

Sagnik Pal

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Biophotonics and Microsystems Lab,
Dept. of Electrical and Computer Engg.,
University of Florida, FL 32611.

Phone: 352-870-7126 (USA)
Email: sagnique@gmail.com, sagnik@ufl.edu

<http://sagnik.yolasite.com>, <http://www.linkedin.com/pub/sagnik-pal/4a/266/9a5>

Objective: Research position geared towards the ideation, design, reliability and fabrication of novel MEMS.

Education:

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|---------|-------------------|---|
| 2006-11 | PhD | Dept. of Electrical and Computer Engineering, University of Florida, Gainesville. <ul style="list-style-type: none">• Dissertation: Modeling and Reliability of Electrothermal Micromirrors• GPA: 3.95/4.0 |
| 2004-06 | M.Tech
(Hons.) | Electrical Engineering (Microwave & Photonics), Indian Institute of Technology, Kanpur. <ul style="list-style-type: none">• Dissertation: Theory and Applications of Optically Actuated MEMS Structures• Ranked 1st with a CPI of 10.00/10.00.• Academic Excellence Award, 2006. |
| 2000-04 | B.Tech
(Hons.) | Electrical Engineering, Indian Institute of Technology, Kharagpur. <ul style="list-style-type: none">• Thesis: Electric Machine Analysis Using Field Theory• CGPA: 8.14/10.00 |

Employment:

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| 10/2011-
Present | Research Associate, Biophotonics and Microsystems Lab, Univ. of Florida. <ul style="list-style-type: none">• Designed in-plane transducers for miniature interferometer based bioimaging. |
| 08/2006-
09/2011 | Research Assistant, Biophotonics and Microsystems Lab, Univ. of Florida. <ul style="list-style-type: none">• Designed and fabricated novel micromirrors with low center-shift, high fill-factor, and improved voltage and power requirements. The new designs enable miniaturization of bio-imaging endoscopic probes.• Proposed and implemented novel fabrication process for robust, fast electrothermal micromirrors.• Proposed, analyzed and fabricated novel MEMS transducers known as curved multimorphs.• Proposed novel in-plane MEMS transducers that produce order of magnitude greater displacement compared to existing designs.• Optimized mirror design that resulted in ten-fold improvement in scan-range. The mirrors were used in dental imaging probes.• Developed comprehensive electrothermomechanical device models.• Demonstrated model-based micromirror control.• Supervised experiments on device reliability by two graduate students.• Delivered lectures on thermal modeling for a course on "Principles of MEMS Transducers," Instructor: Dr. Huikai Xie, 2009.• More details at http://sagnik.yolasite.com/projects.php. |
| 2004-06 | Teaching Assistant, Indian Institute of Technology, Kanpur. <ul style="list-style-type: none">• Conducted weekly lab sessions on COMSOL for a graduate-level course on "Finite Element Method for Electric & Magnetic Fields," Instructor: Dr. Nandini Gupta, 2006.• Evaluated student performance and prepared teaching material for a course on "Microelectromechanical Systems," Instructor: Dr. Anjan K. Ghosh, 2005.• Prepared e-learning study material for National Programme on Technology Enhanced Learning, Supervisor: Dr. Anjan K. Ghosh, 2004. |

Fabrication and Related Skills: 4+ years clean-room experience

Processing	Hands-on experience with RIE, DRIE, wet-etching and lift-off; thin-film sputtering, PECVD and e-beam deposition; lithography
Metrology	Profilometry, Ellipsometry, SEM
Miscellaneous	Dicing saw, Ball bonder

Software Skills:

Simulation	COMSOL, Ansys, IntelliSuite, Coventorware, SPICE
Computing	Matlab, Mathematica
Layout	Cadence, LEdit
Programming	C, C++, Java, SQL
Miscellaneous	Labview, HTML, familiarity with Linux and Windows

Languages: English, Hindi, Bengali, Sanskrit

Patents Pending:

- Microtransducers that produce large in-plane displacements; S. Pal, S. R. Samuelson, H. Xie, 2011.
- Novel curved multimorphs that bend and twist; S. Pal, H. Xie, K. Zawoy, 2011.
- Fabrication of robust, fast electrothermal MEMS; S. Pal and H. Xie, 2010.

Selected Publications: 8 journal papers and 18 conference papers

- **S. Pal** and H. Xie, "A process for fabricating robust electrothermal micromirrors with customizable thermal response time and power consumption," in IEEE Optical MEMS and Nanophotonics, Istanbul, Turkey, 2011, pp. 157-158.
- **S. Pal**, H. Xie, "Analysis and fabrication of curved multimorph transducers that undergo bending and twisting," IEEE/ASME Journal of Microelectromechanical Systems, In Press (accepted), 2012.
- **S. Pal**, H. Xie, "A curved multimorph based electrothermal micromirror with large scan range and low drive voltage," Sensors & Actuators: A. Physical, Vol. 170, pp. 156-163, 2011.

Peer Review Work:

- Journal of Micromechanics and Microengineering
- Sensors and Actuators: A Physical

Administrative Positions:

2009-11	Lab-Safety Committee Member, Interdisciplinary Microsystems Group, University of Florida. <ul style="list-style-type: none">• Enforced safety procedures• Trained lab personnel
2007-09	Web Administrator, Biophotonics and Microsystems Lab, University of Florida. <ul style="list-style-type: none">• Created website• Ensured that website is up-to-date, aesthetic and error free
2004-05	Coordinator, Microwave & Photonics Research Group, Indian Institute of Technology, Kanpur. <ul style="list-style-type: none">• Organized lectures, seminars and discussions• Coordinated information kiosk for prospective students

Industrial Training:

05/2003-06/2003	Wire & Wire Ropes Division, Usha Martin, Ranchi, India. <ul style="list-style-type: none">• Programmed drives and microcontrollers• Tested electric machines
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Academic Honors:

- Inducted into IEEE-HKN (Eta Kappa Nu) Honor Society, 2008.
- Academic Excellence Award, IIT Kanpur, 2006.
- Obtained 99.17 percentile in all-India Graduate Aptitude Test in Engineering (Electrical), 2004.
- Ranked 638 in IIT-Joint Entrance Exam, 2000.
- Several certificates of merit in Mathematics, Physics, Chemistry and English, 1996-2000.

Additional Accomplishments:

- Ranked 5th in marathon, Josh'05, IIT Kanpur, 2005.
- Certificate of Proficiency, 3rd kyu, Shotokan Karate-Do Federation, 1997.