RASHID BASHIR

Grainger Distinguished Chair of Engineering, Professor of Bioengineering,
Executive Associate Dean and Chief Diversity Officer, Carle Illinois College of Medicine

CONTACT INFORMATION

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SUMMARY:

Rashid Bashir completed his Ph.D. from Purdue University in Oct. 1992. From Oct. 1992 to Oct. 1998, he worked at National Semiconductor in the Analog/Mixed Signal Process Technology Development Group, where he was promoted to Sr. Engineering Manager. At National Semiconductor, he led the development and commercialization of 4 analog semiconductor process technologies. He joined Purdue University in Oct. 1998 as an Assistant Professor and was later promoted to Professor of Electrical and Computer Engineering and a Courtesy Professor of Biomedical Engineering and Mechanical Engineering. In Oct. 2007, he joined the University of Illinois at Urbana-Champaign as the Abel Bliss Professor of Engineering, and Professor of Electrical and Computer Engineering & Bioengineering. He was the Director of the Micro and Nanotechnology Laboratory (mntl.illinois.edu), a campus-wide clean room facility, from Oct. 2007 to Aug. 2013 and the Co-Director of the campus-wide Center for Nanoscale Science and Technology (www.cnst.illinois.edu), a "collaboratory" aimed at facilitating center grants and large initiatives around campus in the area of nanotechnology. In Oct. 2016, he was named the Grainger Distinguished Chair in Engineering. From Aug. 2013 to Aug 2017, he was the head of the Bioengineering Department. Since Jan. 2017, he has been the Interim Vice Dean and Chief Diversity Officer of the new Carle-Illinois "Engineering-Based" College of Medicine at UIUC and was appointed as the Executive Associate Dean and Chief Diversity Officer in Aug 2017.

He has authored or co-authored over 220 journal papers, over 200 conference papers and conference abstracts, and over 100 invited talks, and has been granted 45 patents. He is a fellow of 7 international professional societies (IEEE, AIMBE, AAAS, APS, IAMBE, RSC, and BMES). His research interests include bionanotechnology, BioMEMS, lab on a chip, interfacing of biology and engineering from the molecular to the tissue scale, and applications of semiconductor fabrication to biomedical engineering, all applied to solving biomedical problems. Prof. Bashir's key technical contributions and achievements lie in the area of BioMEMS and biomedical nanotechnology, especially in the use of electrical- or mechanical-based label-free methods for detection of biological entities on a chip. In addition, he has also made key contributions to 3-D fabrication methods that can be used for tissue engineering and development of cellular systems. He has been involved in 3 startups that have licensed his technologies (BioVitesse, Inc., Daktari Diagnostics, and, most recently, Prenosis, Inc.).

In addition to leading his own research group, he was the PI on an NSF IGERT on Cellular and Molecular Mechanics and Bionanotechnology (2009–2016) and PI on an NIH Training Grant on Cancer Nanotechnology (2009–2016). He is also the campus lead and Co-PI on an NSF Science and Technology Center (STC) on Emergent Behavior of Integrated Cellular Systems (headquartered at MIT, with

partners at Georgia Tech and UIUC) (2009–2015, and renewed for another 5 years 2015–2020). He was also Deputy Director of the NSF Nanobio Node of the NcN (Network for Computational Nanotechnology). He also served on the external advisory board of the NIH-funded P41 BioMEMS Resource Center at Harvard/MGH and the NIH-funded Center for Cancer Nanotechnology Excellence at Stanford University, and on various editorial boards.

EDUCATION:

BSEE	Dec. 1987	Texas Tech. University, Lubbock, TX. **Summa Cum Laude**: "Highest Ranking Graduate in College of Engineering"
MSEE	Aug. 1989	Purdue University, West Lafayette, Indiana
Ph.D.	Dec. 1992	Purdue University, West Lafayette, Indiana

EXPERTISE AND CURRENT INTERESTS:

BioMEMS and biosensors, Bionanotechnology, Nanomedicine, Applications of MEMS and nanotechnology in medical and biological problems, Multi-scale tissue engineering, cellular machines.

HONORS AND AWARDS:

- Fellow of Royal Society of Chemistry, 2018.
- Pritzker Distinguished Lecture Award from Biomedical Engineering Society Meeting, 2018.
- UIUC Campus Award for Excellence in Faculty Leadership, 2017.
- Grainger Distinguished Chair in Engineering, University of Illinois at Urbana-Champaign, 2016–present.
- Fellow of the Biomedical Engineering Society (BMES), 2015.
- Fellow of the International Academy of Medical and Biological Engineering (IAMBE), 2015.
- Fellow of the American Physical Society (APS), 2013.
- Fellow of the American Association for the Advancement of Science (AAAS), 2012.
- IEEE EMBS Technical Achievement Award, "For significant contributions to the development of micro and nanoscale biosensors," 2012.
- Fellow of the American Institute for Medical and Biological Engineering (AIMBE), 2010.
- Fellow of the Institute of Electrical and Electronics Engineers (IEEE), 2009.
- IEEE Electron Device Society EDS Distinguished Lecturer, 2009–2014.
- Abel Bliss Professor of Engineering, University of Illinois at Urbana-Champaign, 2007–2016.
- 2006 Agricultural Team Research Award: Biosensors for Food Safety, Purdue University.
- Purdue University Faculty Scholar, 2005–2010.
- *Small Times Magazine*: one of five Finalists for "Innovator of the Year" Award, 2005.
- Honorary Member, Golden Key International Honor Society, 2005.
- Student Poster Award at 2003 BioMEMS and Biomedical Nanotechnology World Congress Meeting, Columbus, OH (graduate student Rafael Gomez).
- "Education and Mentorship Award" at the 2003 BioMEMS and Biomedical Nanotechnology World Congress Meeting, Columbus, OH.
- "Global Indus Technovator" Award 2003, in Materials and Devices, from the MIT Sloan Business School and the Indian Business Club. http://technovators.mit.edu/. A Top 20 technologist of South Asian background in 2003.
- Student Poster Award at 2002 BioMEMS and Biomedical Nanotechnology World Congress Meeting, Columbus, OH (graduate student Haibo Li).
- "Technology Translation Award, 2001," BioMEMS and Biomedical Nanotechnology World Congress Meeting, Columbus, OH.

- NSF Faculty Early Career Award, 2000–2004.
- Ruth and Joel Spira "Outstanding Teacher Award" from the School of Electrical and Computer Engineering, Purdue University, 2000.
- Over 15 Patent Achievement Awards from National Semiconductor Corp., 1993–1998.
- "Highest Ranking Graduate in the College of Engineering," Texas Tech University, December 1987.
- Engineering Scholarship at Texas Tech University, January 1985 to December 1987; President's List/Dean's List, August 1984 to December 1987.

PROFESSIONAL EXPERIENCE:

Executive Associate Dean and Chief Diversity Officer, Carle Illinois College of Medicine, Urbana, IL. Aug. 2017 – present.

Interim Vice Dean and Chief Diversity Officer, Carle Illinois College of Medicine, University of Illinois at Urbana-Champaign, Jan. 2017-Aug. 2017.

Faculty Affiliate, Materials Science and Engineering, University of Illinois at Urbana-Champaign, Oct. 2016–present.

Chief Scientist, Prenosis, Inc. Aug. 2016-present.

Faculty Affiliate, Molecular and Integrative Physiology, University of Illinois at Urbana-Champaign, Aug. 2015–present.

Faculty Affiliate, Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Aug. 2014–present.

Head, Department of Bioengineering, University of Illinois at Urbana-Champaign, Aug. 2013–Aug 2017.

Faculty Affiliate, Materials Research Laboratory, University of Illinois at Urbana-Champaign, Jan. 2009–present.

Faculty Affiliate, Beckman Institute, University of Illinois at Urbana-Champaign, July 2008–present.

Faculty Affiliate, Institute of Genomic Biology, University of Illinois at Urbana-Champaign, Mar. 2008–present.

Abel Bliss Professor, Electrical and Computer Engineering & Bioengineering, University of Illinois at Urbana-Champaign, Oct. 2007–2016.

Visiting Scientist, Massachusetts General Hospital, Cambridge, MA & Research Fellow, Shriner's Hospital for Children, Cambridge, MA (host: Prof. Mehmet Toner), May 2006–present.

Director, Micro and Nanotechnology Laboratory, a campus-wide clean room and nanotechnology facility at the University of Illinois at Urbana-Champaign (www.mntl.illinois.edu), Oct. 2007–Aug 2013.

Co-Director (along with Provost Ilesanmi Adesida) of the Center of Nanoscale Science and Technology (CNST) at the University of Illinois. CNST is a campus wide "collaboratory" for nanoscale collaborations and development of large center grants (www.cnst.illinois.edu), Oct. 2007–Aug. 2015.

Visiting Professor of Surgery, Harvard Medical School, Cambridge, MA, May 2006–May 2008.

Courtesy Professor, School of Mechanical Engineering, Purdue University, West Lafayette, IN, Nov. 2005–Oct. 2007.

Scientific Director - Bionanotechnology, Bindley Biosciences Center/Birck Nanotechnology, Discovery Park, Purdue University, West Lafayette, IN, Sept. 2004–Oct. 2007. Responsible for setting up, managing, and setting policies for the shared bionanotechnology lab space in the Birck Nanotechnology Center.

Courtesy Professor, Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN, July 2000–Oct. 2007.

Professor, School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN, Aug. 2005–Oct. 2007.
Associate Professor, School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN, Aug. 2001–Aug. 2005.
Assistant Professor, School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN, Oct. 1998–Aug. 2001.
Sr. Engineering Manager, Process Technology Dev., National Semiconductor, Santa Clara, CA, Aug. 1997–Oct. 1998.
Engineering Manager, Process Technology Dev., National Semiconductor, Santa Clara, CA, May 1995–Aug. 1997.
Staff Process Engineer, Process Technology Dev., National Semiconductor, Santa Clara, CA, Jan. 1995–May 1995.
Sr. Process Engineer, Process Technology Dev., National Semiconductor, Santa Clara, CA, Oct. 1992–Dec. 1994.

Other Activities:

- Consultant with National Semiconductor Corp. and Advanced Micro Devices (AMD) to transfer a High Voltage Trench Isolated Process Technology, May 1999–2001.
- Consultant, Taiwan Semiconductor Manufacturing Corporation, Aug. 2011–present.
- Consultant, Oxford Nanopore Technologies, Jan. 2012–present.
- External Advisory Committee, NIH BioMEMS Resource Center at MGH/Harvard Medical School, June 2009–2014. Mehmet Toner, PI.
- External Advisory Committee, NIH National Cancer Institute Center Cancer Nanotechnology Excellence at Stanford Medical School, May 2011–May 2014. Sam Ghambhir, PI.
- Co-founder of BioVitesse, Inc., aimed at developing bio-chips for detection of pathogens, Jan. 2003–Dec. 2008.
- Co-founder and Chair of Technical Advisory Board, Dektari, Inc. Company started to commercialize microfluidic biochips for global health applications, June 2008–present. Co-inventor of technology licensed to Dektari, Inc.
- Co-founder, Prenosis, Inc. aimed at developing point of care sensors and analytics for sepsis stratifcation. June, 2014.

Partial List of Responsibilities and Activities as Director of MNTL at UIUC (Oct. 2007–Aug. 2013) (www.mntl.illinois.edu)

Reporting to the Dean of the College of Engineering, I was responsible for managing a staff of 14 at the Micro and Nanotechnology Laboratory (MNTL) to manage all aspects of building operations, space, and research activities within MNTL as a unit. The building is a 160,000-square-foot facility with 60,000 square feet of occupiable space, an 8,000-square-foot clean room with a full suite of micro and nano-fabrication equipment, electrical characterization equipment, and a 3,000-square-foot bionanotechnology lab. The building has 20 full-time and 10 part-time resident faculty from different departments. The total resident count in the building is about 220, including faculty, staff, and students. Building operating expenses were about $3M per year, and research expenditures were about $12M per year. In addition to managing the facility and space, my role was also to facilitate and lead large center-like proposals.

- With colleagues Taher Saif, Jimmy Hsia, Martha Gillette, Irfan Ahmad, and Lizanne DeStefano, I led the development of and was the PI of an NSF IGERT in Cell and Molecular Mechanics and Bionanotechnology (http://cmmb-igert.illinois.edu/). The IGERT was funded in 2010 and was a testament of the strong biomechanics and cell mechanics expertise on our campus. The innovative interdisciplinary educational experience brought together over 20 faculty from 5

colleges. Over 50 graduate students have benefited from the traineeship experience over the last 4 years.

- With colleagues Ann Nardulli, Steve Sligar, Taher Saif, Jimmy Hsia, Irfan Ahmad, and Lizanne DeStefano, I led the development of and was the PI of an NIH training grant in Cancer Nanotechnology. We were one of the 6 campuses around the country that were awarded the training grant in 2010 (http://m-cntc.illinois.edu/). The training grant brought over 20 faculty across 5 colleges to focus on nanotechnology applications to cancer. Over 50 graduate students have benefited from the unique interdisciplinary experience.
- With colleagues Brian Cunningham and Irfan Ahmad, we envisioned and laid out the structure of an NSF I-UCRC on nanotechnology applications in the Agriculture, Pharmaceutical and Biomedical Area. PI Prof. Brian Cunningham has led the effort of this industry-driven center that is now in its 5th year of operation (http://cabpn.illinois.edu/) at MNTL.
- A frontier of bioengineering is the "forward design" and realization of biological systems and machines. This goal led to the award of an NSF STC on Emergent Behavior of Integrated Cellular Systems (EBICS, www.ebics.net). In the 3rd year, the leadership from Illinois was changed to me as the PI from our campus. I am serving as the Co-PI, Site lead and also the Co-Director of Knowledge Transfer (with Prof. Lizanne DeStefano). We completed the renewal site visit in Dec. 2014 for another 5 years, and now the grant is in its 7th year.
- With colleagues Umberto Ravioli (PI), Irfan Ahmad, and Nahil Sobh, we developed the vision of the NanobioNode proposal to NSF: to have a bionano hub for computational nanotechnology. The proposal was funded and in the 2nd year, NSF requested that I (and Prof. Cathy Murphy) be added as the Co-PI and Deputy Director for this Center to help expand the research and knowledge transfer vision of the Node. (http://nanobionode.illinois.edu/).
- In 2009–2010, I initiated discussions with then Director of the Center for Individualized Medicine Dr. Frank Prendergast, and long-time collaborator George Vasmatzis of Mayo Clinic. Visits by our campus from myself, Larry Schook, and others led to the campus-wide partnership Mayo-Illinois alliance (www.mayoillinois.org) around individualized medicine, cancer and computational genomics, microbiome, and point of care sensors. Many grants and partnerships have developed out of the Alliance and the partnership has been steady getting stronger.
- In 2012, meetings were led by then Dean of Engineering Ilesanmi Adesida with Bill DiSomma of Jump Trading Ltd (of Chicago) around development of a partnership with OSF Hospital in Peoria in Healthcare Systems Engineering. Meetings with Mr. DiSomma and subsequent alignment of our campuses strengths and his vision of clinical simulation led to the realization of the Health Care Engineering Systems Center, of which I was the Founding Director to lay out the vision and launch this activity. This partnership with OSF Peoria/JUMP ARCHES and College of Engineering is now endowed at the equivalent of $60M+ endowment to fund research projects in the area of health care systems engineering. This partnership, headquartered at the Coordinated Science Lab at UIUC, will have long-term profound impact on the college and campus ecosystem in bioengineering.

Partial List of Responsibilities and Activities as Head of Bioengineering (Aug. 2013–Aug 2017):

- In August 2013, I became the Head of Bioengineering and led the department to expansion in various areas, with Sr. faculty hiring facilitated by the Grainger Engineering Breakthoughs Initiative (http://engineering.illinois.edu/grainger/grainger-engineering-breakthroughs-initiative). The Department of Bioengineering at Illinois is at a turning point in its history and we are working on the following 5 overarching goals:
    - Planned doubling in faculty size from the current 15.8 to 30 to expand in key strategic areas. The Grainger Engineering Breakthroughs Initiative will provide endowment for hiring of about 8 Sr. faculty. The other hires would be open rank.

- Completion of the design, build, and move into the renovated Everitt Lab by end of summer 2018. Availability of a new building, a $55M renovation project, as the academic home will crystalize and unify the core faculty towards the academic mission of the department. Raising the remainder of the building costs remains a high priority.
- Steadily expand the undergraduate program enrollment, continue to strengthen the quality and rigor, and develop new opportunities for students.
- Strengthen and refine the graduate program, partnerships, and opportunities for students, including expansion and development of new professional Masters in Engineering programs.

- Launch of the very exciting new "Engineering-Based College of Medicine." To address the lack of our own college of medicine at UIUC where we can drive innovations in education and research, and to put the department of bioengineering in a unique position in the nation, a group of us proposed the idea of an engineering-based College of Medicine at UIUC. Given the changing landscape of medicine and the need for new educational pedagogy to develop a new curriculum for quantitative and precision medicine, I led the vision behind the development of the new curriculum. The new College of Medicine has been approved and will be admitting its first class in Fall 2018. I was co-chair of the curriculum committee and am serving as the Exectuive Associate Dean and the Chief Diversity Officer.
- Two other activities: (i) In 2011–2013, I was the chair of the campus-wide Biology Coordinating Committee (BCC) to bring together all biology units around campus. Key recommendations were submitted to the provost's office. (ii) I led the committee to host the Grainger Frontiers in Bioengineering Workshop in Fall 2014 at UIUC. This high-profile meeting brought leaders in bioengineering from around the U.S. and the world together at UIUC. Follow-on perspectives were published in Science Translational Medicine, April 2014 issue.
- Co-chaired a committee to envision a new Biomedical Translational Facility at UIUC to facilitate translation of biomedical technologies to the clinic or the consumers.

RESEARCH GRANTS/CONTRACTS/DONATIONS RECEIVED:

Past Grants

#	Source	PIs	Description	Dates	Total Funds	My Portion
1.	National Semiconductor Corporation, Sunnyvale, CA	R. Bashir (PI)	IC fabrication equipment (etchers, deposition systems, etc.)	12/98	$925,000	$925,000
2.	NSF IGERT at Purdue	N. Peppas	Therapeutic and Diagnostic Devices	1/31/99–1/31/00	$2,000,000	$50,000
3.	NSF	R. Bashir (PI), D. Bergstrom	Hybridization Based Assembly of Silicon Electronic Devices, ECS 9986569	2/15/00–2/14/02	$100,000	$87,615
4.	Charles E. Culpeper Biomedical Pilot Initiative,	R. Bashir	Feasibility of a Silicon Based Nano-Electro-Mechanical System for the Electronic	3/1/00–2/28/01	$25,000	$25,000

	Rockefeller Brothers Fund		Characterization and Sequencing of DNA/mRNA			
5.	Indiana 21st Century Research and Technology Fund	PI: S. Datta, Co-PIs (thrust leaders): J. A. Cooper, R. Bashir, D. B. Janes, M. S. Lundstrom (10 other participants)	Center for Nanoscale Electronic/Biological Devices	6/15/00–6/14/02	$1,489,093	$240,000
6.	Army Research Office/CRANE	R. Bashir	Integrated Detection of Hazardous Materials (IDEHM)	7/11/01–7/11/02	$63,863	$63,863
7.	NIH-NIBIB, R21	R. Bashir, G. Vasmatzis (Mayo Clinic)	Silicon Based Nano-Sensor for Single Molecule RNA/DNA Sequencing and Characterizations	7/1/01–6/30/03	$540,000	$270,000
8.	NSF	R. Bashir	Career: Silicon-Based Nano Structures and Bio Sensors for the Nano-bio-technology Era	4/1/00–3/31/04	$210,000	$210,000
9.	USDA/ARS	R. Bashir, A. Bhunia	Biosensors for Rapid Detection of Bacteria in Foods	3/1/02–2/28/04	$300,000	$150,000
10.	NSF	A. Chang, R. Bashir, D. L. Kwong	Noise Spectroscopy for the Investigation of Ultra-thin Dielectrics	6/15/01-5/31/04	$913,320	$306,660
11.	NSF/University of Florida	J. Fortes, M. Lundstrom, D. Datta, R. Bashir, D. Janes	ITR/SY: Design and Simulation of Biologically Inspired Nano-Lattice Computing Architectures	9/15/01–8/31/05	$2,000,000	$260,000
12.	NIH- NIAID, R21	R. Bashir, A. Aronson	Rapid Detection of Viability of Spores in Biochips	10/1/02–9/30/05	$775,000	$387,500
13.	NIH-NCRR	D. Thompson, R. Bashir, Kinam Park, Tom Webster	Acquisition of a Cryogenic Field Emission SEM	4/1/04–3/31/05	$500,000	$500,000

