

Biographical Sketch – Heikenfeld – University of Cincinnati

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a. Professional Preparation

<u>Institution</u>	<u>Field of Study</u>	<u>Degree, Years</u>
University of Cincinnati	Electrical Engineering	Ph.D., 1998-2001.
University of Cincinnati	Electrical Engineering	B.S., 1993-1998.
	Double Minor: Physics, Photonics.	

b. Appointments

2005-Pres.	University of Cincinnati, Cincinnati, Ohio. <i>Associate Professor.</i>
2010-Pres.	Ohio Center for Microfluidic Innovation, <i>Director and Founder</i>
2009- Pres.	Gamma Dynamics LLC, Cincinnati, Ohio. <i>Principal Scientist, Co-founder.*</i>
2001-2005	Extreme Photonix LLC, Cincinnati, Ohio. <i>Principal Scientist, Co-founder.</i>
1996–1997	3M Precision Optics Inc., Cincinnati, Ohio. <i>Associate Equipment Engineer.</i>
1995	Hal Computer Systems Inc., San Jose, California. <i>VLSI Design Engineer.</i>

* Prof. Heikenfeld has hired a full-time CTO and president for this company, and currently spends no more than 2 hours per week in its business operations, only using time outside his university role.

c. Awards and Honors

- 2013 - University of Cincinnati Established Entrepreneur Award (university)
- 2012 - Distinguished Engineering Researcher (college)
 - Eta Kappa Nu Outstanding Professor Award (school)
 - William H. Middendorf Research Excellence Award (school)
- 2010 - University of Cincinnati Emerging Entrepreneur Award (university)
- 2009 - Cincinnati Innovates, Taft Stettinius & Hollister Patent Award – 1st Place (273 entrants)
- 2009 - COE Research Award for Young Faculty (college)
 - Eta-Kappa-Nu Professor of the Year (school)
- 2008 - Neil Wandmacher Teaching Award for Young Faculty (college)
- 2007 - NSF CAREER Award.
- 2007 *1st Ever Recipient of All Three School Awards in the Same Year (>40 faculty)*
 - William E. Restemeyer Teaching Excellence Award
 - William H. Middendorf Research Excellence Award
 - Eta-Kappa-Nu Professor of the Year
- 2006 - AFOSR Young Investigator Award (one of only 21 awarded nationally across all sciences).

d. Publications

Relevant Publications

1. L. Hou, X. Wang, J. Hagen, I. Papautsky, R. Naik, N. Loughnane, "Artificial Microfluidic Skin for In Vitro Perspiration Simulation and Testing," Accepted, *Lab on a Chip*, 2013.
2. J. H. Noh, J. Noh, E. Kreit, J. Heikenfeld, and P. D. Rack, "Toward Active-matrix Lab-on-a-chip: Programmable Electrofluidic Control Enabled by Arrayed Oxide Thin Film Transistors," *Lab on a Chip*, vol. 12, pp. 353-360, 2012.
3. J. Heikenfeld, P. Drzaic, J. Yeo, and T. Koch, "A Critical Review of the Present and Future Prospects for Electronic Paper," *J. Soc. for Inf. Disp.*, vol. 19(2), pp. 129-156, 10.1889/JSID19.2.129, 2011.
4. E. Kreit, B. M. Mognetti, J. M. Yeomans, and J. Heikenfeld, "Partial-post Laplace Barriers for Virtual Confinement, Stable Displacement, and >5 cm S-1 Electrowetting Transport," *Lab on a Chip*, vol. 11, pp. 4221-4227, 2011.
5. E. Kreit, L. M. Mäthger, R. T. Hanlon, P. B. Dennis, R. R. Naik, E. Forsythe, and J. Heikenfeld, "Biological vs. Electronic Adaptive Coloration: How Can One Inform the Other?," *J. Royal Society Interface* – Sept. 26, 2012, rsif20120601.

Other Significant Publications

1. M. Hagedon, S. Yang, A. Russell, and J. Heikenfeld, "Bright e-Paper By Transport of Ink Through a White Electrofluidic Imaging Film", Nature Communications – accepted (in press).
2. M. Dhindsa, J. Heikenfeld, S. Kwon, J. Park, P. D. Rack, and I. Papautsky, "Virtual electrowetting channels: electronic liquid transport with continuous channel functionality," *Lab on a Chip*, vol. 10(7), pp. 832-836, 2010.
3. J. Heikenfeld, *Lite, Brite, Displays*, IEEE Spectrum, April 2010, pp. 22-28. featured on the cover.
4. P. McManamon, E. Watson, P. Bos, M. Escuti J. Heikenfeld, S. Serati, and E. Watson, *A Review of Phased Array Steering for Narrow-Band Electrooptical Systems*, Proceedings of the IEEE, Vol. 97, No. 6, p. 1078-1096, 2009.
5. S. Chevalliot, S. Kuiper, and J. Heikenfeld, "Experimental Validation of the Invariance of Electrowetting Contact Angle Saturation," *J. Adhesion Sci. Technol.*, pp. 1-21, 10.1163/156856111X599580, 2011.

Cumulative Publications/Presentations Since 1999:

Book Chapters (3), Invited Articles (16) Journal Articles (60), Conference Proceedings (65), Invited Presentations (35), Total Presentations (124). ISI citation statistics: >180 year currently, average of 15.4 citations per article published.

e. Example Synergistic Activities (not comprehensive)

- Led the creation of UC's new UC³ undergraduate certificate program, which focuses on three 'C' tracks surrounding innovation transformation: (1) **Conceptualization** – 'how do I get a great idea'; (2) **Commercialization** – 'how do I get my idea out the door, into society'; (2) **Change** – 'what are the societal, environmental, political, etc. impacts of my innovation'. This highly-accessible certificate program is supported by 5 colleges at UC, with entry of >60 students/yr.
- Founding PI of the \$5.9M Ohio Center for Microfluidic Innovation. The center has the mission of seeding a new industrial cluster in southwest Ohio for commercializing technologies that manipulate tiny amounts of fluids inside polymer-microchips. OCMI provides industrial user access, along with a setting to collaborate with the University of Cincinnati's internationally recognized microfluidics scientists. OCMI provides the complete tool set needed to take microfluidic devices from concept, to pilot fabrication, all the way through industry standard characterization and performance specification.
- McNicholas High School Science and Math Mentors Program, every year since 2005;
- Men and Women in Engineering Weeks – run the EE program for and ~40 high school young women, and ~40 high school young men, each year since 2006;
- Associate Editor IEEE J. Display Tech. 2007-present, Associate Editor Silicon 2009-2012, IEEE SPAC National Speaker 2009 - present, IEEE Photonics Board of Governors 2007-2010, SPIE Congressional Science & Technology Team 2008, IEEE LEOS Distinguished Lecture Committee 2008-2009, NSF ERC Site Reviewer 2010, NSF Panel Review 2006, 2007, 2008, 2010, 2011.
- Senior Member IEEE, Senior Member Society for Information Display, IEEE Photonics, Optical Society of America, SPIE, Materials Research Society, National Academy of Inventors.

f. Collaborators and Other Affiliations (last 2 years)

- Dr. Stein Kuiper, CTO, Optilux.
- Dr. Kenneth Dean, CTO, Gamma Dynamics.
- Prof. Michael Dickey – Chemical & Biomolecular Engineering Department, NC State University.
- Prof. Philip Rack - Materials Science and Engineering Dept., University of Tennessee.
- Dr. Mark Goulding – Merck
- Dr. Russel Schwartz – CTO, Sun Chemical
- Prof. Andrew Steckl – Ph.D. Advisor, University of Cincinnati