

THERESA S. MAYER

Professor of Electrical Engineering, Pennsylvania State University

Address

231 Electrical Engineering West Building,
Pennsylvania State University, University Park, PA 16802,
(814) 863-8458 (office) (814) 865-7065 (fax); tsm2@psu.edu

Professional Preparation

Ph.D., Electrical Engineering,	Purdue University,	West Lafayette, IN,	1993.
M.S., Electrical Engineering,	Purdue University,	West Lafayette, IN,	1989.
B.S., Electrical Engineering,	Virginia Tech,	Blacksburg, VA,	1988.

Appointments

Pennsylvania State University, Associate Director, Materials Research Institute	2006-Pres.
Pennsylvania State University, Professor of Electrical Engineering,	2005-Pres.
Pennsylvania State University, Associate Professor of Electrical Engineering,	1999-2005
Pennsylvania State University, Assistant Professor of Electrical Engineering,	1994-1999.
Purdue University, Research Associate,	1988-1993.

Professional Awards and Activities

- Va Tech Advance Scholar, 2006.
- Penn State Engineering Society Outstanding Teaching Award, 2000.
- NSF CAREER Award, 1995.
- Kodak Fellow, 1991-1993.
- NSF National Nanotechnology Infrastructure Network Site Director, 2006-pres.
- IEEE Device Research Conference, Technical Program and General Chair, 2005-2006., Board Member, 2004-pres.
- Gordon Research Conference, Nanofabrication, Chair Elect and Chair, 2004-2006.
- Executive Committee and Electromagnetically-Coupled Nanostructures Research Group Leader, Penn State Center for Nanoscale Science, 2004-pres.; Executive Committee, NRI/SRC Midwest Institute for Nanoelectronics and Discovery, 2008-pres.
- Electronic Materials Conference Program Committee, 1999-pres., Treasurer, 2003-2005; Device Research Conference Committee, 2000-2006; International Symposium on Compound Semiconductors Technical Program Committee, 1997-2000; and Conference on Lasers and Electro-Optics Program Committee, 1997-2000.

Synergistic Activities

- Curricular development for introductory circuits and electronic courses. Participated in NSF Sponsored Engineering Education Coalition (ECSEL) and General Electric Foundation Grant for curricular improvement (1997 - 2000).
- Faculty advisor to PSU student section of Society of Women Engineers, (1994 - 1998) and member of Women in Engineering Program (WEP) Advisory Board (1993 - 1999).
- Host female students during Summer Opportunities and Research for Space (SOARS) Program and Expanding Your Horizons Workshops (1999 - Present).
- Faculty mentor in Undergraduate Teaching Intern Program and NSF Research Experience for Undergraduates (REU) advisor (1994 - Present).
- Faculty mentoring program to 15 middle and high-school girls (2006 - Present).
- Introduction and hands-on nanotechnology tutorials at Society of Hispanic Professional Engineers National Meetings with NSF NNIN (2007 - Present).

Five Relevant Publications

- L. T. Cai, M. A. Cabassi, H. Yoon, O. M. Cabarcos, C. L. McGuinness, A. K. Flatt, D. L. Allara, J. M. Tour, and T. S. Mayer, "Nanoscale Molecular Switching of Thiol-Substituted Oligoanilines," *Nanolett.* 5: 2365-2372 (2005).
- Y. Selzer, L. Cai, M. A. Cabassi, Y. Yao, J. M. Tour, T. S. Mayer, and D. L. Allara, "The Effect of Local Environment on Molecular Conduction: Isolated Molecule versus Self-Assembled Monolayer," *Nanoletters* 5: 61 - 65 (2005).

- Y. Selzer, M. A. Cabassi, T. S. Mayer, and D. L. Allara, "Thermally Activated Conduction in Molecular Junctions," *J. Am. Chem. Soc.* **126**: 4052-4053 (2004).
- L. Cai, H. Skulason, J. Kusmerick, S. Pollack, J. Naciri, R. Shashidhar, D. L. Allara, T. E. Mallouk, and T. S. Mayer, "Nanowire-based Molecular Monolayer Junctions: Synthesis, Assembly, and Electrical Characterization," *J. Phys. Chem.* **B108**: 2827-2832 (2004).
- J. K. N. Mbindyo, T. E. Mallouk, J. B. Mattzela, I. Kratochvilova, B. Razavi, T. N. Jackson, and T. S. Mayer, "Template Synthesis of Metal Nanowires Containing Monolayer Molecular Junctions," *J. Am. Chem. Soc.* **124**: 4020-4026 (2002).

Five Other Significant Publications

- Y. Cao, A. E. Kovalev, J. Kim, T. S. Mayer, and T. E. Mallouk, "Electrical and Chemical Sensing Properties of Individual Conducting Polymer Nanowires," *Nanoletters*, accepted.
- T.-T. Ho, Y. Wang, S. Eichfeld, K. K. Lew, B. Liu, S. E. Mohny, J. M. Redwing, and T. S. Mayer, "In-situ Axially-doped n-channel Silicon Nanowire Field Effect Transistors," *Nanoletters*, accepted.
- M. Li, R. B. Bhiladvala, T. Morrow, J. Sioss, K.-K. Lew, J. M. Redwing, C. D. Keating, and T. S. Mayer, "Bottom-up Assembly of Large-area Nanowire Resonator Arrays," *Nature Nanotechnol.* **3**: pp. 88 – 92 (2008).
- Y. Selzer, M. A. Cabassi, T. S. Mayer, and D. L. Allara, "Temperature Effects on Conduction Through a Molecular Junction," *Nanotechnology* **15**: S483-488 (2004).
- P. A. Smith, C. D. Nordquist, T. N. Jackson, T. S. Mayer, B. R. Martin, J. Mbindyo, and T. E. Mallouk, "Electric field assisted assembly and alignment of metallic nanowires," *Appl. Phys. Lett.* **77**: 1399-1401 (2000).

Collaborations and Other Affiliations

Collaborators: David Allara (PSU), Moses Chan (PSU), Gary Clawson (PSU-Hershey), Vincent Crespi (PSU), Suman Datta (PSU), Elizabeth Dickey (PSU), Mary Jane Irwin (PSU), Christine Keating (PSU), Thomas Mallouk (PSU), Suzanne Mohny (PSU), Vijay Narayanan (PSU), Joan Redwing (PSU), James Tour (Rice), Susan Trolier-McKinstry (PSU), Douglas Werner (PSU).

Graduate thesis advisor: M. R. Melloch, Purdue University

Former graduate students and postdocs (last 5 years): Lisa Zavieh, Christopher Nordquist, Peter Smith, Steven Vogt, Ivan Divliansky, Robert Drupp, Richard Geiger, Yanfeng Wang, Jacob Smith, Marco Cabassi, Rebeca Diaz, Heayoung Yoon, Mingwei Li, Ludmil Zambov (post-doc), Lintao Cai (post-doc), Irena Kratochvilova (post-doc), Yong-Hong Ye (post-doc), Mohammad Ishlam (post-doc).