14.	NSF NER	R. Bashir, Demir Akin, Arun Bhunia	Characterization and Lysing of Single Virus Particles	10/1/04–10/1/05	$100,000	$100,000
15.	NSF NER	Cagri Savran, Rashid Bashir, And Ellington (UT Austin)	Sensitivity Amplification in Biomolecular Detectors Using Activated Receptor Molecules	8/1/05–7/31/06	$100,000	$20,000
16.	Purdue Cancer Center seed grant	Rashid Bashir, Don Bergstrom	Nanowires for Detection of Cancer Markers	10/1/05–9/31/0	$35,000	$35,000
17.	Center for Advanced Manufacturing Seed Grant, Purdue University	R. Bashir	Development of Cartridges for Microfluidic Devices and BioChips	8/22/05–5/31/06	$35,000	$35,000
18.	NASA	S. Datta, 20 other Co-PIs.	Institute on Nanoelectronics and Computing	10/1/02–10/1/07	$15,000,000	$1,000,000
19.	Indiana University School of Medicine/Purdue University Collaborative Grants	R. Bashir, S. Clare	Nanowires for Detection of Cancer Markers	9/1/06–8/31/07	$30,000	$20,000
20.	NIH-NIBIB R21/R33	R. Bashir, D. Akin, S. Broyles, M. Ladisch	Micromechanical Sensors for Virus Detection	10/1/02–9/30/08	$2,100,000	$1,000,000
21.	NSF NSEC	J. Lee (OSU), and 15 other Co-PIs	Center for Affordable Nanoengineering Polymer Biomedical Devices	7/01/04–6/30/09	$10,000,000	$300,000
22.	NIH-NIBIB R21	R. Bashir, M. A. Alam, D. E. Bergstrom	Nanowire Sensor Arrays for Detection of Nucleic Acid Molecules	4/1/06–3/31/09	$540,000	$180,000
23.	NSF ECCS	R. Bashir, M. A. Alam, D. E. Bergstrom	Nanowire Sensor Array for Detection of Biomolecules	5/1/06–4/31/09	$240,000	$80,000

24.	NIH – NDC Center for Nanomedicine	P. Guo, R. Bashir, C. Montemagno (U Cinn.), D. Thompson + 9 investigators	Phi-29 DNA Packaging Motor for Nanomedicine	9/30/06–8/31/10	$6,500,000	$500,000
25.	NIH R21	R Bashir, C. Mao	Phi29 Nanomotors for Biology and Medicine	7/1/07–7/1/10	$540,000	$270,000
26.	NIH-NCI	S. Wickline (Wash U), + 10 other Co-PIs	The Siteman Center of Cancer Nanotechnology Excellence at Washington U (yr 4, 5)	9/1/08–8/1/10	$10,000,000	$240,000
27.	DTRA (through Advanced Diamond Technologies)	W. King, R. Bashir	UNCD Cantilever Sensors for Detection of Biological Pathogens	1/1/09–12/1/10	$440,000	$220,000
28.	Intel Corporation	R. Bashir	Development of Silicon Based Sensors for Sequencing Applications	1/1/08–12/31/10	$200,000	$200,000
29.	NSF MRI	B. Cunningham, R. Bashir, K. Y. Chung, K. Choquette, W. King	Acquisition of Step-and-Flash Lithography Tool for Nanometer-Scaled Surface Engineering	7/1/08–6/31/11	$580,000	$580,000
30.	Intel Corporation	R. Bashir	Development of Silicon Based Sensors for Sequencing Applications	1/1/11–12/31/11	$75,000	$75,000
31.	NSF NSEC	J. Lee (OSU), and 15 other Co-PIs	Center for Affordable Nanoengineering Polymer Biomedical Devices	7/01/09–6/30/14	$10,000,000	$300,000
32.	Army Medical Research (TATRC)	R. Bashir, L. Schook, T. Saif, B. Cunningham, H. Kong	Micro and Nano-mediated Cardiac Tissue Engineering	8/1/08–7/31/14	$2,700,000	$700,000
33.	NIH-NCI R01 Bioengineering	R. Bashir, L. P. Lee (UC Berkeley), A.	Integrated Biochips for Detection of Cancer	4/1/08–5/31/14	$3,000,000	$1,000,000

	Research Partnership	Alam (Purdue), D Bergstrom (Purdue), S. Clare (IU SOM)				
34.	NIH-NCI R21	R. Bashir	DNA Methylation Analysis Using Solid-State Nanopore Sensors	1/1/11–1/1/13	$390,000	$390,000
35.	NSF ECCS	R. Bashir	An Integrated Lab on a Transistor for Pathogen Detection	9/1/10–9/1/14	$560,000	$560,000
36.	NIH-NCI R21 Provocative Questions	R. Bashir, F. Kosari (Mayo Clinic)	Measurements of BPDE-DNA adducts by solid state nanopore and deep sequencing (PQ3)	9/01/12–8/31/14	$432,727	$216,363
37.	Taiwan Semiconductor Manufacturing Corporation	R. Bashir	Silicon CMOS Devices for BioSensing	1/1/12–12/31/15	$300,000	$300,000
38.	NSF IGERT	R. Bashir, M. Gillette, T. Saif, K. J. Hsia, M. Sheetz; 20 participants at UIUC and UC Merced	Cellular and Molecular Mechanics and Bionanotechnolgy (CMMB)	9/1/10-9/1/16	$3,200,000	$350,000
39.	NIH-NCI R25 Alliance for Cancer Nanotechnology	R. Bashir, A. Nardulli, and 20 faculty from UIUC	M-CNTC: Midwest Cancer Nanotechnology Training Center	9/1/10–9/1/16	$2,000,000	$300,000
40.	NSF Industry University Collaborative Research Center	B. Cunningham, R. Bashir, I. Ahmad, P. Hergenrother, L. Votkins	Center for Agricultural, Biomedical and Pharmaceutical Nanotechnology	4/1/10–3/31/16	$2,000,000	$200,000
41.	Lawrence Livermore National Lab.	R. Bashir	3-D Biofabrication and Stereolithography	9/1/15–8/31/16	$50,000	$50,000
42.	Abbott Diagnostics	R. Bashir	Nanobioelectronic Sensors	8/1/12–7/31/16	$300,000	$300,000

43.	NSF	R. Bashir, W.-J. Chang, L. S. Fan (OSU)	Experimental and numerical studies of droplet formation and cell encapsulation in micro-channels for high-throughput electrical measurements	1/01/12–12/31/16	$301,344	$100,448
44.	Oxford Nanopore Technologies	J.-P. Leburton, R. Bashir, A. Aksimientiev	Multi-Layer Solid State Membranes with Nanochannels for Bio-Molecure Manipulation and Sensing	8/01/12–7/31/17	$963,318	$321,109
45.	NIH R21	R. Bashir, A. Lee (UCI)	LLISA: Liposome-Linked Immunosorbant Assay for Detection of HIV Viral Load at Point-of-Care	1/1/13–12/31/16	$375,000	$187,500
46.	NSF	B. Cunningham, R. Bashir, I. Brooks, S. Lumetta, D. Nash, D. Hirschberg	PFR-BIC: Pathtracker, a Smartphone Based System for Mobile Infectious Disease Detection and Epidemiology	9/1/15–8/31/18	$675,000	$180,000
47.	USDA/ARS through the Food Safety Engineering Center at Purdue University	l. Mauer, M. Ladisch, R. Bashir, A. Bhunia, J. P. Robinson.	Engineering of Biosystems for the Detection of Listeria Monocytogenes in Foods (renewed for another 5 years in 2015)	3/1/10–2/28/15	$2,600,000	$400,000
48.	USDA/ARS through the Food Safety Engineering Center at Purdue University	l. Mauer, M. Ladisch, R. Bashir, A. Bhunia, J. P. Robinson.	Engineering of Biosystems for the Detection of Listeria Monocytogenes in Foods	3/1/15–2/28/20	$2,500,000	$300,000
49.	NSF Science and Technology Center	R. Kamm (MIT), R. Nerem (GT), K. J. Hsia	Emergent Behavior of Integrated Cellular Systems (EBICS) (renewed	9/1/10–8/31/15	$25,000,000	$1,000,000

		(UIUC) + 20 Faculty	for another 5 years in 2015)			
50.	NSF Science and Technology Center	R. Kamm (MIT), R. Nerem (GT), R. Bashir (UIUC) + 20 Faculty	Emergent Behavior of Integrated Cellular Systems (EBICS)	9/1/15–8/31/20	$25,000,000	$1,250,000
51.	Singapore GYSS Award	C. Duarte, R. Bashir	Silicon Biochips for Detection of Food Borne Pathogens	1/1/16–12/31/17	$100,000	$100,000
52.	Los Alamos National Lab	R. Bashir, S. W. Nam	Optogenetically Patterned-NMJs Using Graphene Interfaces for Screening of CWAs	8/1/16–7/31/19	$675,000	$337,500
53.	NSF	R. Bashir, J. Amos, S. Boppart, J. Lowestein, G. Herman	Revolutionizing Engineering Departments (Education grant to convert to problem based learning)	6/15/16–6/14/20	$1,999,790	
54.	NSF	M. Gillette, H. J. Kong, R. Bashir, J. Sweedler, N. Cohen	NRT-UtB: Training the Next Generation of Researchers in Engineering and Deciphering of Miniature Brain Machinery	08/01/17 – 7/31/22	$2,999,996	
55.	NSF	Nadya Mason and Colleagues	Illinois Materials Research Science and Engineering Center	10/01/17 – 9/31/22	$15,000,000	$500,000
				Total	**$159,478,451**	**$17,673,558**

PROFESSIONAL SERVICE AND ACTIVITIES:

Professional Society Memberships and Service:

- Golden Key National Honor Society, Student Member, 1985–1987; Honorary Member, 2005.
- Eta Kappa Nu (HKN) Honor Society, Student Member, 1990–1992.
- IEEE, Student Member, 1990–1992, Member, 1992–2000, Sr. Member 2001–2009, **Fellow, 2009–present.**
- IEEE Electron Device Society, 1995–present, Santa Clara Valley Section EDS Vice Chair (1997–1998), plans and arranges for invited talks and symposiums, IEEE Electron Device Society (EDS) representative to IEEE Special Interest Group (SIG) Bio and Health Sciences, 2007–2009.
- American Society for Engineering Education (ASEE), 2007–present.
- American Institute of Chemical Engineers (AiChE), 2009–present.
- American Institute for Medical and Biological Engineering (AIMBE), **Fellow, 2009–present.**

- American Association for the Advancement of Science (AAAS), **Fellow, 2012–present.**
- American Physical Society (APS), **Fellow, 2013–present.**
- International Association of Medical and Biological Engineering (IAMBE), **Fellow, 2015–present.**
- Member, NIH Nano Study Section, June 2011–Oct. 2016.
- Chair of NIH Nano Study Section, Oct. 2014–Oct. 2016.
- Biomedical Engineering Society (BMES), **Fellow, 2015–present.**

Other Professional Activities:

- Invited to attend DARPA Workshop on Nanotechnology for Biodetection/Bioassay and Delivery of Therapeutics to Individual Cells, Scottsdale, AZ, Dec. 12–13, 2000.
- Member of the United States delegation to Japan for the 2nd Japan-US (NSF/MEXT) Joint Symposium on Nanotechnology in Advanced Therapy and Diagnostics at Yokohama, Japan on October 9–12, 2003.
- Nominated by Purdue and selected by National Academy of Engineering to attend the Frontiers in Engineering Workshop in Fall 2003, sponsored by NAE.
- Invited to attend the Japan-U.S. National Academy of Engineering Frontiers of Engineering Meeting, Palo Alto, CA, Nov. 5–7, 2007.
- Invited to attend and present at the NSF USA-EU symposium on BioNanotechnology, Ispra, Italy, May 2008.
- Member, Semiconductor Research Corporation (SRC) Technical Advisory Board on Process Integration and Device Structures (PIDS), 1996–1997.
- Process Technology Sub-committee Member BCTM (Bipolar Circuits and Technology Meeting). Paper Selection Activities, 1998–2001.
- Organizing Committee, SPIE Microelectronics and MEMS Technologies Conference, May 30–June 1, 2001, Edinburgh, Scotland, United Kingdom, 2000–2001.
- Session Chair, Microfluidics, 2nd Annual BioMEMS and Biomedical Nanotechnology World Congress, Sept. 22–25, 2001.
- Session Chair, Microfluidics, 3rd Annual BioMEMS and Biomedical Nanotechnology World Congress, Sept. 22–25, 2002.
- Transducers 2005. Held at Seoul, Korea, June 5–9, 2005. Americas Program Committee (paper selection from USA). Transducers is the leading MEMS conference, held every two years (alternates with Hilton Head MEMS Conference), 2004–2005.
- National Science Foundation Panel Review in ECS Division, Jan. 12–13, 2000.
- National Science Foundation Panel Review in ECS Division, June 12–13, 2000.
- NSF SBIR Phase 1 Panel Review: Biochips, Apr. 1–2, 2002.
- NIH SBIR Phase 1 Panel Review: Topic 87 Development of Novel Approaches to Proteomics, April 29, 2002.
- NSF ECS Panel on Unsolicited Proposals, Jan. 14–15, 2003.
- NSF Panel for NER (Nanoscale Exploratory Research Program), Mar. 6–7, 2003.
- NIH Panel for BioEngineering Research Partnerships (BRP), July 16, 2004.
- BioSensors Thrust Team within BioCrossroads, an initiative in State of Indiana to stimulate economic and technology development, 2004–2005. Organizing team of the Indiana BioSensors Symposium, Indianapolis, IN, April 6, 2005.
- Organizing Committee, Dielectrics and the Dielectric-Electrolyte Interface in Biological and Biomedical Applications, held on the occasion of the 208th Meeting of the Electrochemical Society in Los Angeles, Oct. 16–21, 2005.

- Part of NSF site visit team for NSF NSEC at UC Berkeley (Center for Integrated Nanomechancial Systems, COIN), May 15–16, 2005.
- NIH Special Emphasis Panel on Nanoscience and Nanotechnology in Biology and Medicine, July 11–12, 2005.
- Breast Cancer Research Programs, U.S. Army Medical Research and Materials Command (USAMRMC), Panel review Molecular Biology and Genetics (through telephone), Aug. 1, 2005.
- NIH Panel for BioEngineering Research Partnerships (BRP) (through telephone), Aug. 1, 2005.
- DOD Breast Cancer Concept Award Web Reviewer, May 2006.
- Programme committee and Symposium Organizer, Bioelectronics, Biointerfaces, and Biomedical Applications 2, ECS Dielectric Science and Technology and Sensor Divisions, Joint International Meeting, Cancun, Mexico, Oct. 29–Nov. 3, 2006, 2005–2006.
- External Scientific Advisory Board, Texas Alliance for NanoHealth. Consortium of 7 Texas medical and academic research institutions, 2007.
- Scientific Advisory Board, NIH P41 BioMEMS Resource Center at Massachusetts General Hospital (PI Mehmet Toner), 2007–2010.
- IEEE Electron Device Society (EDS) representative to IEEE Special Interest Group (SIG) Bio and Health Sciences, 2007–2009.
- Site visit team for the NSF Cornell Nanobiotechnology Center, Mar. 17–18, 2008.
- NIH Panel Reviewer for Instrumentation and Systems Development (ISD), San Francisco, CA, Jan. 19–21, 2009.
- Invited to attend NSF Meeting on MicroNanoSystems (MNS) Horizons 2040, June 21, 2009.
- Transducers 2009, Denver, CO. Paper Selection Committee and Conference Session Chair (Cell Manipulation & Analysis II), June 22–26, 2009.
- ASME NEMB2010 Track Co-Chair for Nano-/Micro-fluidics for Medical Diagnostics and Therapeutics, 45 talks (9 sessions), Feb. 2010.
- Organized and led a panel at the 2010 BIO International Convention, McCormick Place Convention Center. Track: Devices and Predictive Diagnostics, Session Title: Diagnostics and Therapeutics for Individualized Nanomedicine. Participants from Mayo Clinic, Baxter, Nanosphere, and UIUC, May 5, 2010.
- Panel Chair, NCI Small Business Innovation Research (SBIR) Contract Proposals, Phase 2. Topic 252, Nanotechnology Imaging and Diagnostics, June 29, 2010.
- Symposium Planning Committee for the Fall 2010 Materials Research Society Meeting, "Nanofunctional Materials, Nanostructures and Nanodevices for Biomedical Applications – II." With Larry A. Nagahara (NIH), Robert Sinclair (Stanford University), Rashid Bashir (UIUC), Thomas Thundat (Oak Ridge National Laboratory), and Wenbin Lin (University of North Carolina, Chapel Hill), Fall 2010.
- IEEE EDS Distinguished Lecturer Colloquium, University of California, San Diego, Mar. 25, 2011.
- Program Chair, IEEE EMBS Micro and Nanotechnology in Medicine Conference (MNMC), Maui, Hawaii, Dec. 3–7, 2012. (Dr. Ali Khademhosseini, MNMC Conference Chair; Dr. Michelle Khine, MNMC Conference Co-Chair.)
- Co-organizer of a Session at AAAS Spring 2014, with Nichaolas Peppas (UT Austin), and Ali Khademhosseini (Harvard). Session: https://aaas.confex.com/aaas/2014/webprogram/Session7128.html Integrated Cellular Systems, Building Machine with Cells. Feb 14, 2014, Chicago, IL.
- External Advisory Committee Review of KIST (Korea Institute of Science and Technology) Biomedical Research Lab, Dec. 12–13, 2013.

- Conference Chair, ASME 3rd Global Conference for Nanoengineering in Medicine and Biology (NEMB), San Francisco, CA, Feb. 2–5, 2014.
- Co-Organizer with Roger Kamm (MIT) and Bob Nerem (Georgia Tech) of 3 Sessions on Emergent Behavior of Integrated Cellular Systems, in the 7th World Congress of Biomechanics, July 6–11, 2014, Boston, MA.
- Chair of Organizing Committee for Frontiers of Bioengineering Workshop, Sept 8–9, 2014, University of Illinois at Urbana-Champaign.
- Program Chair, IEEE EMBS Micro and Nanotechnology in Medicine Conference (MNMC), Maui, Hawaii, Dec. 8–12, 2014. (Dr. Ali Khademhosseini, MNMC Conference Chair; Dr. Michelle Khine, MNMC Conference Co-Chair.)
- Organized Session in AAAS Annual Meeting, Session: Integrated Cellular Systems: Building Machines with Cells, Saturday, Hynes Convention Center, Boston, MA, February 18, 2017.
- Track Co-Chair, Translational Biomedical Engineering, Roger Kamm (Massachusetts Institute of Technology), Rashid Bashir (University of Illinois Urbana-Champaign), 2016 BMES Annual Meeting, October 5–8, 2016, Minneapolis, MN.
- Co-Organizer (with S. Guha and Bjorn Lussem) of US NSF US-BRAZIL Workshop: "Biosensors – From Bioanalytics to Device Integration", Nov. 8-10, 2017. Santo Andre, Sao Paolo, Brazil.

Journal Editorships and Reviewing:

2003–present	Editorial Board: *Biomedical Microdevices*, Springer, Editor-in-Chief: Mauro Ferrari.
2005–present	Editorial Board: *Nanomedicine*, *Future Medicine*, Editor-in-Chief: Morag Robertson.
2007–present	Editorial Board: *Nanotechnology, Science and Applications*. Dove Press. Editor-in-Chief: Dmitri Litvinov.
2009–present	Editorial Board: *Experimental Biology and Medicine*: Systems Biology Section. Editor-in-Chief: Steven R. Goodman.
8/2008–present	Associate Editor, *Biomedical Microdevices*, Springer.
8/2008–present	Associate Editor, *IEEE Transactions on Biomedical Engineering*.
2/2010–12/2012	2010 IEEE Engineering in Medicine and Biology (EMBS) representative to the Steering Committee of *IEEE Trans. on NanoBiosciences*.
11/2011–present	Editorial Committee: *Annual Review of Biomedical Engineering*.

Reviewed papers for *Acta Biomaterialia*, *Advanced Materials*, *Analytical Chemistry*, *Annals of Biomedical Engineering*, *Applied Physics Letters*, *Advanced Functional Materials*, *Biomedical Microdevices*, *Biotechnology & Bioengineering*, *Biomedical Microdevices*, *Bionanotechnology*, *Drugs in R&D*, *Electrochemical Society Journal*, *Electron Device Letters*, *IEEE Transactions on Electron Devices*, *IEEE/ASME Journal of Microelectromechanical Systems*, *Journal of Micromechanics and Microengineering*, *Langmiur*, *Nature*, *Nature Materials*, *Nature Methods, Scientific Reports*, *Proceedings of National Academy of Science*, *Sensors and Actuators A*, *Sensors and Actuators B*, *Nature Communications, Scientific Reports*, and *Lab on a Chip*.

GRADUATE ADVISING:

M.S. Thesis Students Completed, Purdue University:

1.	Nishant Nerurkar	MS ECE	Aug. 2000. "Using the JSM6400 as a High Resolution Lithography System." Now at Sun Microsystems.
2.	Amit Gupta	MS ECE	Dec. 2000. "Design and Microfabrication of Thin Single Crystal Cantilever Beams for Scanning Probe Applications."

		Later obtained a Ph.D. in my group. Became a post-doc in Mehmet Toner's group at Harvard Medical School.
3. Ninad Shinde	MS ME	Dec. 2001. "Design and Fabrication of a Mesoscopic Pulse Tube Refrigerator System." Co-Major Advisor Prof. G. Chiu. Now at Advion Bioscience.
4. Zack Hilt	MS ChemE	Spring 2002. "A Microfabricated Biosensor Based on Cantilevers Patterned with Environmentally Sensitive Hydrogels," Co-Major Advisor Prof. N. Peppas. Now on the faculty at the University of Kentucky.
5. Dong Guo	MS ECE	Dec. 2002. "A Novel Protein Patterning Technique Using DNA Linkers."
6. Hassan Raza	MS ECE	Dec. 2002. "Fabrication and Characterization of Ultra-thin Nitrided Gate Oxide MOS Capacitors." Now on the faculty at the University of Iowa.
7. Oguz Elibol	MS ECE	Dec. 2003. "Fabrication and Characterization of Nano-wire Silicon Sensors," Later obtained a Ph.D. in my group.
8. Angelica Davila	MS ECE	Spring 2006. "Microcantilever Biosensors for Biological Detection of Bacillus Anthracis Sterne Spores in Air and Fluid." Now at Intel Corp., Santa Clara, CA.
9. Kevin Lee	MS ME	Spring 2006. "The Development of Highly Functional Cartridge for Rapid Detection of Microbial Contaminants."
10. Piyush Bajaj	MS BME	Summer 2008. "Characterization of UNCD Surfaces for Biocompatible Implants." Completed Ph.D. and now at LANL.
11. Vincent Chan	MS BMES	Aug. 2008. "Three Dimensional Fabrication of Tissue-Engineering Hydrogels Scaffolds Using Stereolithography," Completed Ph.D., and now a Research Scientist at UCSF.

