

J. TODD HASTINGS

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A. Professional preparation

Massachusetts Institute of Technology	Electrical Engineering	Ph.D. 2003
Purdue University, West Lafayette, IN	Electrical Engineering	M.S. 1998
Centre College, Danville, KY	Physics	B.S. 1996

B. Appointments

2009-present Associate Professor with tenure, Department of Electrical and Computer Engineering, University of Kentucky, Lexington, KY.

2003-2009 Assistant Professor, Department of Electrical and Computer Engineering, University of Kentucky, Lexington, KY.

1998-2003 NSF Graduate Fellow and Research Assistant, NanoStructures Laboratory / Research Laboratory of Electronics, Massachusetts Institute of Technology; Cambridge, MA.

1996-1998 Research Assistant, Department of Electrical and Computer Engineering and Center for Collaborative Manufacturing, Purdue University; West Lafayette, IN.

C. Publications

- [1] E. U. Donev and J. T. Hastings, "Liquid-precursor electron-beam-induced deposition of Pt nanostructures: dose, proximity, resolution," *Nanotechnology*, **20**, p. 505302, (2009).
- [2] E. U. Donev and J. T. Hastings, "Electron-Beam-Induced Deposition of Platinum from a Liquid Precursor," *Nano Letters*, **9**, pp. 2715-2718 (2009).
- [3] C. B. Samantaray and J. T. Hastings, "Amino-propyl-triethoxy-silane on aluminum fiducial grids for spatial-phase-locked electron-beam lithography," *Journal of Vacuum Science & Technology B*, **27**, pp. 2558-2562, (2009).
- [4] Yang and J.T. Hastings, "FPGA Implementation of Real-time Spatial-Phase Locking for Electron Beam Lithography," *Journal of Vacuum Science & Technology B.*, **26**, pp. 2316-2321 (2008).
- [5] Y. Yang and J. T. Hastings, "Real-time Spatial Phase Locking for Vector-Scan Electron Beam Lithography," *Journal of Vacuum Science & Technology B.*, **25**, pp. 2072-2076, (2007)
- [6] V. Karre, P. D. Keathley, G. Jing, and J. T. Hastings, "Direct Electron-Beam Patterning of Teflon AF," *IEEE Transactions on Nanotechnology*, **8**, pp. 139-141 (2009).
- [7] J. Guo, P. D. Keathley, and J. T. Hastings, "Dual-mode surface-plasmon-resonance sensors using angular interrogation," *Opt. Lett.*, vol. 33, pp. 512-514 (2008).

- [8] J. T. Hastings, "Optimizing Surface-Plasmon Resonance Sensors for Limit of Detection Based on a Cramer Rao Bound," *IEEE Sensors Journal*, **8**, pp. 170-175 (2008).
- [9] C. B. Samantaray and J. T. Hastings, "Self-assembled monolayer fiducial grids for spatial-phase-locked electron-beam lithography," *Journal of Vacuum Science & Technology B*, **26**, pp. 2351-2355 (2008).
- [10] J. T. Hastings, J. Guo, P. D. Keathley, P. B. Kumaresh, Y. Wei, S. Law, and L. G. Bachas, "Optimal self-referenced sensing using long- and short- range surface plasmons," *Opt. Express*, **15**, pp. 17661-17672 (2007).

D. Synergistic activities

1. Supervised four male and three female NSF REU students (two from HBCU institutions, four from underrepresented groups) from 2006-2010 to work on surface-plasmon resonance sensing and nanoparticle assembly.
2. Hosted Rogers (11th grade) and Robinson (9th grade) scholars from economically depressed Appalachian counties. Organized a nanotechnology laboratory demonstration in which the scholars designed and fabricated their own lithographic pattern on a silicon wafer. Organized a hand-on photonic demonstration to measure the spectra of various light sources.
3. Section head, session chair and conference organizer for the Electron, Ion, and Photon Beam and Nanofabrication (EIPBN) Conference (2006-2010) and for the 2007 SPIE Security and Defense Symposium "Photonic Sensors II" session
4. Participant and presenter at the NSF-Germany Young Researchers Nanotechnology Workshop, (04/1405), Karlsruhe, Germany and at the NSF/MEXT Japan-US Symposium on Tools and Metrology for Nanotechnology. (01/23/2003).
5. Two U.S. patents granted, and one, non-provisional, application pending.

E. Collaborators and other affiliations

(a) Collaborators: G. Barbastathis (MIT), D. Bhattacharyya (UK), J. Burmeister (UK), D. Carter (Charles Stark Draper Laboratory, Cambridge, MA.), Z. Chen (UK), T. Coates (UK), C. Crofcheck (UK), R. Cohn (U. of Louisville), G. Gerhardt (UK), D. Gil (IBM Microelectronics, East Fishkill, NY), J. Goodberlet (MIT), B. Hinds, (UK), J. Z. Hilt (UK), P. Huettl (UK), B. Knutson (UK), M. Lim (Clarendon Photonics), R. Lodder (UK), R. Menon (MIT), P. Mengüç (UK), T. Murphy (University of Maryland, College Park), F. Pomerleau (UK), S. Rankin (UK), M. Schattenburg (MIT), H. Smith (MIT), F. Stellacci (MIT), I. St. Omer (UK), M. Walsh (MIT), F. Zhang (MIT).

(b) Graduate and Postdoctoral Advisors:

Dr. Henry Smith, Massachusetts Institute of Technology, Cambridge, MA.

Dr. Jerry Woodall, Purdue University, West Lafayette, IN.

(c) Thesis Advisor and Postgraduate-Scholar Sponsor:

Postdoctoral Scholars: Chandan Samantaray and Eugene Donev. *Graduate Students:* Gazi Huda, P. Donald Keathley, Stephen Maloney, Neha Nehru, Vijayasree Karre, Prashanthi Para, Akil Matcheswala, Jing Guo, Yugu Yang, Rajesh Namepalli, Anush Krishnamurthy, Babitha Bommalakunta, Adam Chamberlain, Raghunandan Donipudi, Sandhya Pochiraju, Prasanth Bathae Kumeresh, Silpa Nagari, Eleanor Hawes (co-advised by C. Croftcheck and M. Pinar Menguc), and Sarang Kortikar (co-advised with L. S. Stevens).