic Polymer Networks: Development and Application as Selective Recognition Elements for Biomolecules at the Micro-/Nano-Scale. *2003 American Institute of Chemical Engineers Annual Meeting*, San Francisco, CA, November 16-21, 2003.

J.Z. Hilt, M.E. Byrne, R. Bashir, and N.A. Peppas. Novel BioMEMS Sensor Platform: Fusion of Silicon Technologies with Intelligent Polymer Networks. *Fourth Annual BioMEMS & NANOtech World 2003*, Washington, D.C., August 25-26, 2003.

J.Z. Hilt, M.E. Byrne, and N.A. Peppas. Micropatterning of Bioinspired Recognitive Hydrogels for Microsensing Applications. *20th Annual Houston Conference on Biomedical Engineering Research*, Houston, TX, April 3-4, 2003.

J.Z. Hilt, N.A. Peppas, and R. Bashir. Integration of Environmentally Responsive Hydrogels with Silicon Microcantilevers for Biosensor Applications. *APS March Meeting 2003*, Austin, TX, March 3-7, 2003.

J.Z. Hilt, M.E. Byrne, R. Bashir, and N.A. Peppas. Biomolecule Specific Polymers for Sensing and Diagnostics. *2002 AIChE Annual Meeting*, Indianapolis, IN, November 3-8, 2002.

J.Z. Hilt, R. Bashir, and N.A. Peppas. Environmentally Sensitive Hydrogels Patterned onto Silicon Microcantilevers as a BioMEMS Sensor Platform. *2002 American Institute of Chemical Engineers Annual Meeting*, Indianapolis, IN, November 3-8, 2002.

M.E. Byrne, **J.Z. Hilt**, R. Bashir, K. Park, and N.A. Peppas. Biomimetic Networks as Selective Recognition Elements for Detection of Biomolecules in Microsensor and Microarray Devices. *2002 American Institute of Chemical Engineers Annual Meeting*, Indianapolis, IN, November 3-8, 2002.

PRESENTATIONS (CONT.)

J.Z. Hilt, A. Gupta, R. Bashir, and N.A. Peppas. A BioMEMS Sensor Platform Based on a Cantilever with a Precisely Patterned Environmentally Sensitive Hydrogel. *Second Joint Engineering in Medicine and Biology Society and Biomedical Engineering Society (EMBS-BMES)*, Houston, TX, October 23-26, 2002. (*****Student Finalist Session)*

J.Z. Hilt, R. Bashir, and N.A. Peppas. Ultrasensitive BioMEMS Sensor Based on Silicon Microcantilevers Patterned with Environmentally Responsive Hydrogels. *Third Annual BioMEMS & Biomedical Nanotechnology World 2002*, Columbus, Ohio, September 6-8, 2002.M.E. Byrne, **J.Z. Hilt**, R. Bashir, K. Park, and N.A. Peppas. Biomimetic Materials for Selective Recognition and Microsensing of Biologically Significant Molecules. *Society For Biomaterials 28th Annual Meeting*, Tampa, Florida, April 24-27, 2002.

J.Z. Hilt, A.K. Gupta, R. Bashir, and N.A. Peppas. Environmentally Sensitive Hydrogels Patterned on Silicon Microcantilevers. *APS March Meeting 2002*, Indianapolis, Indiana, March 18-22, 2002.

R. Bashir, **J.Z. Hilt**, A.K. Gupta, and N.A. Peppas. Environmentally Sensitive Hydrogels Patterned on Silicon Microcantilevers. *Materials Research Society Spring Meeting 2002*, San Francisco, California, April 1-5, 2002.

J.Z. Hilt, R. Bashir, and N.A. Peppas. Microfabrication of Biomedical Polymers for Sensor Applications. *Second Annual BioMEMS & Biomedical Nanotechnology World 2001*, Columbus, Ohio, September 22-25, 2001.

N.A. Peppas, M. Byrne, E. Oral, **J.Z. Hilt**, and D. Henthorn. UV Free-Radical Polymerization for Micropatterning and Microimprinting of Poly(ethylene glycol)-Containing Films. *6th International Symposium on Polymers for Advanced Technologies*, Eiliat, Israel, September 5, 2001.

M.J. Pechan, **J.Z. Hilt**, E.E. Fullerton, J.S. Jiang, C.H. Sowers, and S.D. Bader. Anisotropy Determination on Epitaxial Sm-Co/Fe Exchange Springs, *44th Annual Conf. on Magnetism and Magnetic Materials*, San Jose, CA, Nov. 15-18, 1999.

J.Z. Hilt, A.J. Shapiro., R.D. Shull, V.I. Nikitenko, V.S. Gornakov, J.S. Jiang, C.H. Sowers, A. Inomata, and S.D. Bader. Magneto-Optical Indicator Film Investigation of the remagnetization Behavior of Exchange Spring Magnets. *Materials Research Society Spring Meeting 1999*, San Francisco, California, April 5-9, 1999.

J.Z. Hilt, M.J. Pechan, and I.K. Schuller. Dramatic Suppression of Magnetic Coercivity in Thin Ni Films: Role of Morphology and Epitaxy. *43rd Annual Conference on Magnetism and Magnetic Materials*, Miami, Florida, November 9-12, 1998.