M.S. Thesis Students Completed, University of Illinois at Urbana-Champaign:

12. Ho Jun Suk	MS ECE	Fall 2009. "Fluidic Characterization of Electric Field Sensitivity of Ti-GaAs Schottkey Junction Gated Field Effect Biosensors."
13. Sukru Yemeni	MS ECE	Summer 2010. "Stability and Bandwidth Investigation of Alternative Structures for Nanopore Sensors."
14. Mitch Collens	MS BioE	Spring 2012. "2D and 3D Patterning of Cells."
15. Umer Hassan	MS ECE	Spring 2013. "CD4+ Cell Capture in Microfluidic Biochips for Global Health."
16. Jimmy Ni	MS ECE	Fall 2012. "Nano-grass Array for Capture of Nanoparticles and Viruses."
17. Carlos Duarte	MS ECE	Fall 2012. "On-Chip Parallel Detection of Food Borne Pathogens Using Loop-Mediated Isothermal Amplification."
18. Gregory Damhorst	MS BioE	Spring 2013. "Liposome and Ion Released Based Biological Detection in Microfluidic Biochips."
19. Jose Rivera	MS ECE	Spring 2013. "Graphene Supported Hafniium Oxide Nanopores for DNA Sensing."
20. Caroline Cvetkovic	MS BioE	Spring 2013. "The Development of Skeletal Muscle Bioactuator Using 3D Stereolithography."
21. Ritu Raman	MS MechSE	Fall 2013. "3-D Fabrication of Biological Machines."

22. Katrina Keller	MS BioE	Fall 2013. "Using Resonant MEMS Pedestal Sensors and Filtering Techniques to Determine the Growth Curve of MB-231 Metastatic Breast Cancer Cells."
23. Olaoluwa Adeniba	MS MechSE	Spring 2014. "Development of High-Q Micromechanical Cell Mass Sensor (Optimizing Parameters for In-plane Mass Sensors)."
24. Anurup Gangali	MS BIOE	Spring 2016. "Spatially Conserved LAMP and PCR from Tissue Slices."
25. Gelson Pagan	MS BIOE	Spring 2016. "Neuroelecronic Measurements of Mouse ESC Embroid Bodies on Chip."
26. Tanmay Ghonge	MS BIOE	Spring 2016. "Transit Time Based Electrical Counting of Particles for Bioesensing."

Ph.D. Students Purdue University:

1. Rafael Gomez	Ph.D. ECE	Dec. 2003. "Biochips for Rapid Detection of Cell Metabolism." Post-doc at Stanford with Prof. Steve Quake. Now a research scientist at LBNL.
2. Haibo Li	Ph.D. ECE	Aug. 2004. "Dielectrophoresis and Its Application in BioChips." Now a Research Scientist at SanDisk Corp., Santa Cruz, CA.
3. Sangwoo Lee	Ph.D. ECE	Dec. 2004. "Technology Development for Heterogeneous Integration of Silicon Electronic Devices Using Directed Fluidic Self-Assembly." Now an Associate Professor, Department of Bioengineering, Yonsai University, Korea.
4. Hung Chang	Ph.D. ECE	Dec. 2005, "Characterization of DNA Translocation Through a Silicon Based Nanopore."
5. Amit Gupta	Ph.D. ECE	Dec. 2005, "Micromechanical Resonant Sensors for Detection and Characterization of Biological Entities." Held a post-doc at Harvard Medical School with Prof. Mehmet Toner. Now with Silicon Valley Technology Corporation (SVTC).
6. Samir Iqbal	Ph.D. ECE	May 2007. "An Electrical Framework for Characterization of DNA Molecules." Held a post-doc in our group in Spring 2007. Now an Associate Prof. at University of Texas at Arlington.
7. Yi-Shao Liu	Ph.D. ECE	May 2008. "Impedance Spectroscopy Based Micro-Scale Biosensing." Now at Taiwan Semiconductor Manufacturing Corporation (TSMC).
8. Oguz Elibol	Ph.D. ECE	Dec. 2008. "Silicon Field Effect Sensors for Sensing and BioChemical Reactions." Now at Intel Corporation, Santa Clara, CA.
9. Kidong Park	Ph.D. ECE	Aug. 2009. "Micro-mechanical Sensors for Detection of Biological Entities." Joined Samsung Corporation, Dec 2010–2012. Now an Assistant Professor, Division of Electrical & Computer Engineering, Louisiana State University, Baton Rouge, LA.

Ph.D. Students University of Illinois at Urbana-Champaign:

10. Murali Venkatesan	Ph.D. ECE	Spring 2011. "DNA Nanopore Sensors for Biomolecular Characterization." Now at Illumina Corporation, San Diego, CA.
11. Nicholas Watkins	Ph.D. ECE	Spring 2012. "Electrical Microcytometer for Portable Blood Analysis in Global Health Applications." Now at NabSys, Portland, Maine.
12. J. Bobby Reddy	Ph.D. ECE	Spring 2012. "Top Down Fabricated Silicon Nanowires for pH and Molecular Detection." Now Post-doc in my group.
13. Vincent Chan	Ph.D. BioE	Fall 2012. "3D Printing of Biological Machines for Biology and Medicine." Now Post-doc at MIT
14. Piyush Bajaj	Ph.D. BioE	Jan 2013. "Engineering the Micro-environment to Control the Fate of Mammalian cells." Now at Pfizer.
15. Brian Dorvel	Ph.D. Biophys.	May 2013. "Design and Optimization of Ultrathin Silicon Biological Field Effect Transistors (BioFETs) for Sensitive, Electronic-Based Detection of Biological Analytes." Now at Dow Chemicals, Houston, TX.
16. Elise Corbin	Ph.D. MechSE.	Dec. 2013. IGERT Trainee (co-advised with Bill King) "Detection of Mass, Growth Rate and Stiffness of Single Breast Cancer Cells Using Micromechanical Sensors," Now a post-doc in my group.
17. Eric Salm	Ph.D. BioE	May 2014. "Transistor Based Biosensing: Expanding the Functionality of Field Effect Transistors." Now at Boston Consulting Group.
18. Umer Hassan	Ph.D. ECE	May 2015. "A Microfluidic Biosensor to Electrically Enumerate Blood Cells at Point of Care for Infectious Disease Diagnosis and Management." Now a post-doc in my group.
19. Greg Damhorst	MD/Ph.D. BioE	Aug. 2015. "Microscale Biosensors for HIV Detection and Viral Load Determination." Now an MD student at UIC.
20. Vikhram Swaminathan	PhD, MechSE	Aug. 2015. "Electrostatic Control of Microfluidic Systems for Enhancement of Nanoparticle Separation and FET Nanobiosensors."
21. Shouvik Banerjee	Ph.D. MatSE	Spring 2016. "Advanced Nanopore Architectures with 2D Materials for Nanobiosensing."
22. Carlos Duarte	Ph.D. ECE	Spring 2016. "Multiplexed Label-Free Electrical Label Detection of DNA."
23. Ritu Raman	Ph.D. Mechse	Fall 2016. "3D Printed Muscle-powered Bio-Bots."
24. Caroline Cvetkovic	Ph.D. BioE	Fall 2016. "Biological Building Blocks for 3D Printed Cellular Systems."
25. Olaoluwa O. Adeniba	Ph.D. Mechse	Began Fall 2013
26. Tanmay Ghonge	Ph.D. BioE	Began Fall 2013
27. Anurup Ganguli	Ph.D. BioE	Began Fall 2014
28. Gelson Pagan Diaz	Ph.D. BioE	Began Fall 2014 (NSF Fellowship)
29. Jacob Berger	Ph.D. BioE	Began Fall 2016
30. Yongdoek Kim	Ph.D. MatSE	Began Fall 2016 (Korean Fellowship)
31. Lauren Grant	Ph.D. BioE	Began Fall 2016
32. Akid Ornob	Ph.D. BioE	Began Fall 2016
33. Arianna Mostafa	Ph.D. BioE	Began Fall 2017

POST-DOCTORAL FELLOWS/RESEARCH SCIENTISTS SUPERVISED:

Purdue University:

1. Helen McNally	Ph.D. EE, Arizona State University. Post-doc in my group Jan. 2001–Dec. 2002. Now at Department of Electrical Engineering Technology, Purdue University, West Lafayette, IN.
2. Woo-Jin Chang	Ph.D. ChemE, Inha University, Korea. Post-doc in my group Jan. 2002–Oct. 2003. Now an Assistant Professor at University of Wisconsin, Clearwater campus.
3. Sangwoo Lee	Ph.D. ECE, Purdue University. Ph.D. and Jan. 2005–May 2005 post-doc in my group. Now an Associate Professor, Department of Bioengineering, Yonsai University, Korea.
4. Liju Yang	Ph.D. ABE, Louisiana Tech. Post-doc in my group Aug. 2004–Feb. 2006. Now an Associate Professor at North Carolina Central University, Raleigh, NC.
5. Demir Akin	DVM, Ph.D. Basic Medical Sciences, Purdue University. Sr. Research Scientist in my group Jan. 2002–Spring 2008, biomedical expertise. Research Assistant Professor in Weldon School of Biomedical Engineering, Purdue University, Fall 2006–Spring 2008. Now an instructor at Stanford University Medical School and Manager of NIH Center Cancer Nanotechnology Excellence.
6. Dallas Morisette	Ph.D. ECE, Purdue University. Sr. Research Scientist in my group (part time) Jan. 2003–Spring 2008. Microelectronics and fab expertise. Sr. Device Engineer, BioVitesse, Inc., West Lafayette, IN.
7. Jaesung Jang	Ph.D. ME, Purdue University. Post-doc in my group Aug. 2004–Sept. 2007. MEMS and fab expertise. Now an Assistant Professor at Chung-Ang University, Seoul, Korea.
8. Kwanseop Lim	Ph.D. Chemistry, Inha University, Korea. Post-doc in my group Feb. 2005–Feb. 2007. Now a post-doc at University of Minnesota.
9. Samir Iqbal	Ph.D. ECE, Purdue University. Ph.D. and Mar.–July 2007 post-doc in my group. Microelectronics and MEMS fab and DNA chemistry expertise. Now an Associate Prof. at University of Texas at Arlington.
10. Shantanu Bhattacharya	Ph.D. ME, University of Missouri, Columbia. Post-doc in my group Aug. 2006–June 2007. Now an Assistant Professor in the Department of Mechanical Engineering, Indian Institute of Technology, Kanpur, India.
11. JeongMi Moon	Ph.D. Chemistry, Purdue University. Post-doc in my group Mar. 2007–June 2008. Now a post-doc at Chemical Engineering, Purdue University.

University of Illinois at Urbana-Champaign:

12. Yi-Shao Liu	Ph.D., Purdue University. Post-doc in my group Jan. 2009–July 2010. Now at Taiwan Semiconductor Manufacturing Corporation.
13. Pinar Zorlutua	Ph.D. in Biotechnology, Middle East Technical University. Post-doc in my group Jan. 2010–Jan. 2011. Now an Assistant Professor at the University of Connecticut.
14. W.-J. Chang	Ph.D., Inha University. Research Scientist in my group Jan. 2008–May 2011. Now an Assistant Professor at the University of Wisconsin, Milwaukee.

15. A. Radadia	Ph.D. MechSE, UIUC. Post-doc in my group Jan. 2009–July 2011. Now an Assistant Professor in Chemical Engineering at Louisiana Tech, Ruston, LA.
16. B. M. Venkatesan	Ph.D. ECE, UIUC. Post-doc in my group May 2011–Sept. 2011. Now at Illumina, San Diego, CA.
17. Preetha Jothimuthu	Ph.D. ECE, University of Cincinnati. Post-doc in my group Mar.–Dec. 2011.
18. Vita Solovyeva	Ph.D., Post-Doc, May 2011–June 2012.
19. Larry Millet	Ph.D. Molecular and Cellular Biology, UIUC, Post doc May 2009–Aug. 2013. Now at Oak Ridge National Lab.
20. Kidong Park	Ph.D. ECE, Purdue University, post-doc in my group Oct. 2011–Aug. 2013. Joined Samsung Corporation, Dec. 2010-2012. Now an Assistant Professor, Division of Electrical & Computer Engineering, Louisiana State University, Baton Rouge, LA.
21. David Estrada	Ph.D. ECE, UIUC. Post-doc in my group May–Sept. 2013. Now an Assistant Professor of ECE at Boise State University, Boise, ID.
22. Elise Corbin	Ph.D. MechSE, UIUC. Post-doc in my group Nov. 2013–Aug. 2014. Post doc at Penn State.
23. Hamasaki Koshin	Visiting Researcher from Toshiba, Japan, Group Member, Jan. 2013–Jan. 2014.
24. Artem Shkumatov	Ph.D. in Veterinary Pathobiology UIUC, post-doc in my group Sept. 2014–May 2015. Now Principal Pathologist at Amgen.
25. Sangjo Shim	Ph.D., ECE, UT Austin. Post-doc in my group Sept. 2013–May 2015.
26. Jiwook Shim	Ph.D. University of Missouri, Columbia, post-doc in my group Sept. 2012–Aug. 2016. Now an Assistant Professor at Rowan University, NJ.
27. Umer Hassan	Ph.D. ECE, UIUC. Now a research scientist in our group, Fall 2015–present.
28. Yoshi Watanbe	M.S. University of Tokyo, now a research scientist in our group, Fall 2015–present.
29. Enrique Valera	Ph.D. Spain. Now a research scientist in our group, Fall 2016–present.

UNDERGRADUATE STUDENT MENTORING:

Purdue University:

1. Jeff Uram, EE496: "Design of a Neuro-chip," Fall 2000.
2. Oguz Elibol, EE496: "Design and Set up of a Pressure Test System for MEMS," Spring 2001.
3. Vandna Handa, EE496: "DNA-based Self Assembly and Charge Determination on Silicon Devices Due to Charged Molecules," Fall 2002.
4. Undergraduate students Vandna Handa and Eric Tkaczyk spent a year in my lab with graduate students and worked on an interdisciplinary project on DNA-mediated self-assembly of electronic devices, 2001–2002. The work resulted in a conference paper.
5. Luke Johnson, BM REU Student (Luther College). "Use of Nanomechanical Devices for Virus Detection," Summer 2004.
6. Annie Elble, Engineering SURF Program, BME Interdisciplinary Engineering Program. "Microfluidic Devices for Bacterial Separation," Summer 2004.
7. Kyle Hagler, Sr. ECE Student, 496 and summer research, "Packaging of Microfluidic Devices," Spring 2004.

University of Illinois at Urbana-Champaign (Partial List):

8. James Polans, B.S. ECE Undergraduate Research Assistant, 5/09–5/10.
9. Jacob Bermudez, B.S. Biology, Undergraduate Research Assistant, 8/09–5/10.
10. Anna Czapar, Undergraduate in Bioengineering, Summer 2010.
11. Daniel Machiawandy, B.S. Biology, Undergraduate Research Assistant, 5/11–present.
12. Robert Free, EBICS REU, Undergraduate Research Assistant, Summer 2011.
13. David Korechan, BioE Undergraduate Research Assistant, 4/11–4/12.
14. Daniel Pak, Undergraduate Research Assistant, 8/12–present.
15. Yu Zhong, Undergraduate Research Assistant, 8/12–present.
16. Samir Mishra, Undergraduate Research Assistant, 8/12–present.
17. Magdalena "Maggie" Michelle Sobieraj, Sophomore in Molecular and Cellular Biology, Chemistry, 8/12–present.
18. Rodrigo Cotrim Chaves, Junior in Bioengineering, 1/1/13-12/31/13.
19. Bauyrzhan Vermagambetov, Junior in Bioengineering, 1/1/13-12/31/13.
20. Nathan Habtetzion, Junior in Bioengineering, 1/1/13-12/31/13.
21. Syed Osama, Junior in Bioengineering, 1/1/13-12/31/13.
22. Yu Zhong, Junior in Bioengineering, 1/1/13–present.
23. Marva Dar, 1/1/13–12/31/13.
24. Olivia Webb, 1/1/13–12/31/13.
25. Jackie Yu, 1/1/13–12/31/13.
26. Shahzad Ahmad, 1/1/13–present.
27. Anuradha Nandyala, sophomore in bioengineering, 1/1/13–12/31/13.

HIGH SCHOOL STUDENT MENTORING (PARTIAL LIST):

1. Azam Ghafoor, a West Lafayette High School junior year student, did his Biology project with me and won the first prize at the Biology Science Fair, 2000–2001.
2. Lawrence Lee, a West Lafayette High School senior year student, did his Biology project on biochips in our lab and won the first prize at the Biology Science Fair, 2001–2002.
3. Pragg Sharma, an eighth-grader, did a science project and won the gold medal in the category of Microbiology at the Purdue Regional Science Fair, 2002–2003.
4. Petra Rantanen, ISTEM High School Intern, Uni High School in Urbana, IL, Summer 2011.
5. Chelsea Edwards, ISTEM High School Intern. Uni High School in Urbana, IL, Summer 2011 and 2012.
6. Mustafa Entezar, Summer 2012, Sr. from Irvine High School.
7. Kamil Qazi, Summer 2012, Jr. from Chicago Oak Brook High School.
8. Lara Orlandic, Summer 2013, ISTEM High School Intern. Uni High School, Urbana, IL.
9. Elizabeth Sanders, Fall 2013, ISTEM High School Intern. Uni High School, Urbana, IL.
10. Mariam Arif, Spring 2014–2016, ISTEM High School Intern. Uni High School, Urbana, IL.
11. Chloe Yang, Spring 2014–2015, ISTEM High School Intern. Uni High School, Urbana, IL.
12. Carrisa Hwu, Spring 2016–present, Uni High School, Urbana, IL.
13. Ginger Tufte, Fall 2015–present, Central High School, Urbana, IL.

COURSES DEVELOPED AND IN CHARGE OF:

Purdue University:
ECE 526/BME 581, Fundamentals of MEMS and MicroIntegrated Systems (BioMEMS)
ECE 557, IC Fabrication, with Prof. Dimitri Peroulis, added a MEMS module to the IC fabrication class.

University of Illinois at Urbana-Champaign:

BioE 498, BioNanotechnology and Nanomedicine: Applications in Cancer and Mechanobiology, Fall 2011, Fall 2012, Fall 2013, team-taught with Taher Saif, Catherine Murphy, Ann Nardulli.

SCHOOL/UNIVERSITY COMMITTEE ACTIVITIES:

At Purdue University:

- Admissions Committee, ECE, Member, 1999–2002.
- Qualifying Exam Committee, ECE, Member, 1999–2001.
- ECE Head Search Committee, Member, 2001–2002.
    - Mark Smith hired from Georgia Tech.
- RF MEMS Faculty Search Committee, ECE, Member, 2002
    - Dimitri Peroulis hired from University of Michigan.
    - Saeed Mohammadi hired from University of Michigan.
    - Bill Chappell hired from University of Michigan.
- Grade Appeals Committee, Member 2002–2004.
- Discovery Park Strategic Plan Development Committee, Summer 2002.
- Nanotechnology Cluster Search Committee, Spring 2003.
- Tissue and Cellular Engineering Cluster Search Committee, Spring 2003.
- Co-Chair, BioMEMS Faculty Search Committee, Spring 2003–Spring 2006.
- Weldon School of Biomedical Engineering, Primary Committee, 2005–2006.
- Weldon School of Biomedical Engineering, Faculty Search Committee, 2005–2006.
- Advisory Committee, Burton Morgan Center for Entrepreneurship, Discovery Park, 2006–2007.
- Member, Birck Nanotechnology Center, Bindley Biosciences Center, Center for Advanced Manufacturing, Oncological Science Center (Member launch team), Center for Environment. 2005–2007.

At the University of Illinois at Urbana-Champaign:

- Launch Team of the New Campus-wide Division of Biomedical Sciences (DBS), Fall 2008.
- College of Engineering Tenure and Promotions Committee, Fall 2008–Spring 2010.
- ECE Faculty Search Committee, Spring 2009–Spring 2012.
- Campus team on Health Sciences Vision 2020, appointed by the Provost/Chancellor, 2010–2011.
- Chair, Campus Coordinating Committee on Biology Research and Education, Spring 2011–present.
- Provost Advisory Committee, Summer 2011–present.
- Chair of 5-year annual review of the Director of the School of Molecular and Cellular Biology, Fall 2011.
- Member, College of Engineering Communications Committee, 2012–present.
- Chair of Grainger Bioengineering Search Committee, Aug. 2013–present.

MISCELLANEOUS OTHER ACTIVITIES:

- Volunteer at Skilled Nursing Facility, Stanford University Hospital. Aug. 1997–June 1998.
- Member of Tippecanoe County School Board Task Force on Character Education and Implementation, Jan. 2002–Dec. 2002.
- Represented Purdue President Martin Jischke at the inauguration of the 14th President of Texas Tech University on February 28, 2004.
- External evaluator (written) for joint Ph.D. program in Bioengineering, Electrical and Computer Engineering, and Structural Engineering between UC San Diego and San Diego State University, 2009.

- Participated in tenure and promotion review for many faculty at U.S. institutions including MIT, Berkeley, Michigan, UT Austin, Michigan State, Purdue, etc.
- External Review of Georgia Tech Bioengineering Graduate Program, November 2015.
- External Review of UC Berkeley Bioengineering Department, November 2016.
- External Review of Stanford Bioengineering Department, December 2016.
- Co-Chair of Board of Visitors for NSF ECCS Division for reviewing the processes and procedures, May 2018.

PUBLICATIONS:

Edited Books:

1. R. Bashir and S. Wereley, Volume Editors. M. Ferrari, Series Editor, *Biomolecular Sensing, Processing and Analysis*, Vol. 4 in series *BioMEMS and Biomedical Nanotechnology*, Springer, 2006, ISBN 0-387-25566-4.
2. S. M. Iqbal and R. Bashir (Eds.), *Nanopores: Sensing and Fundamental Biological Interactions*, Springer, 2011, ISBN 978-1-4419-8251-3.

Book Chapters:

1. R. Bashir, "Biologically Mediated Assembly of Artificial Micro and Nanostructures," Chapter 15 in Goddard, Brenner, Iafrate, and Lyshevski (Eds.), *CRC Handbook of Nanoscience, Engineering, and Technology*, pp. 1–28, CRC Press, 2003.
2. R. Gomez and R. Bashir, "Microscale Impedance-Based Detection of Bacterial Metabolism," in *Encyclopedia of Rapid Microbiological Methods*, Vol. 3, pp. 333–362, Michael J. Miller (Series Editor), Davis Healthcare International Publishing (DHI), 2006.
3. H. Li, R. Gomez, and R. Bashir, "Integrated Microsystems for Cellular Analysis and Manipulation," in R. Bashir and S. Wereley (Eds.), *Biomolecular Sensing, Processing and Analysis*, Vol. 4 of *BioMEMS and Biomedical Nanotechnology*, Springer, 2006.
4. S. Lee and R. Bashir, "Biological and Chemical-Mediated Self-Assembly of Artificial Micro and Nanostructures," in Goddard, Brenner, Iafrate, and Lyshevski (Eds.), *CRC Handbook of Nanoscience, Engineering, and Technology*, 2nd Edition, CRC Press, 2007.
5. A. Gupta and R. Bashir, "Integrated Cantilever Based Biosensors for the Detection of Chemical and Biological Entities," in *Nanotechnology in Biology and Medicine*, CRC Press, 2007.
6. S. M. Iqbal and R. Bashir, "Nanoelectronic-Based Detection for Biology and Medicine," in S. Y. Nof (Ed.), *Handbook of Automation*,, Springer, 2008.
7. L. Mercado, J. K. Carney, M. J. Ebert, S. A. Hareland, and R. Bashir, "Digital Health and Biomedical Packaging," in D. Lu and C. P. Wong (Eds.), *Materials for Advanced Packaging* , 2009.
8. L. Yang, X. Cheng, Y. Liu, and R. Bashir, "Lab-on-a-chip Impedance Detection of Microbial and Cellular Activity," in N. Yaakov and S. Bhatia (Eds.), *Microdevices in Biology and Medicine* (series *Methods in Bioengineering*), Artech House, Boston, MA, 2009.
9. M. Venkatesan and R. Bashir, "Solid State Nanopore Sensors," in S. M. Iqbal and R. Bashir (Eds.), *Nanopores: Sensing and Fundamental Biological Interactions*, Springer, 2011.
10. R. Raman and R. Bashir, "Stereolithographic 3D Bioprinting for Biomedical Applications," in *Essentials of 3D Biofabrication and Translation*, Elsevier Press, edited by Anthony Atala and James Yoo (Eds.). 2015.
11. E. A. Corbin, A. YekrangSafakar, O. Adeniba, A. Gupta, K. Park, and R. Bashir, "Integrated Cantilever Based Biosensors for the Detection of Chemical and Biological Entities," chapter in *Nanotechnology in Biology and Medicine*, 2nd Edition, CRC Press, 2016.
12. C. Cvetkovic, E. Ko, C. Kaufman, L. Grant, and R. Bashir, "Chapter 6: Rapid Prototyping of Soft Bio-Actuators," in *3D Bioprinting in Regenerative Engineering: Principles and Applications*, Taylor & Francis, edited by Gulden Camci-Unal and Ali Khademhosseini, Oct. 2017.

Journal Publications:

1. R. Bashir, C. Subramaniam, G. W. Neudeck, and K. Y. Chung, "Transit Time Studies and Electron Mobility Measurement in Hydrogenated Amorphous Silicon Thin Film Transistor," *IEEE Transactions on Electron Devices*, Vol. 36, no. 12, 2944–2948, Dec. 1989.
2. R. Bashir and G. W. Neudeck, "A Technique to Measure the Dynamic Response of a-Si:H Circuits," *Solid State Electronics*, Vol. 33, no. 7, 973–974, 1990.
3. R. Bashir, S. Venkatesan, G. W. Neudeck, and J. P. Denton, "A Poly-Silicon Contacted Sub-Collector BJT for a 3-Dimensional BiCMOS Process," *IEEE Electron Device Letters*, Vol. 13, no. 8, 392–395, Aug 1992.
4. R. Bashir, S. Venkatesan, H. Yen, G. W. Neudeck, and E. P. Kvam, "Doping of Poly-crystalline Silicon Films Using an Arsenic Spin-on-Dopant Source," *Journal of Vacuum Science and Technology-B*, Vol. 11, no. 5, 1903–1905, Sept./Oct. 1993.
5. H. Yen, E. P. Kvam, R. Bashir, and G. W. Neudeck, "Microstructural Examination of Extended Crystal Defects in Silicon Selective Epitaxial Growth," *Journal of Electronic Materials*, Vol. 22, no. 11, 1331–1339, 1993.
6. R. Bashir, W. McKweon, and A. E. Kabir, "A Simple Process to Produce High Quality Silicon Surface Prior to Selective Epitaxial Growth ," *IEEE Electron Device Letters*, Vol. 13, no. 8, 392–395, June 1995.
7. R. Bashir, G. W. Neudeck, H. Yen, E. P. Kvam, and J. P. Denton, "Characterization of Sidewall Defects in Selective Epitaxial Growth of Silicon," *Journal of Vacuum Science and Technology-B*, Vol. 11, no. 5, 923–928, June/July 1995.
8. R. Bashir, G. W. Neudeck, H. Yen, and E. P. Kvam, "Characterization and Modeling of Sidewall Defects in Selective Epitaxial Growth of Silicon," *Journal of Vacuum Science and Technology-B*, Vol. 11, no. 5, 928–935, June/July 1995.
9. R. Bashir, S. Kim, N. Qadri, D. Jin, G. W. Neudeck, J. P. Denton, G. Yeric, K. Wu, and A. Tasch, "Degradation of Insulators in the Silicon Selective Epitaxial Growth Ambient," *IEEE Electron Device Letters*, Vol. 16, no. 9, 306–308, Sept. 1995.
10. M. Sherman, G. W. Neudeck, J. P. Denton, R. Bashir, and W. W. Fultz, "Elimination of the Sidewall Defects in Selective Epitaxial Growth (SEG) of Silicon for a Dielectric Isolation Technology," *IEEE Electron Device Letters*, Vol. 17, no. 6, 267–269, June 1996.
11. R. Bashir and F. Hebert, "PLATOP: A Novel Planarized Trench Isolation and Field Oxide Formation Using Poly-Silicon," *IEEE Electron Device Letters*, Vol. 17, no. 7, 352–354, July 1996.
12. Jamal Deen, S. Rumyantsev, R. Bashir, and R. Taylor, "Measurements and Comparison of Low Frequency Noise in NPN and PNP Polysilicon Emitter Bipolar Junction Transistors," *Journal of Applied Physics*, Vol. 84, no. 1, 625–633, July 1, 1998.
13. R. Bashir, A. E. Kabir, F. Hebert, and C. Bracken, "Tungsten Silicide and Tungsten Polycide Anisotropic Dry Etch Process for Highly Controlled Dimensions and Profiles," *Journal of Vacuum Science and Technology-B*, Vol. 16, no. 4, 2118–2120, July/Aug. 1998.
14. R. Bashir, F. Wang, W. Yindepool, J. De Santis, and J. McGregor, "Back Gated Buried Oxide MOSFETs in a High Voltage Bipolar Technology for Bonded Oxide/SOI Interface Characterization," *IEEE Electron Device Letters*, Vol. 19, no. 8, 282–284, Aug. 1998.
15. R. Bashir, A. E. Kabir, P. Westrom, and D. Rossman, "Phosphorus and Arsenic Dopant Profile Control for High Performance Epitaxial Base Bipolar Junction Devices," *Applied Physics Letters*, Vol. 75, no. 6, 796–798, Aug. 9, 1999.
16. R. Bashir, A. E. Kabir, and K. Chao, "Formation of Self-Assembled Si1-xGex Islands Using Reduced Pressure Chemical Vapor Deposition and Subsequent Thermal Annealing of Thin Germanium Rich Films," *Applied Surface Science*, Vol. 152, 99–106, 1999.

17. A. E. Kabir, R. Bashir, J. Bernstein, J. De Santis, R. Mathews, J. O. O'Boyle, and C. Bracken, "Very High Sensitivity Acoustic Transducers with Thin P+ Membrane and Gold Back Plate," *Sensors and Actuators-A*, Vol. 78, no. 2–3, 138–142, Dec. 17, 1999.

18. Gómez, G. W. Neudeck, and R. Bashir, "On the Design and Fabricaton of Novel Lateral Bipolar Transistor in a Deep-Submicron Technology," *Microelectronics Journal*, Vol. 31, no. 3, 199–205, Feb. 2000.
19. Bashir, T. Su, J. M. Sherman, G. W. Neudeck, J. Denton, and A. Obeidat, "Reduction of Sidewall Defect Induced Leakage Currents by the Use of Nitrided Field Oxides in Silicon Selective Epitaxial Growth (SEG) Isolation for Advanced ULSI," *Journal of Vacuum Science and Technology-B*, Vol. 18, no. 2, Mar./Apr. 2000.
20. J. Babcock, P. Francis, R. Bashir, A. E. Kabir, T. Dhayahude, W. Yindeepol, S. J. Prasad, A. Kalnitsky, M. E. Thomas, H. Haggag, K. Egan, R. Razouk, and D. K. Schroder, "Precision Electrical Trimming of Poly-SiGe Resistors," *IEEE Electron Device Letters*, Vol. 21, no. 6, 283–285, June 2000.
21. R. Bashir and F. Hebert, "Stability of Boron And Phosphorus Implanted Tungsten Silicide Structures at High Temperatures," *Journal of Vacuum Science and Technology-B*, Vol. 18, no. 4, July/Aug. 2000.
22. R. Bashir, A. Gupta, G. W. Neudeck, M. McElfresh, and R. Gomez, "On the Design of Piezoresistive Silicon Cantilevers with Stress Concentration Regions for Scanning Probe Microscopy Applications," *Journal of Micromechanics and Microengineering*, Vol. 10, no. 4, 483–491, Dec. 2000.

23. R. Bashir, "DNA-Mediated Artificial Nano-Bio-Structures: State of the Art and Future Directions," (invited review), *Superlattice and Microstructures*, Vol. 29, no. 1, 1–16, Jan. 2001.
24. S. Lee and R. Bashir, "Modeling and Characterization of Deep Trench Isolation Structures," *Microelectronics Journal*, Vol. 32, no. 4, 295–300, Jan. 2001.
25. R. Bashir, K.-J. Chao, and A. E. Kabir, "Atomic Force Microscopy Study of Self-Assembled Si1-xGex Islands Produced by Controlled Relaxation of Strained Films," *Journal of Vacuum Science and Technology-B*, Vol. 19, no. 2, 517–522, March/April 2001.
26. R. Bashir, R. Gomez, A. Sarikaya, M. Ladisch, J. Sturgis, and J. P. Robinson, "Adsorption of Avidin on Micro-Fabricated Surfaces for Protein Biochip Applications," *Biotechnology and Bioengineering*, Vol. 73, no. 4, 324–328, May 2001.
27. J. Ward, R. Bashir, and N. Peppes, "Micropatterning of Biomedical Polymer Surfaces by Novel UV Polymerization Techniques," *Journal of Biomedical Materials Research*, Vol. 56, no. 3, 351–360, Apr. 24, 2001.
28. R. Gomez, R. Bashir, T. Geng, A. Bhunia, M. Ladisch, H. Apple, and S. Wereley, "Micro-Fluidic Biochip for Impedance Spectroscopy of Biological Species," *Biomedical Micro-Devices*, Vol. 3, no. 3, 201–209, Sept. 14, 2001.
29. H.-M. Cheng, M. T. S. Ewe, R. Bashir, and G. C. T. Chiu, "Modeling and Control of Piezoelectric Cantilever Beam Micro-Mirror and Micro-Laser Arrays to Reduce Image Banding in Electrophotographic Processes," *Journal of Micromechanics and Microengineering*, Vol. 11, 487–498, 2001.
30. S. Bourland, J. Denton, A. Ikram, G. W. Neudeck, and R. Bashir, "SOI Processes for the Fabrication of Novel Nano-Structures," *Journal of Vacuum Science and Technology B*, Vol. 19, no. 5, 1995–1997, Sept./Oct. 2001.
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33. S. W. Lee, H. A. McNally, D. Guo, M. Pingle, D. E. Bergstrom, and R. Bashir, "Electric-Field-Mediated Assembly of Silicon Islands Coated with Charged Molecules," *Langmuir*, Vol. 18, 3383–3386, 2002.
34. R. Gómez, R. Bashir, and A. K. Bhunia, "Microscale Electronic Detection of Bacterial Metabolism," *Sensors and Actuators B*, Vol. 86, 198–208, 2002.
35. H. Li and R. Bashir, "Dielectrophoretic Separation and Manipulation of Live and Heat-treated Cells of Listeria on Microfabricated Devices with Interdigitated Electrodes," *Sensors and Actuators B*, Vol. 86, 215–221, 2002.
36. H. Chang, A. Ikram, T. Geng, F. Kosari, G. Vasmatzis, A. Bhunia, and R. Bashir, "Electrical Characterization of Microorganisms Using Microfabricated Devices," *J. Vac. Sci. Technol. B*, Vol. 20, 2058, 2002.
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38. T. Huang, J. Sturgis, R. Gomez, T. Geng, R. Bashir, A. K. Bhunia, J. P. Robinson, and M. R. Ladisch, "Composite Surface for Blocking Bacterial Adsorption on Protein Biochips," *Biotechnol Bioeng*, Vol. 81, 618–624, 2003.
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41. J. Z. Hilt, A. Gupta, R. Bashir, and N. A. Peppas, "Ultra-sensitive Biomems Sensors Based on Microcantilevers Patterned with Environmentally Responsive Hydrogels," *Biomedical Microdevices*, Vol. 5, no. 3. 177–184, Sept. 2003.
42. S. W. Lee and R. Bashir, "Dielectrophoresis and Electro-hydrodynamics Mediated Fluidic Assembly of Silicon Resistors," *Appl. Phys. Lett.*, Vol. 83, 3833, 2003. (Also in *Virtual Journal of Nanoscale Science & Technology*, Vol. 8, no. 19, Nov. 10, 2003.)
43. T. T. Huang, T. Geng, D. Akin, W. J. Chang, J. Sturgis, R. Bashir, A. K. Bhunia, J. P. Robinson, and M. R. Ladsich, "Micro-assembly of Functionalized Particulate Monolayer on C18 Derivatized SiO2 surfaces," *Biotechnol Bioeng.*, Vol. 83, no. 4, 416–427, Aug. 20, 2003.
44. T. Geng, K. Kim, R. Gomez, D. Sherman, R. Bashir, M. R. Ladisch, and A. K. Bhunia, "Expression of Cellular Antigens of Listeria Monocytogenus that React with Monoclonal Antibodies C11E9 and EM-7G1 Under Acid, Salt, or Temperature Induced Stress Environments," *Journal of Applied Microbiology*, Vol. 95, 762–772, 2003.
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56. R. Gomez, D. Morrisette, and R. Bashir, "Microfluidic BioElectronic Processors for Rapid Detection of Live Bacterial Cells," *IEEE/ASME Journal of Microelectromechanical Systems*, Vol. 14, no. 4, 829–838, Aug. 2005.
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125. J. B. Reddy, Jr., O. H. Elibol, B. R. Dorvel, P. R. Nair, M. A. Alam, and R. Bashir. "SOI Nanofet Devices for Ultra-Sensitive Detection of Biomolecules," Biophysical Society Annual Meeting, March 1, 2009.
126. S. Solin, A. K. M. Newaz, Y. Wang, J. Wu, W-J. Chang, V. R. Kavasseri, I. S. Ahmad, I. Adesida, and R. Bashir, "Measurement and Analysis of Extraordinary Electroconductance in Ti-Ga-As Hybrid Structures," oral presentation and abstract, March Meeting of the American Physical Society, 2009.
127. B. Dorvel, O. Elibol, J. Reddy, P. Nair, A. Alam, and R. Bashir, "Silicon Nanoplate Arrays: Implications for Biosensing and Electronic Label-free Detection," oral presentation, 237th National Meeting of the American Chemical Society (ACS), Salt Lake City, UT, Mar. 23, 2009.
128. B. Dorvel, O. Elibol, J. Reddy, P. Nair, A. Alam, and R. Bashir, "Fabrication and Characterization of Silicon Nanoplates for Biosensing Applications," poster presentation, 237th National Meeting of the American Chemical Society (ACS), Salt Lake City, UT, Mar. 23, 2009.
129. W.-J. Chang, H.-J. Suk, A. Newaz, I. Ahmad, I. Adesida, S. A. Solin, and R. Bashir, "Solution-biased Measurements of Extraordinary Electroconductance in Ti-GaAs Hybrid Structures," 2009 Biomedical Engineering Society Annual Fall Meeting, Pittsburgh, PA, Oct. 7–10, 2009.
130. P. Bajaj, D. Akin, and R. Bashir, "Cardiac Cell Based Bio-batteries," 2009 Biomedical Engineering Society Annual Fall Meeting, Pittsburgh, PA, Oct. 7–10, 2009.
131. P. Bajaj, X. Tang, T. Saif, and R. Bashir, "Substrate Stiffness Influences the Beating Rate and Beating Force of Embryonic Chicken Cardiac Myocytes," 2009 Biomedical Engineering Society Annual Fall Meeting, Pittsburgh, PA, Oct. 7–10, 2009.
132. M. Polans, M. Venketesan, B. Dorvel, S. MacLaren, and R. Bashir, "Alumina Supported Planar Bilayers for the Integration of Protein Channels," 2009 Biomedical Engineering Society Annual Fall Meeting, Pittsburgh, PA, Oct. 7–10, 2009.
133. J. Jeong, V. Chan, C. Cha, R. Bashir, and H. Kong, "In situ Cell Encapsulation into a Vascularized Hydrogel Matrix Using Stereolithography," 2009 Biomedical Engineering Society Annual Fall Meeting, Pittsburgh, PA, Oct. 7–10, 2009.
134. V. Chan, J. Jeong, P. Bajaj, H. Kong, and R. Bashir, "Three-Dimensional Hydrogel Fabrication Using Stereolithography for Live Cell Encapsulation," 2009 Biomedical Engineering Society Annual Fall Meeting, Pittsburgh, PA, Oct. 7–10, 2009.
135. W.-J. Chang, H.-J. Suk, R. Bashir, A. K. M. Newaz, and S. A. Solin, "Solution-biased Measurements and Simulation of Extraordinary Electroconductance in Ti-GaAs Hybrid Structures," APS Spring Meeting, Portland, OR, March 15–19, 2010.
136. B. M. Venkatesan, A. B. Shah, J. M. Zuo, and R. Bashir, "Al_2O_3 Nanopore Sensors for Single Molecule DNA Detection," Microscopy & Microanalysis Workshop, 2010.
137. B. M. Venkatesan, A. B. Shah, J. M. Zuo, and R. Bashir, "Surface Enhanced Al2O3 Nanopore Sensors for DNA Analysis" (poster), Biophysical Society 54th Annual Meeting, San Francisco, CA, Feb. 20–24, 2010.
138. Y. Liu, N. Privorotskaya, J. Lee, H. Zeng, J. A. Carlisle, A. Radadia, L. Millet, R. Bashir, and W. P. King, "Rapid Thermal Lysis of Cells Using Silicon-Diamond Microcantilever Heaters," 7th International Workshop on Nanomechanical Cantilevers, Banff, Canada, May 2010.
139. J. H. Jeong, V. Chan, C. Cha, P. Zorlutuna, R. Bashir, and H. Kong, "In situ Cell Encapsulation into a Vascularized Hydrogel Matrix Using a SLA," Advances in Tissue Engineering and Regenerative Medicine Symposium, University of Illinois, Chicago, IL, Mar. 24, 2010. **(Outstanding paper award in stem cell and regenerative medicine.)**
140. *R. Bashir, "Enabling Technologies for Development and Characterization of Integrated Cellular Systems," World Congress in Biomechanics, GEM4 Symposium, Singapore, Aug. 1–6, 2010. (Invited.)*