J.Z. Hilt, J.J. Picconatto, A. O'Brien, M.J. Pechan, and E.E. Fullerton. Symmetry Influence on Interlayer Coupling in Epitaxial Co/Cr Trilayers Grown on MgO (100) and (110) Substrates. *3rd International Symposium on Metallic Multilayers (MML '98) held jointly with the EMRS Symposium on Magnetic Ultrathin Films and Ultrathin Film Nanostructures*, Vancouver, British Columbia, Canada, June 14-19, 1998.

T. Charlton, D. Lederman, F. Zhang, **J.Z. Hilt**, and M.J. Pechan. Strong In-Plane Magnetic Anisotropy in Co/Re Superlattices. *American Physical Society March Meeting 1998*, Los Angeles, CA, March 16-20, 1998.

J.Z. Hilt, J.J. Picconatto, A. O'Brien, M.J. Pechan, and E.E. Fullerton. Magnetic Anisotropy and Coupling in Epitaxial Co/Cr Trilayers on MgO (100) and MgO (110) Substrates. *Ohio Sectional Meeting of the American Physics Society*, Miami University, Oxford, OH, October 11, 1997.

J.J. Picconatto, A. O'Brien, **J.Z. Hilt**, M.J. Pechan, and E.E. Fullerton. Magnetic Anisotropy and Coupling in Epitaxial Co/Cr Trilayers on MgO (100) and (110) Substrates. *American Physical Society March Meeting 1997*, Kansas City, MO, March 17-21, 1997.

SYMPOSIUMS ORGANIZED

Bionanotechnology Topical Conference, Chair, *2006 American Institute of Chemical Engineers Annual Meeting*, San Francisco, CA, November 12-17, 2006.

Bionanotechnology: The Future of Biomaterials Symposium, Co-Chair, *2006 Society for Biomaterials Annual Meeting*, Pittsburgh, PA, April 26-29, 2006.

Bionanotechnology Topical Conference, Co-Chair, *2005 American Institute of Chemical Engineers Annual Meeting*, Cincinnati, OH, October 30 - November 4, 2005.

Biomaterials and Nanotechnology Symposium, Co-Chair, *2005 Society for Biomaterials Annual Meeting*, Memphis, TN, April 27-30, 2005.

SESSIONS CHAIRED

Biomimesis in Drug Delivery, Co-Chair, *2006 Society for Biomaterials Annual Meeting*, Pittsburgh, PA, April 26-29, 2006.

Polymers as Tailorable Functional Components, Co-Chair, *2005 Biomedical Engineering Society Annual Fall Meeting,* Baltimore, MD, September 28 - October 1, 2005

Bionanotechnology Symposium Sessions, Chair or Co-Chair, *2005 American Institute of Chemical Engineers Annual Meeting*, Cincinnati, OH, October 30 - November 4, 2005.

Nanofabrication of Biosensing Devices, Co-Chair, *2004 American Institute of Chemical Engineers Annual Meeting,* Austin, TX, November 7-12, 2004.

Biological Materials for Patterning and Assembly of Nanomaterials, Chair, *2004 American Institute of Chemical Engineers Annual Meeting,* Austin, TX, November 7-12, 2004.

PATENTS

R. Arsenescu, **J.Z. Hilt**, and C. Pramudiati. Drug Eluting Biodegradable Polymer. *U.S. Provisional Application in preparation.*

N.A. Peppas, **J.Z. Hilt**, and M.E. Byrne. Configurational biomimetic imprinted polymers (CBIP) for controlled drug loading and delivery. *U.S. Provisional Application Filed: April 28, 2005.*

R. Bashir, N.A. Peppas, **J.Z. Hilt**, and A.K. Gupta. Microscale sensor element and related device and method of manufacture. *U.S. Provisional Application No. 60/366,32. Filed: March 20, 2002.*

IN THE NEWS

Swell Sensors. *Nature Materials Update Highlights*. October 17, 2002.

Micromechanical cantilever as an ultrasensitive pH microsensor. *Highlighted in MEMS/NEMS section of Virtual Journal of Nanoscale Science & Technology*, Volume 6, Issue 17, October 21, 2002

PROPOSAL REVIEWER

Reviewed proposals on a *National Science Foundation (NSF)* Research Experience for Undergraduate (REU) Panel and *National Institutes of Health (NIH) NIAID Panel on, "Cooperative Research Partnerships for Biodefense".*

JOURNAL REVIEWER

Reviewed manuscripts for publication in *Advanced Materials, Langmuir, AIChE Journal, Trends in Biotechnology, Rheologica Acta, Drug Discovery Today, Journal of Biomedical Materials Research: Part A, Journal of Membrane Science, Journal of Biomedical Materials Research Part B: Applied Biomaterials*, *Macromolecules, Macromolecular Chemistry and Physics, Journal of Biomedical Nanotechnology,* and *Polymer*.

SHORT COURSES

Advances in Controlled Release Technology: Polymeric Delivery Systems for Drugs, Pesticides, and Foods. Massachusetts Institute of Technology, Cambridge, MA, June 18-22, 2001.

PROFESSIONAL MEMBERSHIPS

American Institute of Chemical Engineers (AIChE), American Chemical Society (ACS), American Physical Society (APS), Biomedical Engineering Society (BMES), Controlled Release Society (CRS), IEEE Engineering in Medicine and Biology (IEEE EMBS), International Society for BioMEMS and Biomedical Nanotechnology (ISBBN), Materials Research Society (MRS), and Society for Biomaterials (SFB)