141. *V. Chan, P. Zorlutuna, J. H. Jeong, H. Kong, and R. Bashir, "3-Dimensional Bio-Fabrication for Live Cell Encapsulation," Sym 6.6-03: Molecular and Micro/Nano Biosensors in Biomedical Imaging, World Congress of Biomechanics, Singapore, Aug. 1–6, 2010. (Invited.)*
142. *B. M. Venkatesan, Y.-S. Liu, N. Watkins, W.-J. Chang, and R. Bashir, "Integrated Nanobiosensors and Devices for Sensitive Electrical Detection of DNA Molecules," International Materials Research Congress (IMRC-2010) Symposium 23 "Nanostructure Applications in Cross-over Scientific and Technology Fields," Cancun, Mexico, Aug. 16–20, 2010. (Invited.)*
143. A. K. M. Newaz, W.-J. Chang, K. D. Wallace, S. A. Wickline, R. Bashir, A. M. Gilbertson, L. F. Cohen, L. C. Edge, and S. A. Solin, "Inverse-Extraordinary Optoconductance in Ti/Au/GaAs Hybrid Structures," International Conference on the Physics of Semiconductors, COEX, Seoul, Korea, July 25–30, 2010.
144. X. Tang, P. Bajaj, R. Bashir, and T. A. Saif, "Mechanosensitivity of Cardiac Cells and Its Implication on Myocardiac Infarction," 2010 Biomedical Engineering Society Annual Fall Meeting, Austin, TX, Oct. 6–9, 2010.
145. L. J. Millet, G. Popescu, J. V. Sweedler, M. U. Gillette, and R. Bashir, "Neurobiology and Engineering: Resolving Nervous System Function." Biomedical Engineering Society, Austin, TX, Oct. 6–9, 2010.
146. L. J. Millet, K. Park, and R. Bashir, "Deriving Volume-based Mass Profiles Using Confocal Microscopy and Time-lapse Dark Field Imaging." Biomedical Engineering Society, Austin, TX, Oct. 6–9, 2010.
147. J. Go, P. R. Nair, B. Reddy Jr., B. Dorvel, R. Bashir, and M. A. Alam, "Beating the Nernst Limit of 59mV/pH with Double-Gated Nano-Scale Field-Effect Transistors and Its Applications to Ultra-Sensitive DNA Biosensors," Proceedings of the IEDM, 2010. (**Selected as top 10 highlighted papers on the website.**)
148. J. H. Jeong, V. Chan, C. Cha, P. Zorlutuna, R. Bashir, and H. Kong, "Assembly of Vascularized Cell-Encapsulated Hydrogel Matrix Using a Stereolithography (SLA)," 2010 MRS Fall meeting, Boston, MA, Nov. 29–Dec. 3, 2010.
149. Radadia, C. J. Stavis, Y.-S. Liu, N. Privorotskaya, H. Zeng, J. A. Carlisle, W. P. King, R. J. Hamers, and R. Bashir, "Functionalized Ultra-Nanocrystalline Diamond (UNCD) Films For Pathogen Sensing," Fall 2010 Materials Research Society Meeting, Symposium A: Diamond Electronics and Bioelectronics: Fundamentals to Applications IV, Nov. 29–Dec. 2, 2010.
150. *R. J. Hamers, T. L. Clare, J. Butler, A. Radadia, H. Zeng, W. King, J. Carlisle, R. Bashir, and C. Stavis, "Diamond as an Ultra-stable Platform for Biologically Selective Surfaces: From Proteins to Cells," Fall 2010 Materials Research Society Meeting, Symposium A: Diamond Electronics and Bioelectronics: Fundamentals to Applications IV, Nov. 29–Dec. 2, 2010. (Invited.)*
151. J. H. Jeong, V. Chan, C. Cha, P. Zorlutuna, R. Bashir, and H. Kong, "Assembly of Functional Neovessels Using a Stereolithographic Hydrogel Matrix," American Chemical Society (ACS) National Spring Meeting, Anaheim, CA, Mar. 2011.
152. J. Jeong, V. Chan, C. Cha, P. Zorlutuna, R. Bashir, and H. Kong, "Assembly of Functional Neovessels Using a Stereolithographic Hydrogel Matrix," 2011 Society For Biomaterials (SFB) Annual meeting, Orlando, FL, Apr. 13–16, 2011.
153. K. Park, L. Millet, N. Kim, H. Li, K. J. Hsia, N. R. Aluru, and R. Bashir, "MEMS Mass Sensors with Uniform Sensitivity for Monitoring Cellular Apoptosis," Transducers 2011, Beijing, China, June 5–9, 2011.
154. P. Bajaj, B. Reddy Jr., L. Millet, C. Wei, and R. Bashir, "Geometrical Constraints Regulate the Differentiation of Myotubes," UIC/UIUC 3rd Annual Symposium in Tissue Engineering, Chicago, IL, May 20, 2011.
155. P. Bajaj, C. Wei, B. Reddy, and R. Bashir, "Influence of Geometry on the Differentiation of C2C12 Myoblasts," BMES, Hartford, CT, October 12–15, 2011.

156. L. J. Millet, B. M. Venkatesan, M. U. Gillette, and R. Bashir, "Applications of Micro and Nanotechnology for Studying the Functional Interactions of Glia and Neurons in Vitro" (poster), Gordon Conference, Ventura, CA, March 2011.
157. B. M. Venkatesan, D. Estrada, B. Dorvel, S. Banerjee, G. Humphreys, V. E. Dorgan, A. Nardulli, E. Pop, and R. Bashir, "Nano-fabricated Graphene-Al2O3 Nanopores and Nanopore Arrays for the Sensitive Detection of DNA and DNA-Protein Complexes," Proceedings of the 2011 Manufacturing Technologies 2011 Workshop, Napa, CA, Aug. 8–10, 2011.
158. P. Zorlutuna, J. H. Jeong, H. Kong, and R. Bashir, ESB2011, 24th European Conference on Biomaterials (Annual Conference of the European Society for Biomaterials), "Examining Cellular Interactions in 3-Dimensional Microenvironments," Dublin, Ireland, Sept. 4–8, 2011.
159. J. H. Jeong, V. Chan, C. Cha, P. Zorlutuna, C. Sukotjo, R. Bashir, and H. Kong, "Independent Control Stiffness and Permeability of a Cell-encapsulating Hydrogel for Tissue Engineering," BMES Annual Meeting 2011, Hartford, CT, Oct. 12–15, 2011.
160. P. Zorlutuna, J. H. Jeong, H. Kong, and R. Bashir, "Spatial Patterning of Multiple Cell Types in Multifunctional Hydrogel, Environments Using Stereolithography," BMES Annual Meeting, Hartford, CT, Oct. 12–15, 2011.
161. J. Jeong, V. Chan, C. Cha, P. Zorlutuna, R. Bashir, and H. Kong, "Independent Control Stiffness and Permeability of a Cell-encapsulating Hydrogel; Integration of Bio-inspired Material Chemistry and Microfabrication," 2011 AIChE Annual Meeting, Minneapolis, MN, Oct. 16–21, 2011.
162. S. Banerjee, B. M. Venkatesan, D. Estrada, X. Jin, V.E. Dorgan, V. Solovyeva, M.-H. Bae, N. Aluru, E. Pop, and R. Bashir, "A Stacked Graphene-Al2O3 Nanopore Architecture for DNA Detection," Biophysical Society 56th Annual Meeting, San Diego, CA, February, 2012.
163. V. Chan, J. H. Jeong, C. Cvetkovic, H. Kong, and R. Bashir, "A 'Microvascular Stamp' for Guiding New Blood Vessel Growth in Physiologically-Relevant Patterns." Biomedical Engineering Society Annual Meeting, Atlanta, GA, October 24-27, 2012.
164. V. Chan, M. Collens, T. Saif, H. Kong, and R. Bashir, "Developing Autonomous Walking Biological Machines with Hydrogels and Cardiomyocytes Using a Stereolithographic Printer," Biomedical Engineering Society Annual Meeting, Atlanta, GA, October 24-27, 2012.
165. *P. Bajaj, V. Chan, J. H. Jeong, P. Zorlutuna, H. J. Kong, and R. Bashir, "3-D Biofabrication for Development of Cellular Systems," MRS Spring Meeting, Session PP, Manipulating Cellular Microenvironments, San Francisco, CA, Apr. 9–13, 2012. (Invited talk.)*
166. P. Bajaj, D. Marchwiany, C. Duarte, M. Collens, T. C. McDevitt, and R. Bashir, "Dielectrophoretically Assisted Stereolithography for Patterned Three Dimensional Encapsulation of Mammalian Cells," Stem Cell Research and Regenerative Medicine Conference, April 2012 (Oral Abstract Winner).
167. *V. Solovyeva, B. M. Venkatesan, J. Shim, S. Banerjee, J. Rivera, and R. Bashir, "Nanopore Sensors for DNA Analysis," Micro- and Nanotechnology Sensors, Systems, and Applications IV, Emerging Technologies, Proceedings of SPIE Vol. 8373, April 23–27, 2012. (Invited paper.)*
168. X. Tang, P. Bajaj, R. Bashir, and T. Saif, "Mechanical Communication between Cardiac Cells Leads to Synchrony in Beating," Summer Bioengineering Conference ASME, June 2012.
169. *J. Shim, V. Solovyeva, D. Estrada, S. Banerjee, J. Rivera, E. Pop, and R. Bashir, "Graphene Nanopores for Nucleic Acid Analysis," IEEE Nano, 2012. (Invited paper.)*
170. J. D. Wood, S. W. Schmucker, R. T. Haasch, G. P. Doidge, G. L. Damhorst, A. S. Lyons, R. Bashir, E. Pop, and J. W. Lyding, "Improved Graphene Growth and Fluorination on Cu with Clean Transfer to Surfaces," IEEE NANO 2012: 12th International Conference on Nanotechnology, Birmingham, UK, Aug. 20–23, 2012.
171. A. Watkins, U. Hassan, W. Rodriguez, and R. Bashir, "Electrical Flow Metering of Blood for Point-of-Care Diagnostics," IEEE Engineering in Medicine and Biology, San Diego, CA, Sept. 2012.

172. *P. Bajaj, V. Chan, J. Jeong, P. Zorlutuna, H. Kong, and R. Bashir, "3-D Biofabrication Using Stereolithography for Biology and Medicine," IEEE Engineering in Medicine and Biology, San Diego, CA, September 2012. (Invited Talk.)*
173. A. Jokilaakso, E. Salm, A. Chen, L. Millet, C. Duarte, R. Sooryakumar, A. Eriksson Karlström, and R. Bashir, "Ultra Localized Cell Lysis Using Silicon Nanowires," MicroTAS 2012.
174. L. J. Millet, K. Park, K. R. Keller, and R. Bashir, "Real-time Monitoring of Changes in Cell Stiffness During Fixation Using MEMS Mass Sensors in Microfluidic Flow Fields," IEEE EMBS Micro and Nanotechnology in Medicine, Ka'anapali, Hawaii, 2012.
175. V. Chan, K. Park, M. B. Collens, H. Kong, and R. Bashir, "3D Bioartificial Muscle Strips for Actuation of Cellular Systems," IEEE EMBS Micro and Nanotechnology in Medicine, Maui, HI, December 3–7, 2012.
176. V. Chan, J. Jeong, C. Cvetkovic, H. Kong, and R. Bashir, "Toward a Smart Bandage: 'Writing' New Blood Vessels with Stem Cells," IEEE EMBS Micro and Nanotechnology in Medicine, Maui, HI, December 3-7, 2012.
177. S. Banerjee, J. Shim, J. Rivera, X. Jin, D. Estrada, E. Pop, N. R. Aluru, and R. Bashir, "Stacked Graphene-Al2O3 Architecture for DNA Detection," IEEE-EBMS Micro and Nanotechnology in Medicine Conference (MNMC), Ka'anapali, HI, Dec. 2012.
178. J. Shim, G. Humphreys, J. M. Munz, F. Kosari, G. Vasmatzis, A. M. Nardulli, and R. Bashir, "Nanopore-based Direct Analysis of Methylated-DNA/MBD Complex," IEEE EMBS Micro and Nanotechnology in Medicine (MNM'13) Conference, Mau HI, December 3–7, 2012.
179. G. L. Damhorst, C. E. Smith, E. M. Salm, H. Ni, H. Kong, and R. Bashir, "A Liposome-Based Impedance Sensing Device for Point-of-Care Viral Load Determination," ASME 2013 2nd Global Congress on Nanoengineering for Medicine and Biology, February 4–6, 2013, Boston, MA.
180. L. Sloofman, C. Thibodeaux, F. Biase, P. Bajaj, L. Millet, T. Tanaka, R. Bashir, T. Ha, and S. Zhong, "Identifying Gene Regulatory Networks in Pre-implantation Embryos," ASME 2nd Global Congress on Nanoengineering for Medicine and Biology, February 2013.
181. P. Bajaj, D. Marchwiany, C. Duarte, and R. Bashir, "Mimicking the Micro-scale Tissue Architecture Using Stereolithography and Dielectrophoresis," 7th International Conference on Microtechnologies in Medicine and Biology, Monterey, CA, April 10-12, 2013.
182. S. Banerjee, J. Shim, J. Rivera, X. Jin, D. Estrada, V. Solovyeva, X. You, J. Pak, E. Pop, N. Aluru, and R. Bashir, "Electrochemistry of Graphene Edge Embedded Nanopores," American Physical Society March Meeting 2013, Baltimore, MD, March 18–22, 2013.
183. *R. Bashir, "Advanced Solid-State Nanopore Architectures," American Physical Society March Meeting 2013, Baltimore MD, March 19, 2013. (Invited Talk.)*
184. S. Banerjee, J. Shim, J. Rivera, X. Jin, D. Estrada, V. Solovyeva, X. You, J. Pak, E. Pop, N. Aluru, and R. Bashir, "Electrochemistry at the Edge of a Single Graphene Layer in a Nanopore," NHGRI Advanced Sequencing Technology Development Meeting, San Diego, CA, May 1–2, 2013.
185. J. Shim, G. I. Humphreys, B. M. Venkatesan, J. M. Munz, X. Zou, C. Sathe, K. Schulten, F. Kosari, A. M. Nardulli, G. Vasmatzis, and R. Bashir, "Detection and Quantification of Methylation in DNA Using Solid State Nanopores," NHGRI Advanced Sequencing Technology Development Meeting, San Diego, CA, May 1–2, 2013.
186. J. D. Wood, G. P. Doidge, J. Shim, J. C. Koepke, E. A. Carrion, I. Datye, G. L. Damhorst, E. Salm, Y. Chen, R. Bashir, E. Pop, and J. W. Lyding, "Layered Graphene Membranes for Biomolecule Preservation and Programmable Hydration," Graphene Week, Chemnitz, Germany, June 2–7, 2013.
187. V. Chan, H. Kong, and R. Bashir, "3D Fabrication of Biological Machines," IEEE EMBS Conference of the IEEE Engineering in Medicine and Biology Society, Osaka, Japan, July 3–7, 2013. (Invited.)

188. R. Bashir, "Biomedical Micro and Nanotechnology: From Lab-on-Chip to Building Systems with Cells," Advances in Microfluidics & Nanofluidics 2013, University of Notre Dame, South Bend, IN, May 24–26, 2013. (Keynote Talk.)
189. R. Bashir, "Biomedical Micro and Nanotechnology: From Lab-on-Chip to Building Systems with Cells," Transducers 2013 & Eurosensors XXVII: The 17th International Conference on Solid-State Sensors, Actuators and Microsystems, Barcelona, Spain, June 20, 2013. (Invited.)
190. *R. Bashir, "Biomedical Micro and Nanotechnology: From Lab-on-Chip to Building Systems with Cells," 2013 Device Research Conference (DRC) , South Bend, IN, June 23–25, 2013. (Plenary Talk.)*
191. M. Melhem, T. Jensen, J. Jeong, V. Chan, L. Knapp, R. Bashir, H. Kong, and L. Schook, "A Cardiac Patch for Delivering Therapeutic Stem Cells to the Heart Following Myocardial Infarction," 2013 Annual Biomedical Engineering Society Meeting (BMES) Meeting, Seattle, Washington, September 25–28, 2013.
192. R. Raman, V. Chan, M. Mir, B. Bhaduri, C. Cvetkovic, G. Popescu, and R. Bashir, "A Projection Stereolithography System for High Resolution Patterning of Cells in 3D," 2013 Annual Biomedical Engineering Society Meeting (BMES) Meeting, Seattle, Washington, September 25–28, 2013.
193. G. L. Damhorst, C. E. Smith, E. M. Salm, M. M. Sobieraj, H. Ni, H. Kong, and R. Bashir, "A Liposome-based Impedance Sensing Device for Biological Detection," 2013 Annual Biomedical Engineering Society Meeting (BMES) Meeting, Seattle, Washington, September 25–28, 2013.
194. U. Hassan, N. N. Watkins, G. Damhorst, W. Rodriguez, and R. Bashir, "A Point-of-Care Cell Counter for HIV/AIDS Diagnostics," 2013 Annual Biomedical Engineering Society Meeting (BMES) Meeting, Seattle, Washington, September 25–28, 2013.
195. C. Cvetkovic, V. Chan, R. Raman, and R. Bashir, "Development of a 3-D Skeletal Muscle Biological Actuator," 2013 Annual Biomedical Engineering Society Meeting (BMES) Meeting, Seattle, Washington, September 25–28, 2013.
196. A. Nandyala, E. M. Salm, C. Duarte, G. Damhorst, and R. Bashir, "On-Chip Detection of HIV Using Loop-Mediated Isothermal Amplification," Undergraduate Research Poster, 2013 Annual Biomedical Engineering Society Meeting (BMES) Meeting, Seattle, Washington, September 25–28, 2013.
197. *R. Bashir, "Biomedical Micro and Nanotechnology: From Lab-on-Chip to Building Systems with Cells," 15th International Conference on BioMedical Engineering (*http://www.icbme.org/*), Singapore, December 4–7, 2013. (Plenary Talk.)*
198. *R. Bashir, "Lab on Chip for Point of Care Diagnostics," MRS Spring Meeting, San Francisco, CA, April 21–25, 2014. (Invited Talk.)*
199. *R. Bashir, "Biomedical Micro and Nanotechnology: From Lab-on-Chip to Building Systems with Cells," Lab-on-a-Chip European Congress, Berlin, Germany, March 10–11, 2014. (Keynote Talk.)*
200. *C. Cvetkovic, R. Raman, V. Chan, and R. Bashir, "3-D Biofabrication of Creating Biological Machines (Soft Robotics and Drug Screening)," 7th World Congress of Biomechanics, Boston, MA, July 6–11, 2014. (Invited Talk).*
201. V. V. Swaminathan, P. Dak, B. Reddy, E. Salm, C. Duarte, Y. Zhong, J. C. Huang, J. H. Yang, Y. Liu, A. Fischer, M.A. Alam, and R. Bashir, "Localized Electronic Desalting Around Field-Effect Sensors for Molecular Detection in Droplets with Enhanced Sensitivity," 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Chicago, IL, Aug. 26–30, 2014.
202. K. Park and R. Bashir, "Non-Invasive Mechanical Characterization of Adherent Cells," 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Chicago, IL, Aug. 26–30, 2014.
203. *R. Bashir, "Challenges and Opportunities in Lab-on-a-Chip Technologies for Global Healthcare," In Global Health Informatics Summit: Biomedical and Health Informatics in Solving Global Healthcare Grand*

Challenges, 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Chicago, IL, Aug. 26–30, 2014. (Keynote Talk.)

204. *R. Bashir, "Electrical Lab on Chip for Point of Care Diagnostics," Point of Care Diagnostics World Congress, San Diego, CA, September 18–19, 2014. (Invited Talk.)*
205. C. Duarte-Guevara, F. Lai, C. W. Cheng, B. Reddy, E. Salm, V. Swaminathan, Y. Liu, and R. Bashir, "Enhanced Electrical Label-Free Detection of Pathogens Through Isothermal DNA Amplification Using True Dual-Gated ISFETs," BMES 2014 Annual Meeting, San Antonio, TX, October 22–25, 2014.
206. U. Hassan, G. Damhorst, T. Ghonge, O. Sonoiki, L. Orlandic, B. Reddy, and R. Bashir, "Differential Immuno-Capture Assay to Electrically Enumerate Blood Cells," BMES 2014 Annual Meeting, San Antonio, TX, October 22–25, 2014.
207. R. Raman, B. Bhaduri, A. Shkumatov, I. Baek, M. Mir, H. Kong, G. Popescu, and R. Bashir, "Projection Micro-Stereolithography Apparatus for High Resolution Patterning of Cells in 3D: Applications in Tissue Engineering of Vasculature," BMES 2014 Annual Meeting, San Antonio, TX, October 22–25, 2014.
208. E. Corbin and R. Bashir, "Measuring the Growth Rate of Cancerous Human Breast Cancer Cells," BMES 2014 Annual Meeting, San Antonio, TX, October 22–25, 2014.
209. G. Damhorst, J. Kooiman, R. Chaves, M. Sobieraj, T. Ghonge, and R. Bashir, "A Microfluidic Virus Capture and Sensing Device for HIV Viral Load Measurements," BMES 2014 Annual Meeting, San Antonio, TX, October 22–25, 2014.
210. C. Cvetkovic, R. Raman, M. Rich, R. Swetenburg, B. J. Williams, S. Stice, H. Kong, T. Saif, and R. Bashir, "3D Printed Biological Machines Powered by Skeletal Muscle," BMES 2014 Annual Meeting, San Antonio, TX, October 22–25, 2014.
211. R. Raman, C. Cvetkovic, B. J. Williams, S. Uzel, R. J. Platt, R. D Kamm, M. Taher A. Saif, and R. Bashir, "3D Printed Optogenetic Skeletal Muscle-Powered Biological Machines," BMES 2014 Annual Meeting, San Antonio, TX, October 22–25, 2014.
212. *R. Raman, C. Cvetkovic, H. J. Kong, and R. Bashir, "3-D Printing of Biological Systems for Tissue Engineering and Biological Soft Robotics," Symposium H: Micro/Nano Engineering and Devices for Molecular and Cellular Manipulation, Stimulation and Analysis, MRS Fall Meeting & Exhibit, Boston, MA, November 30–December 5, 2014. (Invited Talk.)*
213. R. Bashir, "Opportunity Recognition at the Interface of Medicine and Technology," Special Experts Panel, BMES 2015 Annual Meeting, Tampa, FL, October 7–10, 2015.
214. *J. Shim, Y. Kim, G. Humphreys, A. Nardulli, F. Kosari, G. Vasmatzis, W. Taylor, D. Ahlquist, S. Myong, and R. Bashir, "Nanopore-Based Detection of Biomarker toward Cancer Diagnostics," BMES 2015 Annual Meeting, Tampa, FL, October 7–10, 2015. (Dream Team and Center Talk.)*
215. R. Raman, C. Cvetkovic, S. Uzel, P. Sengupta, R. D. Kamm, and R. Bashir, "Optogenetic Skeletal Muscle Powered 3D Printed Biological Machines," BMES 2015 Annual Meeting, Tampa, FL, October 7–10, 2015. (Dream Team and Center Talk.)
216. C. Cvetkovic, C. Wilder, M. Ferrall, R. Raman, M. Platt, and R. Bashir, "Optimizing the Performance and Lifetime of Muscle-Powered Biological Machines," BMES 2015 Annual Meeting, Tampa, FL, October 7–10, 2015.
217. U. Hassan, B. Reddy, C. Yang, G. Damhorst, and R. Bashir, "A Complete Blood Cell Count Biochip from a Drop of Blood," BMES 2015 Annual Meeting, Tampa, FL, October 7–10, 2015.
218. C. Duarte-Guevara, V. Swaminathan, M. Burgess, B. Reddy Jr., E. Salm, Y.-S. Liu, J. Rodriguez-Lopez, and R. Bashir, "ISFET Operation With Polypyrrole Quasi-Reference Microelectrodes for Miniaturized Label-Free Detection Of Biomolecular Reactions," BMES 2015 Annual Meeting, Tampa, FL, October 7–10, 2015.

219. J. W. Hwang, Y-S. Choi, R. Bashir, and W-J. Chang, "Aqueous Micro-droplet Generation Using Water Immiscible Room Temperature Ionic Liquids in a Microfluidic Device," BMES 2015 Annual Meeting, Tampa, FL, October 7–10, 2015.
220. G. Damhorst, W. Chen, C. Duarte-Guevara, B. Cunningham, and R. Bashir, "RT-LAMP On a Chip for Bloodborne Viral Load Diagnostics," BMES 2015 Annual Meeting, Tampa, FL, October 7–10, 2015.
221. R. Raman, B. Bhaduri, M. K. Lee, A. Shkumatov, G. Popescu, H. J. Kong, and R. Bashir, "High-Resolution 3D Bio-Printing Apparatus for Applications in Patterning of Microvasculature," BMES 2015 Annual Meeting, Tampa, FL, October 7–10, 2015.
222. O. Adeniba, E. Corbin, and R. Bashir, "Dynamic Mechanical Measurement of the Viscoelasticity of Single Adherent Cells," BMES 2015 Annual Meeting, Tampa, FL, October 7–10, 2015.
223. A. Williams, R. Raman, C. Cvetkovic, and R. Bashir, "Three-Dimensional Stereolithographic Patterning of Cells Within A Microfluidic Device," BMES 2015 Annual Meeting, Tampa, FL, October 7–10, 2015.
224. *J. Shim, G. I. Humphreys, A. M. Nardulli, F. Kosari, G. Vasmatzis, W. R. Taylor, D. A. Ahlquist, and R. Bashir, "Nanopore-Based Detection of Biomarker toward Cancer Diagnostics," Symposium K: Materials Science, Technology and Devices for Cancer Modeling, Diagnosis and Treatment, 2015 MRS Fall Meeting & Exhibit, Boston, MA, November 29–December 4, 2015. (Invited Talk.)*
225. U. Hassan, B. Reddy, T. Jensen, M. Patel, E. Flaugher, M. Rappleye, G. Smith, Z. Price, P. Guevara, H. Shahid, A. Tanna, T. Ghonge, and R. Bashir, "Point-of-Care Biochip to Quantify CD64 Expression for Sepsis Diagnosis," 2016 BMES Annual Meeting, Minneapolis, MN, October 5–8, 2016.
226. C. Cvetkovic, M. Ferrall-Fairbanks, R. Raman, M. Platt, and R. Bashir, "Forward Engineering the Functionality of 3D Printed Skeletal Muscle-Powered Biological Machines," 2016 BMES Annual Meeting, Minneapolis, MN, October 5–8, 2016.
227. T. Ghonge, B. Reddy, A. Ganguli, G. Damhorst, U. Hassan, and R. Bashir, "A Biomimetic Microfluidic Particle Tracker for Enumeration of White Blood Cells Subtypes and Quantification of Antigen Surface Expression Level," 2016 BMES Annual Meeting, Minneapolis, MN, October 5–8, 2016.
228. A. Ganguli, G. Damhorst, C. Duarte, T. Ghonge, F. Kosari, C. Konopka, W. Dobrucki, and R. Bashir, "Spatially Mapped Gene Expression Analysis from Tissue," 2016 BMES Annual Meeting, Minneapolis, MN, October 5–8, 2016.
229. R. Raman, M. Mitchell, P. Perez-Pinera, R. Bashir, and L. DeStefano, "Integrating Biological Design-Thinking and the Scientific Method into Undergraduate Biomedical Engineering Curriculum," 2016 BMES Annual Meeting, Minneapolis, MN, October 5–8, 2016.
230. O. Adeniba, E. Corbin, and R. Bashir, "Viscoelastic Correction of Stiffness-Dependent Growth Rates of Cancerous Human Breast Cells," 2016 BMES Annual Meeting, Minneapolis, MN, October 5–8, 2016.
231. E. Ko, S.-J. Yu, J. Park, S. G. Im, M. Boppart, R. Bashir, and H. Kong, "Nanotopography-Induced Neuromuscular Junction Assembly," 2016 BMES Annual Meeting, Minneapolis, MN, October 5–8, 2016.
232. G. Pagan-Diaz, C. Cvetkovic, R. Bashir, and P. Sengupta, "Characterization of Spontaneous and Light-evoked Activity of Mouse Embryonic Stem Cell Derived Motor Neurons using Optogenetic Stimulation and Multi-electrode Electrophysiology," 2016 BMES Annual Meeting, Minneapolis, MN, October 5–8, 2016.
233. C. Kouadio, B. Williams, R. Raman, G. N. Kouzehgarani, R. Swetenburg, L. DeStefano, and R. Bashir, "Biological Machines: Bioengineering Activities for the Classroom," National Science Teachers Association Conference, Minneapolis, MN, October 27, 2016.

INVITED TALKS:

Total External Invited Talks/Lectures (Note: The list includes the invited talks from above and additional ones at universities and industry):

1. R. Bashir and G. W. Neudeck, "Advanced Silicon Structures Using Selective Epitaxial Growth of Silicon," NED Engineering University, Karachi, Pakistan, May 1992.
2. R. Bashir, "Bipolar (SiGe/SOI) Process Development at National," invited talk at Texas Tech. University, Electrical Engineering/Physics Monthly Symposium, Lubbock, TX, Jan. 1997.
3. R. Bashir, "Bipolar/BiCMOS (SiGe/SOI) Process Development at National," invited talk at UC Davis, Electrical Engineering Dept., Davis, CA, May 1997.
4. W. Yindeepol, R. Bashir, J. M. McGregor, K. C. Brown, I. De Wolf, J. DeSantis, and A. Ahmed, "Defect Free Deep Trench Isolation for High Voltage Bipolar Application on SOI Wafer," IEEE Electron Devices Society, Santa Clara Valley Chapter, Winter Half-Day Symposium: Recent Advances in SOI Device and Process Technology, Sunnyvale, CA, Jan. 22, 1999.
5. R. Bashir and G. W. Neudeck, "Novel Applications of Silicon Epitaxy," Advanced Technology Group, National Semiconductor Corp., Sunnyvale, CA, Nov. 15, 1999.
6. R. Bashir, "MEMS Based Biosensors and Nano-structures," University of Texas Medical Branch at Galveston & Biomedical Engineering Department, Galveston, TX, May 10, 2000.
7. R. Bashir and M. Ladisch, "Micro-Fluidic BioChips for Detection of Food Pathogens," Physical Sciences Research Laboratories, Motorola, Inc., Phoenix, AZ, June 22, 2000.
8. R. Bashir, "BioMEMS and Nanobiotechnology Efforts at Purdue University," Regional Conference on MicroTechnology and NanoFabrication, Argonne National Laboratories, Argonne, IL, Sept. 7, 2000.
9. R. Bashir, "Nanobiotechnology: From Biochips to DNA Self-assembly," Department of Materials Science, Ohio State University, Columbus, OH, Oct. 20, 2000.
10. R. Bashir, "Nanosystems for the Characterization of Biological Species," DARPA Workshop on Nanotechnology for Biodetection/Bioassay and Delivery of Therapeutics to Individual Cells, Scottsdale, AZ, Dec. 12–13, 2000.
11. R. Bashir, "Nanosystems for the Characterterization of Biological Species," Nanogen Incorporated, San Diego, CA, Dec. 14, 2000.
12. R. Bashir, "Nanotechnology: It's a Small World After All," Lafayette Area Rotary Club, Feb. 13, 2001.
13. R. Bashir, "Biomedical Applications of Micro/Nano Systems Technology," Roche Diagnostics Corp., Indianapolis, IN, May 10, 2001.
14. R. Bashir, H. McNally, S. Lee, D. Guo, M. Pingle, and D. Bergstrom, "BASIC: Bioinpsired Assembly of Semiconductor ICs," IBC First Meeting on Nanobiotechnology, San Diego, CA, July 16–17, 2001.
15. R. Bashir, "Micro and Nanobiotechnology: At the Interface of Life Science and Engineering," University of California, Berkeley, Nano/Bio Seminar Series, Nov. 26, 2001.
16. R. Bashir, "Micro and Nanobiotechnology: At the Interface of Life Science and Engineering," Xerox Palo Alto Research Center (PARC), Palo Alto, CA, Nov. 27, 2001.
17. H. McNally, M. Pingle, S. W. Lee, D. Guo, D. Bergstrom, and R. Bashir, "Towards the Use of Biologically Inspired Techniques to Assemble Electronic Devices," MRS Fall Meeting, San Francisco, CA, Dec. 3, 2001.
18. R. Bashir, "Micro and Nanobiotechnology: At the Interface of Life Science and Engineering," Eastman Kodak Company, Research Laboratories, Rochester, NY, Dec. 20, 2001.
19. R. Bashir, "Micro and Nanobiotechnology: At the Interface of Life Science and Engineering," American Physical Society (APS) March Meeting, Indianapolis, IN, Mar. 2002.

20. R. Bashir, "Technology Platforms for the Characterization and Detection of Microorganisms," BioMEMS and Nanobiotechnology 2002 World Congress, Columbus, OH, Sept. 6–9 2002.
21. R. Bashir, "From BioMEMS to Bionanotechnology: Interfacing Life Sciences and Engineering," American Institute of Chemical Engineers Annual Meeting, Indianapolis, IN, Nov. 3–8, 2002.
22. H. McNally, S. W. Lee, D. Guo, M. Pingle, D. Bergstrom, and R. Bashir, "Bio-Inspired Self Assembly of Micro- and Nano-Structures for Sensing and Electronic Application," MRS Fall Meeting, Boston, MA, 2002.
23. R. Bashir, "Integrated BioChips for the Detection of Cells and Microorganisms," 225th ACS National Meeting, New Orleans, LA, Mar. 23–27, 2003.
24. R. Bashir, "From BioMEMS to NanoBiotechnology: Interfacing Life Sciences and Engineering at the Micro and Nano Scale," MRS Spring Meeting, San Francisco, CA, Apr. 22, 2003.
25. R. Bashir, "From BioMEMS to Bionanotechnology: Interfacing Life Sciences and Engineering," BioMEMS ERC Opening Meeting, Inha University, Incheon, South Korea, Aug. 18, 2003.
26. R. Bashir, "From BioMEMS to Bionanotechnology: Interfacing Life Sciences and Engineering," Electrical and Computer Engineering Seminar, Seoul National University, Seoul, South Korea, Aug. 19, 2003.
27. R. Bashir, "From BioMEMS to Bionanotechnology: Interfacing Life Sciences and Engineering," Electrical and Computer Engineering Seminar, Hanyang University, Seoul, Korea, Aug. 20, 2003.
28. R. Bashir, R. Gómez, H. Li, D. Akin, and A. Gupta, "Interfacing Micro/NanoTechnology with Life-Sciences for Detection of Cells and Microorganisms," Bipolar/BiCMOS Circuits and Technology Meeting, Emerging Technology Session, Toulouse, France, Sept. 28–30, 2003.
29. R. Bashir, Biomedical Engineering Society Meeting in Fall 2003, Session: BioMEMS, New Frontiers, and Emerging Technologies, Nashville, TN, Oct. 1–4, 2003.
30. R. Bashir, "BioMEMS and Bionanotechnology: Novel Tools for Diagnostics and Biology," University of Illinois, Urbana, IL, Mar. 24, 2004.
31. R. Bashir, "BioMEMS and Bionanotechnology: Novel Tools for Diagnostics and Biology," University of California, Davis, CA, Mar. 27, 2004.
32. R. Bashir, "BioMEMS and Bionanotechnology: Novel Tools for Diagnostics and Biology," NIH NIAID Nanobiology Strategies for Understanding the Immune System Workshop, Bethesda, MD, June 21–22, 2004.
33. A. Gupta, H. Li, R. Gomez, W.-J. Chang, Y. M. Koo, H. Chang, G. Andreadakis, D. Akin, and R. Bashir, "BioMEMS to Bionanotechnology: State-of-the-Art in Integrated Biochips and Future Prospects," Nanosensing: Materials and Devices, SPIE, OpticsEast, vol. 5593, Philadelphia, PA, Oct. 25–28, 2004.
34. R. Bashir, "BioMEMS and Bionanotechnology: Novel Tools for Diagnostics and Biology," Department of Electrical Engineering, Stanford University, Stanford, CA, Nov. 4, 2004.
35. R. Bashir, "BioMEMS and Bionanotechnology: Novel Tools for Biology and Medicine," NSF NSEC at Ohio State University Seminar Series, Ohio State University, Columbus, OH, Feb. 22, 2005.
36. R. Bashir, A. Gupta, D. Akin, and J. Jang, "Nano-mechanical Resonantor Sensors for Virus Detection," Chemical and Biological Sensing with Microcantilevers, American Physical Society Annual Meeting, Los Angeles, CA, Mar. 21, 2005.
37. R. Bashir, "From Publish or Perish to Publish and Protect?," 2005 Indiana BioSensors Symposium, Indianapolis, IN, Apr. 6, 2005.
38. R. Bashir, "BioMEMS and Bionanotechnology: Novel Tools for Biology and Medicine," Wireless Integrated Microsystems ERC Seminar Series at University of Michigan, Ann Arbor, MI, Apr. 12, 2005.
39. J. Jang, A. Gupta, A. Davila, D. Akin, and R. Bashir, "Nanomechanical Resonant Sensors for Virus Detection," ASME Nanomechanics: Sensors and Actuators Conference, Knoxville, TN, May 16–18, 2005.

40. R. Bashir, "BioMEMS and Bionanotechnology for Biology and Medicine," Advances in Optics for Biotechnology, Medicine and Surgery Conference V, Denver, CO, July 24–28, 2005.
41. R. Bashir, "Top Down Nanosensors for Electronic Detection of Biomolecules," 2nd Focused Workshop on Electronic Recognition of Biomolecules, Beckman Institute, University of Illinois at Urbana-Champaign, Sept. 7–9, 2005.
42. R. Bashir, "BioMEMS and Bionanotechnology for Biology and Medicine," Glennan Micro-Breakfast invited talk, Cleveland, OH, Sept. 16, 2005.
43. R. Bashir, "BioMEMS and BioNanotechnology, Novel Tools for Biology and Medicine," Electrical Engineering Department, University of California, Los Angeles, CA, Oct. 10, 2005.
44. R. Bashir, "Nanotechnology and BioMEMS for Characterization of Biological Entities," Chemistry Department, Indiana University, Bloomington, IN, Oct. 13, 2005.
45. R. Bashir, "BioMEMS and BioNanotechnology for Biology and Medicine," nanoSecurity 2005: From Basic Research to Applications, Halle, Germany, Oct. 24–25, 2005.
46. *R. Bashir, "BioMEMS and Bionanotechnology and Applications to Diagnostics," Topical Conference "Biomedical Applications of Nanotechnology (Bionanotechnology)," AIChE 2005 Annual Meeting, Cincinnati, OH, Oct. 31–Nov. 4, 2005. Plenary Session.*
47. R. Bashir, "BioMEMS in Biological Detection and Food Industry," video-lecture. Enterprise Forum of Micro-technologies with Applications in Food Industry, Texas A&M University Center in Mexico City, México, Nov. 4–5, 2005.
48. R. Bashir, "Biomedical or Biological MEMS," Workshop on Biological Large Scale Integration/BioLSI-2, Kavli Nanoscience Institute, California Institute of Technology, Apr. 10–12, 2006. (Invited.)
49. R. Bashir, "BioMEMS and BioNanotechnology for Biology and Medicine: Interfacing Life Sciences and Engineering at the Micro and Nanoscale," Sigma Xi Lecture, University of Dayton, Dayton, OH, Apr. 20, 2006. (Invited.)
50. R. Bashir, "Microfluidic Devices as Petri Dish on a Chip," Summer ITIC Molecular Biology Seminar: Use of Microdevices for Exploring Biology, The MITRE Corporation, McClean, VA, July 11, 2006.
51. R. Bashir, "BioMEMS and Bionanotechnology: Integrated Systems for Biology and Medicine," First Annual Methods in Bioengineering Conference, MIT, Boston, MA, July 17–18, 2006.
52. R. Bashir, "Integration of Biology with Silicon Devices: Opportunities and Future Prospects," Micro/Nanotechnology Seminar Series (MNSS) at MIT, Oct. 5, 2006.
53. R. Bashir, D. Akin, and L. Yang, "BioMEMS and Bionanotechnology: Interfacing Life Sciences and Engineering at the Micro and Nanoscale," ECS Dielectric Science and Technology and Sensor Divisions, Bioelectronics, Biointerfaces, and Biomedical Applications 2 Section E6, Joint International Meeting, Cancun, Mexico, Oct. 29–Nov. 03, 2006. (Invited.)
54. R. Bashir, "Integration of Silicon and Biology: Opportunities and Prospects," Nanotechnology Seminar Series, University of Missouri, Columbia, Apr. 3, 2007.
55. R. Bashir, "Integration of Silicon and Biology: Opportunities and Prospects," IEEE EDS Disntiguished Lecture Series, IEEE-EDS Dallas Section, University of Texas at Arlington NanoFab, Apr. 19, 2007.
56. R. Bashir, "Integration of Silicon and Biology: Opportunities and Prospects," CNST Annual Meeting, University of Illinois, Urbana-Champaign, May 3–4, 2007.
57. R. Bashir, "'Top-Down' Micro/Nanosensors for Biology and Medicine: Opportunities and Prospects," Panel on Nanotechnology, NSF Workshop for Frontiers in Transport Phenomena Research & Education: Energy Systems, Biological Systems, Security, Information Technology & Nanotechnology, University of Connecticut, Storrs, CT, May 17–18, 2007.

58. R. Bashir, "BioMEMS and Bionanotechnology: Integration of Life Sciences and Engineering at the Micro and Nanoscale," The Knowledge Foundation's 10th Annual Conference, BioDetection Technologies 2007, Atlanta, GA, June 14–15, 2007.
59. R. Bashir, "BioMEMS and BioNanotechnology for Biology and Medicine," The Amelia Project Giving Wings to Research, Sponsored by the Indianapolis Affiliate of the Susan G. Komen For the Cure, Indianapolis, IN, Feb. 2, 2008.
60. R. Bashir, "BioMEMS and Bionanotechnology: Integration of Life Sciences and Engineering at the Micro and Nanoscale," Washington University Medical School, Siteman Center for Cancer Nanotechnology Excellence, St. Louis, MO, Feb. 13, 2008.
61. R. Bashir, "Interfacing Silicon and Biology at the Micro and Nanoscale," University of Cinncinnati, Nanomedicine Center Seminar Series, Cinncinnati, OH, Feb. 18, 2008.
62. R. Bashir, "Interfacing Silicon and Biology at the Micro and Nanoscale: Opportunities and Prospects," Keynote talk at the ISMA 2008, Amman, Jordan, May 27, 2008.
63. R. Bashir, "Interfacing Silicon and Biology at the Micro and Nanoscale," NSF USA-EU Workshop on Bionanotechnology, Ispra, Italy, May 2008.
64. R. Bashir, A. Bhunia, and M. Ladisch, "Engineering of Biosystems for the Detection of Listeria Monocytogenes in Foods: Development of a Biochip," Kansas State University, June 18, 2008.
65. R. Bashir and I. Ahmad, "BioMEMS and Bionanotechnology for Development of Miniaturized Instruments," Symposium on Center for Analytical Instrumentation Development, Purdue University, West Lafayette, IN, June 18, 2008.
66. R. Bashir, "Bacterial Detection on a Chip," Harvard/MGH CIMIT Summer Education Series, July 16, 2008.
67. R. Bashir, "Novel Micro and Nanoscale Diagnosic and Therapeutic Platforms," Third Annual NCI Nnaotechnology Alliance Investigators Meeting, Chicago, IL, Sept. 8–10, 2008. (Invited.)
68. R. Bashir, Y. S. Liu, D. Akin, O. H. Elibol, J. Reddy, and K. Park, "Interfacing Silicon, Biology, and Medicine at the Micro and Nanoscale: Opportunities and Prospect," BioMEMS Topical Session at the AVS 55th International Symposium & Exhibition, Boston, MA, Oct. 19–24, 2008. (Invited.)
69. R. Bashir, "Interfacing Life Sciences and Engineering at the Micro and Nanoscale," Nanotechnology Seminar Series, Vanderbilt University, Apr. 15, 2009.(Invited.)
70. R. Bashir, "Bionanoelectronic Sensing on a Chip," Lecture in NSF-Sponsored 2009 GEM4 Summer School on Cellular and Molecular Mechanics, University of Illinois at Urbana-Champaign, June 8–19, 2009. (Invited.)
71. R. Bashir, "Interfacing Life Sciences and Engineering at the Micro and Nanoscale," Nanotechnology Seminar Series at the National University of Singapore, Aug. 3, 2009. (Invited.)
72. R. Bashir, "Interfacing Life Sciences and Engineering at the Micro and Nanoscale," Institute of Microelectronics (IME), An A*Star Research Institute, Singapore, Aug. 4, 2009. (Invited.)
73. R. Bashir, "Interfacing Life Sciences and Engineering at the Micro and Nanoscale," Missouri Nanofrontiers Symposium, University of Missouri, Columbia, Nov. 19, 2009. (Invited.)
74. R. Bashir, "Microsystems Technologies for Probing Molecules and Cells," 49th Annual Meeting of the American Society for Cell Biology, San Diego, CA, Dec. 5, 2009. (Invited.)
75. R. Bashir, "BioMEMS and Bionanotechnology in Biology and Medicine," Nanotechnology Seminar Series, Ohio State University, Jan. 14, 2010.
76. R. Bashir, "Interfacing Life Sciences and Engneering at Micro and Nanoscale," St. Louis Institute of Nanomedicine Inaugural Symposium, Washington University, St. Louis, MO, 2010.
77. R. Bashir, "BioMEMS and Bionanotechnology in Biology and Medicine," Bionanotechnology Seminar Series, Stanford University, Feb. 16, 2010.
78. R. Bashir, "Integrated Biochip Sensors for Detection of Cancer," 20th Southern Biomedical Engineering Conference, University of Maryland, Apr. 30, 2010.

79. R. Bashir, "Silicon Sensors for Biology and Medicine," IEEE EDS Distinguished Lecture, EDS Puebla Chapter, National Institute of Astrophysics, Optics and Electronics (INAOE), Puebla, Mexico, May 20, 2010.
80. R. Bashir, "Interface of Medicine, Biology, and Silicon at the Micro and Nanoscale," Department of Nanoengineering, University of California, San Diego, June 14, 2010.
81. R. Bashir, "Enabling Technologies for Development and Characterization of Integrated Cellular Systems," World Congress in Biomechanics, GEM4 Symposium, Singapore, Aug. 1–6, 2010.
82. V. Chan, P. Zorlutuna, J. H. Jeong, H. Kong, and R. Bashir, "3-Dimensional Bio-Fabrication for Live Cell Encapsulation," Sym 6.6-03: Molecular and Micro/Nano Biosensors in Biomedical Imaging, World Congress of Biomechanics, Singapore, Aug. 1–6, 2010.
83. M. Venkatesan, Y.-S. Liu, N. Watkins, W.-J. Chang, and R. Bashir, "Integrated Nanobiosensors and Devices for Sensitive Electrical Detection of DNA Molecules," International Materials Research Congress (IMRC-2010) Symposium 23 "Nanostructure Applications in Cross-over Scientific and Technology Fields," Cancun, Mexico, Aug. 16–20, 2010.
84. R. Bashir, "BioMEMS and 3-D Biofabrication for Biology and Medicine," 50th Annual Meeting of the American Society of Cell Biology (ASCB), Philedelphia, PA, Dec. 10–15, 2010.
85. R. Bashir, "BioMEMS and 3-D Biofabrication for Biology and Medicine," Bioengineering Seminar Series, University of California, Merced, Jan. 28, 2011.
86. R. Bashir, "Interfacing Engineering, Biology, and Medicine at the Micro and Nanoscale," IEEE EDS Distinguished Lecture and Nano-Electronics/Photonics Seminar Series, Urbana EDS Chapter, University of Illinois at Urbana-Champaign, Jan. 31, 2011.
87. M. Ladisch, E. Ximenes, H. Vibbert, L. Liu, A. Bhunia, R. Bashir, J. Shin, and R. Linton, "Rapid Sample Processing for Pathogen Detection," AIMBE 20th Annual Event, Washington, DC, Feb. 21, 2011.
88. R. Bashir, "Interfacing Engineering, Biology, and Medicine at the Micro and Nanoscale," IEEE EDS Distinguished Lecture, Case Western Reserve University, Cleveland, OH, Mar. 3, 2011.
89. R. Bashir, "Interfacing Engineering, Biology, and Medicine at the Micro and Nanoscale," UT Austin Bioengineering Seminar Series, Austin, TX, Mar. 10, 2011.
90. R. Bashir, "BioMEMS and Biofabrication for Development of Cellular Systems," Invited Investigator Seminar, NSF Science and Technology Center EBICS (Emergent Behaviors of Integrated Cellular Systems), May 6, 2011. (Broadcast at UIUC, MIT, GT, UC Merced, and CCNY.)
91. M. Venkatesan and R. Bashir, "Al2O3 Nanopore Sensors for Complex DNA Analysis" (invited talk), 11th International Symposium on Mutations in the Genome, Human Variome Society, Santorini, Greece, June 6–10, 2011.
92. R. Bashir, "3-D Biofabrication and BioMEMS for Biology and Medicine," 2011 GEM4 Summer School, Georgia Tech, Atlanta, GA, June 26, 2011.
93. R. Bashir, "Out-reach Beyond the Alliance," moderated panel and talk at the Annual Meeting for the NCI Alliance for Nanotechnology in Cancer, Boston, MA, Sept. 21–23, 2011.
94. C. Ximenes, X. Li, H. Vibbert, L. Liu, K. Foster, J. Jones, A. Fleischman, A. Bhunia, R. Bashir, L. Mauer, and M. Ladisch, "Rapid Sample Processing for Pathogen Detection," Food Safety Forum, Shanghai, China, Sept. 2011.
95. R. Bashir, "Interfacing Biology and Silicon at the Micro and Nanoscale: Opportunities and Prospects," Electrical Engineering, Texas A&M University, College Station, TX, Nov. 11, 2011.
96. R. Bashir, "Interfacing Biology and Silicon at the Micro and Nanoscale: Opportunities and Prospects in Cancer and Mechanobiology," University of Kentucky, Lexington, KY, Nov. 28, 2011.
97. R. Bashir, "BioMEMS and Bionanotechnology: Interfacing Biology, Medicine and Engineering at the Micro and Nano Scale," Noguchi Memorial Institute for Medical Research, College of Health Sciences, Jan. 12, 2012.

98. R. Bashir, "BioMEMS and Bionanotechnology: Interfacing Biology, Medicine and Engineering at the Micro and Nano Scale," Nano-Bio Collaborative International Conference. University of South Florida, Tampa, FL, Mar. 22, 2012.
99. P. Bajaj, V. Chan, J. H. Jeong, P. Zorlutuna, H. J. Kong, and R. Bashir, "3-D Biofabrication for Development of Cellular Systems," MRS Spring Meeting, Session PP, Manipulating Cellular Microenvironments, San Francisco, CA, Apr. 9–13, 2012.
100. R. Bashir, "Nanotechnology for Cancer Diagnostics and Therapeutics," 2012 NSTI Cancer Nanotechnology Symposium, Keynote Speaker, Santa Clara, CA, June 20, 2012.
101. L. J. Millet and R. Bashir, "MEMS and nanotechnology in medical and biological problems," Biosensing and Nanomedicine-II at SPIE Optics and Photonics, San Diego, CA, August 12–16, 2012.
102. V. Solovyeva, S. Banerjee, J. Shim, J. Rivera, and R. Bashir, "Solid State Nanopore Sensors for Nucleic Acid Analysis," invited talk at IEEE NANO 2012: 12th International Conference on Nanotechnology, Birmingham, UK, Aug. 20–23, 2012.
103. P. Bajaj, V. Chan, J. Jeong, P. Zorlutuna, H. Kong, and R.Bashir, "3-D Biofabrication Using Stereolithography for Biology and Medicine," IEEE Engineering in Medicine and Biology, San Diego, CA, September 2012. (Invited Talk).
104. E. Salm, C. Duarte, and R. Bashir, "Integrated Lab on Chip for Detection of Cells and Micro-Organisms," invited paper at the IEEE 2012 Photonics Conference, Burlingame, CA, September 23–27, 2012.
105. R. Bashir, "Micro and Nanotechnology for Combating Cancer," IEEE Life Sciences Grand Challenges Conference held in the National Academy Auditorium at Washington, DC, October 4-5, 2012.
106. R. Bashir, "BioMEMS and Biomedical Nanotechnology," Department of Bioengineering, University of California, San Diego, Oct. 19, 2012.
107. R. Bashir, "Microfluidics and Nanotechnology for Point of Care Sensors," Biomedical Engineering Society Meeting, Atlanta, GA, Oct. 25, 2012.
108. R. Bashir, "3-D Biofabrication for Development of Cellular Systems," Track: New Frontiers and Special Topics: Cellular Machines IBiomedical Engineering Society Meeting, Atlanta, GA, Oct. 26, 2012.
109. R. Bashir, "Micro & Nanotechnology for Biology and Medicine: Applications in Point-of-Care Diagnostics and Fabrication of Cell-Based Systems," Mechanical Engineering Department, Massachusetts Institute of Technology, Nov. 9, 2012.
110. R. Bashir, "Micro & Nanotechnology for Biology and Medicine: Applications in Point-of-Care Diagnostics and Fabrication of Cell-Based Systems," Biomedical Engineering, University of Minnesota, MN, Nov. 25, 2012.
111. U. Hassan and R. Bashir, "Point-of-Care CD4 & CD8 T Lymphocyte Counter for HIV/AIDS Diagnostics," Continuing Medical Education Lecture, Shaukat Khanum Memorial Cancer Hospital and Research Center, Lahore, Pakistan, December 24, 2012.
112. R. Bashir, "Advanced Solid-State Nanopore Architectures," American Physical Society March Meeting 2013, Baltimore MD, March 19, 2013 (Invited Talk).
113. R. Bashir, "Biomedical Micro and Nanotechnology: From Lab-on-Chip to Building Systems with Cells," Department of Bioengineering, University of California, San Diego, March 3, 2013.
114. R. Bashir, "Biomedical Micro and Nanotechnology: From Lab-on-Chip to Building Systems with Cells," Stanford Radiology Department, Stanford, CA, March 19, 2013.
115. ***R. Bashir, "Biomedical Micro and Nanotechnology: From Lab-on-Chip to Building Systems with Cells," Advances in Microfluidics & Nanofluidics 2013, University of Notre Dame, South Bend, Indiana, May 24-26, 2013. (Keynote Talk.)***

116. R. Bashir, "Biomedical Micro and Nanotechnology: From Lab-on-Chip to Building Systems with Cells," Transducers 2013 & Eurosensors XXVII: The 17th International Conference on Solid-State Sensors, Actuators and Microsystems, Barcelona, Spain, June 20, 2013. (Invited.)
117. R. Bashir, "Biomedical Micro and Nanotechnology: From Lab-on-Chip to Building Systems with Cells," 2013 Device Research Conference (DRC), South Bend, IN, 2013. (Plenary Talk).
118. V. Chan, H. Kong, and R. Bashir. "3D Fabrication of Biological Machines," IEEE EMBS Conference of the IEEE Engineering in Medicine and Biology Society, Osaka, Japan, July 3-7, 2013. (Invited.)
119. R. Bashir, "Biomedical Micro and Nanotechnology: From Lab-on-Chip to Building Systems with Cells," 15th International Conference on BioMedical Engineering (http://www.icbme.org/), Singapore, December 4–7, 2013. (Plenary Talk.)
120. R. Bashir, "Integrated Cellular Systems," IEEE Life Sciences Grand Challenge Meeting, Singapore, Dec. 2–4, 2013. (Invited Talk.)
121. R. Bashir, "Biomedical Micro and Nanotechnology: From Lab-on-Chip to Building Systems with Cells," Transducers 2013 & Eurosensors XXVII: The 17th International Conference on Solid-State Sensors, Actuators and Microsystems, Barcelona, Spain, June 20, 2013. (Invited.)
122. R. Bashir, "Lab on Chip for Point of Care Diagnostics," MRS Spring Meeting, San Francisco, CA, April 21-25, 2014. (Invited Talk.)
123. R. Bashir, "Biomedical Micro and Nanotechnology: From Lab-on-Chip to Building Systems with Cells," Lab-on-a-Chip European Congress, Berlin, Germany, March 10-11, 2014. (Keynote Talk.)
124. R. Bashir, "Interfacing Engineering, Biology, and Medicine at the Micro and NanoScale: From Lab-on-Chip to Building Systems with Cells," 2014 Interdisciplinary Faculty Retreat, University of Nebraska, Lincoln, May 15, 2014. (Keynote Talk.)
125. C. Cvetkovic, R. Raman, V. Chan, and R. Bashir, "3-D Biofabrication of Creating Biological Machines (Soft Robotics and Drug Screening)," 7th World Congress of Biomechanics, Boston, MA, July 6-11, 2014. (Invited Talk.)
126. R. Bashir, "Electrical Lab on Chip for Point of Care Diagnostics," Point of Care Diagnostics World Congress, San Diego, CA, September 18-19, 2014. (Invited Talk.)
127. R. Raman, C. Cvetkovic, H. J. Kong, and R. Bashir, "3-D Printing of Biological Systems for Tissue Engineering and Biological Soft Robotics," Symposium H: Micro/Nano Engineering and Devices for Molecular and Cellular Manipulation, Stimulation and Analysis, MRS Fall Meeting & Exhibit Boston, MA, November 30–December 5, 2014. (Invited Talk.)
128. R. Bashir, "Interfacing Biology and Medicine at the Micro and Nanoscale," Visionary Frontiers at the Convergence of Biology and Engineering, AAAS auditorium at 1200 New York Ave, NW, Washington, DC, January 14, 2015. (Invited Talk.)
129. R. Bashir, "3-D Printing of Biological Systems for Tissue Engineering and Biological Soft Robotics," SelectBio Tissue Engineering & BioPrinting: Research to Commercialization Conference, Boston, MA, February 9-10, 2015. (Invited Talk.)
130. R. Bashir, "Microfluidics and Nanotechnology for Point of Care Diagnostics," Design of Medical Devices Conference, Minneapolis, MN, April 14, 2015. (Invited Talk.)
131. R. Bashir, "From Lab on Chip to Building with Cells: Interfacing Engineering, Biology and Medicine at the Micro and Nanoscale," 2015 ASME NanoEngineering for Medicine and Biology Congress (NEMB), Minneapolis, MN, April 19–22, 2015. (Plenary Talk.)
132. R. Bashir, J. Shim, S. Banerjee, A. Nardulli, G. Vasmatzis, and D. Ahlquist, "Nanopore Based Methylation Analysis," Drug Discovery & Therapy World Congress 2015, Boston, MA, July 22–25, 2015. (Invited Talk.)
133. R. Bashir, "Microfluidic Blood Cell Counters for Biomedical Diagnostics," Point-of-Care Diagnostics and Global Health World Congress, San Diego, CA, September 29, 2015.
134. J. Shim, G. I. Humphreys, A. M. Nardulli, F. Kosari, G. Vasmatzis, W. R. Taylor, D. A. Ahlquist, and R. Bashir, "Nanopore-Based Detection of Biomarker toward Cancer Diagnostics," Symposium

K: Materials Science, Technology and Devices for Cancer Modeling, Diagnosis and Treatment, 2015 MRS Fall Meeting & Exhibit, Boston, MA, November 29–December 4, 2015. (Invited Talk.)

135. R. Bashir, "Building Emergent Biological Systems: (Using Macro to Nano)," 2015 NSF Nanoscale Science and Engineering Grantees Conference: Progress in Nanotechnology, Arlington, VA, December 9, 2015. (Plenary Talk.)

136. R. Bashir, "From Lab on Chip to Building with Cells: Interfacing Engineering, Biology and Medicine at the Micro and Nanoscale," BME Distinguished Seminar Series at UC Davis, Jan. 28, 2016.
137. R. Bashir, "From Lab on Chip to Building with Cells: Interfacing Engineering, Biology and Medicine at the Micro and Nanoscale," Houston Methodist Research Institute Seminar, Houston, TX, Feb. 1, 2016.
138. R. Bashir, "From Lab on Chip to Building with Cells: Interfacing Engineering, Biology and Medicine at the Micro and Nanoscale," Rice University Houston Methodist Research Institute Seminar, Houston, TX, Feb. 1, 2016.
139. R. Bashir, "Interfacing Engineering, Biology, and Medicine at the Micro and Nanoscale: from Lab-on-Chip to Building with Cells," Seminar series, Parker H. Petit Institute for Bioengineering and Bioscience, Georgia Tech, April 19, 2016.
140. R. Bashir, "Micro and Nanoelectronic Devices for Biology and Medicine," ARO/NSF/SRC Technical Exchange Meeting: Cell-Semiconductor Interfaces and Hybrid Semiconductor-Biological Systems, Georgia Tech Hotel & Conference Center, Atlanta, GA, July 27–28, 2016.
141. R. Bashir, "Engineered (and Emergent) Living Systems: 3D Printed Living Systems," 1st International Workshop on Engineered Living Systems, Chicago, IL, August 3-4, 2016.
142. R. Bashir, "From Lab on Chip to Building with Cells: Interfacing Engineering, Biology and Medicine at the Micro and Nanoscale," King Abdul Aziz University, Jeddah, Sept. 27, 2016.

143. *R. Bashir, "3D Bioprinting for Tissue Engineering and Biological Machines," Biofabrication 2016, Winston-Salem, NC, Oct. 30, 2016. (Plenary Talk.)*

144. R. Bashir, "Micro and Nanotechnology in Medicine: Applications in POC Diagnostics and 3D Bioprinting," Distinguished Lecture Series, J. Crayton Pruitt Family Department of Biomedical Engineering, University of Florida, Gainsville, FL, Nov. 7, 2016.
145. R. Bashir, "Micro and Nanotechnology in Medicine: Applications in POC Diagnostics and 3D Bioprinting," Department of Biomedical Engineering, Texas A&M University, College Station, TX, Nov. 8, 2016.
146. R. Bashir, "How to Engineer a Living System," AAAS Annual Meeting in Boston, Session: Integrated Cellular Systems: Building Machines with Cells, Saturday, Hynes Convention Center, Boston, MA, February 18, 2017.
147. R. Bashir, "Micro and Nanotechnology in Biology and Medicine: Applications in POC Diagnostics, Biofabrication and More…," The Advanced Study Institute on Global Healthcare Education, Harvard University, Boston, MA, March 25–26, 2017.

148. ***R. Bashir, "BioMEMS and Biomedical Nanotechnology: Opportunities and Prospects," Plenary Talk at the Kilpatrick Lecturer Sympoisum "Sensor Science and Technology," Illinois Institute of Technology, Chicago, IL, April 10, 2017.***

149. R. Bashir, "3D Printed Skeletal Muscle-Powered Biological Machines," Materials Research Symposium Spring Meeting, Phoenix, AZ, April 17–21, 2017.

150. R. Bashir, "Biomedical Micro and Nanotechnology: Opportunities and Prospects," 12th Annual Ontario on a Chip Symposium, Ontario, Canada, May 25–26, 2017. (Keynote Talk.)

151. R. Bashir, "BioMEMS and Biomedical Nanotechnology: From Lab on Chip to Printing Cellular Machines," Society of Engineering Mechanics Annual Conference. Indianapolis, IN, June 13, 2017. (Keynote Talk)

152. R. Bashir, "BioMEMS and Biomedical Nanotechnology: From Lab on Chip to Printing Cellular Machines," Co-Organizer (with S. Guha and Bjorn Lussem) of US NSF US-BRAZIL Workshop: "Biosensors – From Bioanalytics to Device Integration", Nov. 8-10, 2017. Santo Andre, Sao Paolo, Brazil.

Short Courses:

1. Three-hour short course on BioChips, at Spring College on Science at the Nanoscale, at the Abdus Salam Center for Theoretical Physics, Trieste, Italy, May 24–June 11, 2004.
2. Short course on BioMEMS, "BioMEMS - Materials, Fabrication, and Devices," at the 2005 Materials Reseach Symposium, San Francisco, CA, March 28, 2005. Co-taught with Prof. David La Van (Yale) and Prof. Kevin Turner (U. of Wisconsin).
3. Short course on BioMEMS, "BioWarfare Agent Detection Using BioMEMS ," at the 2005 ASME Technology Seminar Short Course (PD 437 BioMEMS), Minneapolis, MN.
4. Nanotechnology 501 series on the nanoHub (www.nanohub.org), "An Introduction to BioMEMS and Bionanotechnology," 4 video lectures. More than 11,000 downloads.
5. Co-organized and presented a lecture in an all-day short course on "An Introduction to Microtechnology and Microfluidics for Biology and Medicine." Course organizers: Mehmet Toner (Harvard) and Rashid Bashir (Purdue). Boston, MA, July 9, 2006. http://www.biomemsrc.org/biomems/training-workshop.htm
6. Co-organized (with Jimmy Hsia, Taher Saif, and Irfan Ahmad) a 2-week NSF-Sponsored 2009 GEM4 Summer School on Cellular and Molecular Mechanics at the University of Illinois at Urbana-Champaign, June 8–19, 2009. Lectures and lab sessions had a focus on enabling technologies in cellular and molecular biomechanics, biological, and biomedical research. http://gem4-2009.mechse.illinois.edu/
7. Lecture in IEEE EMBS Short Course in BioMEMS entitled "Integrated BioMEMS and Nanodevices," IEEE EMBS Meeting, Sept. 2, 2009.
8. BioSensing and Bioactuation, Summer School (co-organized with Jimmy Hsia and Irfan Ahmad). 2-week long summer school, July 12–23, 2010. Lectures and hands-on workshop. Also, gave 2 talks in this summer school. http://bsbasi-2010.mechse.illinois.edu/
9. Bionanotechnology Summer Institute (co-organized with Laura Miller, Irfan Ahmad, Jimmy Hsia, Taher Saif, Ann Nardulli, and Martha Gillette). 2-week-long summer school, July 25–Aug. 5, 2011. Lectures and hands-on workshop. http://www.nano.illinois.edu/archive/BNSI2011FinalProgram.pdf
10. Bionanotechnology Summer Institute (co-organized with Laura Miller, Irfan Ahmad, Jimmy Hsia, Taher Saif, Ann Nardulli, and Martha Gillette). 2-week-long summer school, July 30–Aug. 10, 2012. Lectures and hands-on workshop. https://bsbasi-2012.mechse.illinois.edu/
11. GEM^4 Bionanotechnology Summer Institute (co-organized with Laura Miller, Irfan Ahmad, Jimmy Hsia, Taher Saif, Ann Nardulli, and Martha Gillette). 2-week-long summer school, July 29–Aug. 9, 2013. Lectures and hands-on workshop. http://www.nano.illinois.edu/BioNano2013/
12. 2014 Bionanotechnology Summer Institute (co-organized with Laura Miller, Irfan Ahmad, Jimmy Hsia, Taher Saif, Ann Nardulli, and Martha Gillette). 2-week-long summer school, July 28–Aug. 8, 2014. Lectures and hands-on workshop. http://nano.illinois.edu/summer-institute-2014/index.html

PATENTS:

Patents Granted:

1. G. W. Neudeck, R. Bashir, U.S. Patent #5,286,996 granted Feb. 15, 1994, "Triple Self-Aligned Bipolar Junction Transistor-Structure."

2. G. W. Neudeck, R. Bashir, U.S. Patent #5,382,828 granted Jan. 17, 1995, "Triple Self-Aligned Bipolar Junction Transistor-Method."
3. G. W. Neudeck, R. Bashir, U.S. Patent #5,434,092 granted July 18, 1995, "Method for Fabricating a Triple Self-aligned Bipolar Junction Transistor."
4. R. Bashir, F. Hebert, D. Chen, U.S. Patent #5,385,861 granted Jan. 31, 1995, "Planarized Trench and Field Oxide and Poly Isolation Scheme-Method."
5. R. Bashir, F. Hebert, U.S. Patent #5,397,722 granted March 14, 1995, "Process for Making Self-Aligned Source/Drain Polysilicon or Polysilicide Contacts in Field Effect Transistors."
6. R. Bashir, F. Hebert, D. Chen, U.S. Patent #5,411,913 granted May 2, 1995, "Simple Planarized Trench Field Oxide and Poly Isolation Scheme."
7. R. Bashir, F. Hebert, U.S. Patent #5,451,532 granted Sept. 19, 1995, "Process for Making Self-Aligned Base Polysilicon or Polysilicide Contacts in Bipolar Transistors."
8. F. Hebert, D. Chen, R. Bashir, U.S. Patent #5,439,833 granted Aug. 8, 1995, "Method of Making Truly Complementary and Self-Aligned Bipolar and CMOS Transistors with Minimized Base and Gate Resistances and Parasitic Capacitances."
9. R. Bashir, F. Hebert, U.S. Patent #5,581,114 granted Dec. 3, 1996, "Self-Aligned Polysilicon Base Contact in a Bipolar Junction Transistor."
10. F. Hebert, R. Bashir, D. Chen, U.S. Patent #5,681,776 granted Oct. 28, 1997, "Planar Selective Field Oxide Isolation Process and Structures."
11. F. Hebert, R. Bashir, D. Chen, U.S. Patent #5,683,932 granted Nov. 4, 1997, "Planarized Trench and Field Oxide Isolation Scheme."
12. F. Hebert, R. Bashir, D. Chen, U.S. Patent #5,691,232 granted Nov. 25, 1997, "Planarized Trench and Field Oxide Isolation Scheme."
13. R. Bashir, A. E. Kabir, U.S. Patent #5,747,353 granted May 5, 1998, "Method of Making Surface Micro-machined Accelerometers Using Silicon on Insulator Technology."
14. R. Bashir, U.S. Patent #5,780,343 granted June 15, 1998, "A Simple Process to Produce High Quality Silicon Surface Prior to Selective Epitaxial Growth."
15. F. Hebert, R. Bashir, U.S. Patent #5,773,350 granted June 30, 1998, "Method of Forming a Self Aligned BJT with Silicide Extrinsic Base Contacts and Selective Epitaxial Grown Intrinsic Base."
16. W. Yindepool, J. McGregor, K. Brown, R. Bashir, U.S. Patent #5,811,315 granted Sept. 22, 1998, "Method of Forming and Planarizing Deep Isolation Trenches in a Silicon-on-Insulator (SOI) Structure."
17. R. Bashir, F. Hebert, D. Chen, U.S. Patent #5827762 granted Oct. 27, 1998, "Method for Forming Buried Interconnect Structure Having Stability at High Temperatures."
18. R. Bashir, A. E. Kabir, F. Hebert, U.S. Patent #5856239, granted Jan. 5, 1999, "Tungsten Silicide/ Tungsten Polycide Anisotropic Dry Etch Process."
19. R. Bashir, A. E. Kabir, U.S. Patent #5888845 granted March 30, 1999, "Method of Making High Sensitivity Micro-machined Pressure Sensor and Acoustic Transducer."
20. R. Bashir, W. Yindepool, U.S. Patent #5914523 granted June 22, 1999, "Semiconductor Device Trench Isolation Structure with Polysilicon Bias Voltage Contact."
21. R. Bashir, F. Hebert, U.S. Patent #5930635 granted July 27, 1999, "Complementary Si/SiGe Heterojunction Bipolar Technology."
22. R. Bashir, U.S. Patent #5952706 granted Sept. 14, 1999, "Semiconductor Integrated Circuit Having a Lateral Bipolar Transistor Compatible with Deep Sub-Micron CMOS Processing."
23. R. Bashr, A. E. Kabir, U.S. Patent #6,012,335 granted Jan. 11, 2000, "High Sensitivity Micro-machined Pressure Sensors and Acoustic Transducers."
24. P. Moore, R. Bashir, U.S. Patent #6051466 granted April 18, 2000, "Thin Liquid Crystal Transducer Pixel Cell Having Self-Aligned Support Pillars."

25. R. Bashir, W. Yindeepol, U.S. Patent #6,121,148, granted Sept. 19, 2000, "Semiconductor Device Trench Isolation Structure with Polysilicon Bias Voltage Contact."
26. E. Kabir, R. Bashir, U.S. Patent #6,346,452, granted Feb. 12, 2002, "Method for Controlling an N-type Dopant Concentration Depth Profile in Bipolar Transistor Epitaxial Layers."
27. J. M. McGregor, R. Bashir, W. Yindeepol, U.S. Patent #6,362,064, granted Mar. 26, 2002, "Elimination of Walkout in High Voltage Trench Isolated Devices."
28. R. Bashir, R. Gomez, M. Ladisch, A. Bhunia, J. P. Robinson, U.S. Patent #6,716,620, granted Apr. 6, 2004, "Biosensor and Related Method."
29. R. Bashir, N. Peppas, Z. Hilt, A. Gupta, U.S. Patent #6,935,165, granted Aug. 30, 2005. "Microscale Sensor Element and Related Device and Method of Manufacture."
30. R. Gomez, R. Bashir, A. K. Bhunia, M. Ladisch, J. P. Robinson, U.S. Patent #7,306,924, granted Dec. 11, 2007. "Biosensor and Related Method."
31. R. Bashir, L. Razouk, D. M. Morisette, B. Erimli, U.S. Patent #7,413,891, granted Aug. 19, 2008. "Apparatus and Method for Detecting Live Cells with an Integrated Filter and Growth Detection Device."
32. R. Bashir, R. Gomez, U.S. Patent #7,435,579, granted Oct. 14, 2008, "Biosensor and Related Method." Now licensed to Accelerate Diagnostics.
33. R. Bashir, L. R. Razouk, D. T. Morisette, B. Erimli, U.S. Patent #7,553,633, granted June 30, 2009, "Apparatus and Method for Detecting Live Cells with an Integrated Filter and Growth Detection Device."
34. R. Bashir, L. R. Razouk, D. T. Morisette, B. Erimli, U.S. Patent #7,816,100, granted Oct. 19, 2010, "Apparatus and Method for Detecting Live Cells With an Integrated Filter and Growth Detection Device."
35. M. Maschmann, T. S. Fisher, T. Sands, R. Bashir, U.S. Patent #8,679,630, granted March 25, 2014, "Vertical Carbon Nanotube Device In Nanopore Templates."
36. M. Toner, R. Bashir, X. Cheng, U. Demirci, D. Irimia, W. R. Rodriguez, L. Yang, L. Zamir, Y. Liu, U.S. Patent #8,852,875, October 7, 2014, "Methods for Counting Cells."
37. R. Bashir, A. Alam, D. Akin, O. E. Elibol, J. B. Reddy, D. E. Bergstrom, Y. S. Liu, U.S. Patent #8,945,912, granted Feb. 3, 2015, "DNA Sequencing and Amplification Systems Using Nanoscale Field Effect Arrays."
38. H. J. Kong, R. Bashir, J. Jeong, V. Chan, C. Cha, P. Zorlutuna, U.S. Patent #9,050,180, granted June 9, 2015, "Microvascular Stamp for Patterning of Functional Neovessels."
39. R. Bashir, K. Park, L. Millet, K. J. Hsia, N. Aluru, U.S. Patent #9,250,113, granted February 2, 2016, "Cell Mass Measurement and Apparatus."
40. R. Bashir, Y. S. Liu, E. Salm, W-J. Chang, N. N. Watkins, U.S. Patent #9,376,713, granted June 28, 2016, "Label Free Detection of Nucleic Acid Amplification."
41. R. Bashir, E. Salm, C. E. D. Guevara, M. A. Alam, U.S. Patent #9,433,943, granted Sept. 2016. "Thermal Control of Droplets by Nanoscale Field Effect Transistors."
42. H. J. Kong, R. Bashir, J. Jeong, V. Chan, C. Cha, P. Zorlutuna, U.S. Patent #9,533,073, granted Jan. 3, 2017, "Microvascular Stamp for Patterning of Functional Neovessel".
43. R. Bashir, B. M. Venkatesan, Chineese Patent No. 2012800468665, granted June 9th, 2017, "Nanopore Sensors for Biomolecular Characterization."
44. Y-S. Liu, R. Bashir, F-L. Lai, C-W. Cheng, U.S. Patent #9,689,835, granted June 27th, 2017, "Amplified dual-gate bio field effect transistor."
45. R. Bashir, J. B. Reddy, M. A. Alam, P. R. Nair, J. Go, US Patent # 9,835,634, granted December 5th, 2017, "Coupled heterogeneous devices for pH sensing".

Another 10 disclosures files/patents pending.

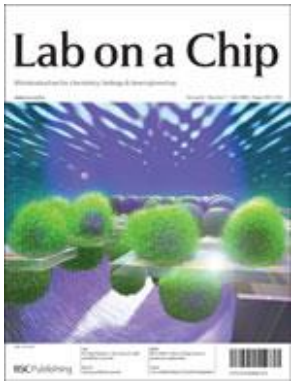
SOME RESEARCH HIGHLIGHTS IN POPULAR MEDIA:

- Prof. Bashir's group has developed miniature light controlled biobots. The work was reported by many sites below:
  NPR Science Friday: Predicting the Future of Robotics, Light illuminates the way for bio-bots, NSF Science Nation – These BioBots show some real muscle, Do The Impossible – Engineering at Illinois, Illinois News: Electrically Paced Bio-Bots Powered by Skeletal Muscle, Illinois News Video featuring Electrically Paced Skeletal Muscle Powered Bio-Bots, WCIA News Video featuring Electrically Paced Skeletal Muscle Powered Bio-Bots.
  BioBots research also featured in Popular Science, Forbes, NBC, Yahoo, Popular Mechanics, Gizmodo, Engadget, TechCrunch, MIT Technology Review, Science Daily, The Verge, Red Orbit, French Tribune, Mashable, Atlas of Science and many other news sources!
- Prof. Bashir's group has developed millimeter scale biological walking microrobots. The work was published in Scientific Reports (NPG) and highlighted in BBC News, NBC, National Geographic, Popular Mechanics, and many other news sites.
  Popular Mechanics (Nov. 15, 2012): 3D-printed biobots might one day roam the insides of our bodies, sensing and neutralizing toxins, targeting tumors and releasing drugs, and acting as cellular repairmen. Engineers from the University of Illinois at Urbana-Champaign used a 3D printer to build several designs for a wormy biobot. Also: Science Daily (Chevy Chase, MD, Nov. 14), R&D Magazine (Rockaway, NJ, Nov. 14), Red Orbit.com (Dallas, Nov. 15), Phys.Org (Nov. 15), NBC News.com (Nov. 15), Discovery News (Nov. 15), Science Codex (Nov. 15), BBC News (Nov. 16), Laboratory Equipment (Nov. 16), The Engineer (London, Nov. 16), TG Daily (Nov. 16), Science 360 (NSF, Nov. 16), AZoNano.com (Warriewood, Australia, Nov. 16), Atlantic Wire (3rd story, Nov. 16), Rapid Ready Technology (Nov. 16), SmartPlanet (Nov. 16), GizMag (Nov. 17), The Verge (Nov. 18), Medical Daily (Nov. 17), ExtremeTech (Nov. 17), MedGadget (Nov. 19), ASEE FirstBell (Nov. 19), National Geographic (Nov. 19), Mashable Tech (Nov. 20), Science News (Washington, DC, Nov. 19), The Scientist (Philadelphia, Nov. 20), e! Science News (Quebec City, Nov. 21), Nanowerk News (Honolulu, Nov. 21), PhysOrg.com (Douglas, Isle of Man, Nov. 21), R&D Magazine (Rockaway, NJ, Nov. 21), Science Codex (San Jose, CA, Nov. 21). NY Times (http://www.nytimes.com/2013/08/20/science/printing-out-a-biological-machine.html?_r=1&)
- Bio-bots featured in news worldwide! In June 2014, Prof. Bashir's group also developed next-generation biobots that were reported in Proceedings of National Academy of Sciences. NBC News | Forbes | Yahoo News | CNET | Popular Mechanics | Science Daily | NSF | Live Science | Tech Crunch
- In collaboration with researchers at Mayo Clinic, Prof. Bashir's group has developed new sensor for detection of methylated DNA:
  http://www.eurekalert.org/pub_releases/2013-03/mc-mca031413.php
  http://newsnetwork.mayoclinic.org/discussion/mayo-clinic-and-illinois-researchers-develop-new-sensor-for-methylated-dna
- Prof. Bashir's group developed MEMS sensors for detection of cell mass versus cell growth at the single-cell level. The work was published in PNAS in Nov. 2010.
  http://www.sciencedaily.com/releases/2010/11/101115131125.htm
- Prof. Bashir's group developed a new process for making solid-state nanopore sensors for detection of DNA molecules.
  http://www.sciencedaily.com/releases/2009/06/090602112307.htm
- Prof. Bashir's group and collaborators developed microscale sensors to measure an individual adherent cell's mass grown in fluid on cantilever sensors.
  http://www.rsc.org/Publishing/Journals/cb/Volume/2008/7/Weighing_cells.asp

- Prof. Bashir (during a sabbatical at MGH) co-developed a new electrical method of counting cells captured from blood. This technology has been licensed to a new startup company, Dektari, Inc., for development of biochip sensors for detection of white blood cells for global health applications.
- Prof. Bashir's group developed a bacterial-mediated delivery technique for delivery of nanoparticles into cells. The technique has higher efficiency than reported techniques and was demonstrated in in-vitro and in-vivo models. Work was reported in *Nature Nanotechnology* and many news sites.
  http://www.purdue.edu/uns/x/2007a/070613BashirSmartnano.html
- Prof. Bashir's group developed nanopore channel sensors for selective detection of DNA sequences. Work reported in *Nature Nanotechnology* and highlighted in many news journals.
  Purdue researchers use 'nanopore channels' to precisely detect DNA
- Prof. Bashir's group developed nano mechanical cantilevers for the detection of mass of viruses through an NIH-funded project, and demonstrated the detection of single virus particles on cantilevers. Work was published in PNAS and highlighted in many news sites.
  http://www.eetimes.com/story/OEG20040213S0009, Virus Detection in ME, Virus Detection in Nature News
- Prof. Bashir's group developed biochips for the rapid detection of cells and micro microorganisms. We miniaturized the technique of "impedance microbiology" and put it on a chip for rapid detection of cell growth. The work has resulted in many publications and also is the basis of a new company, BioVitesse, Inc. The work was highlighted in many news journals.
  EE times: (http://www.eet.com/story/OEG20000711S0023),
  Semiconductor International:
  (http://www.e-insite.net/semiconductor/index.asp?layout=article&articleid=CA65237),
  Photonics Spectra: (http://www.photonics.com/Spectra/tech/read.asp?techid=921),
  Nanobiotech News: Bacterial Detection in Nanobiotech News
- Prof. Bashir's group developed ultra-sensitive pH sensors using hybrid micro-mechanical sensors and hydrogel polymer materials. These devices have a sensitivity of $5x10^{-4}$ ΔpH units, the most sensitive pH sensor reported to date. The work was also highlighted by the Nature Materials website and other science news websites.
  Nature Materials Highlights on Swell Sensors
  http://www.sciencenet.org.uk/slup/CuttingEdge/Sep00/glue.html

Please visit group website to get more details on news highlighting his research program and projects: libna.mntl.illinois.edu

Journal Cover Images:



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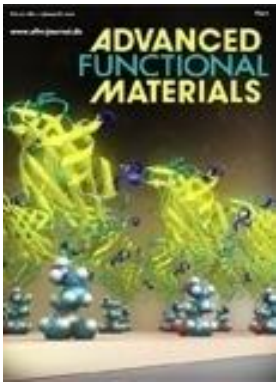

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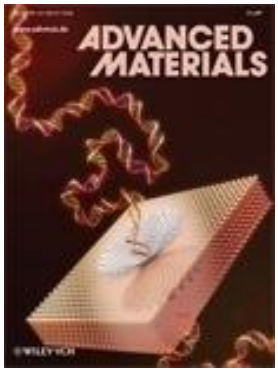

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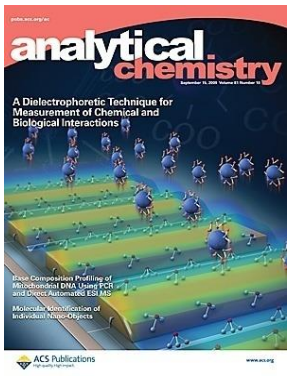

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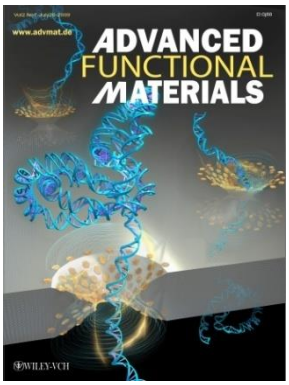

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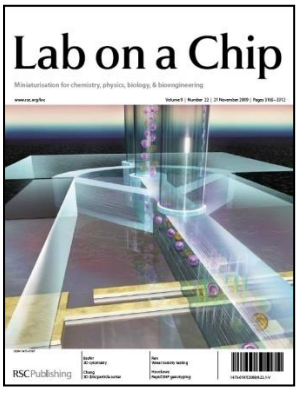

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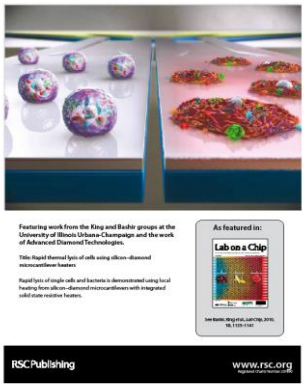

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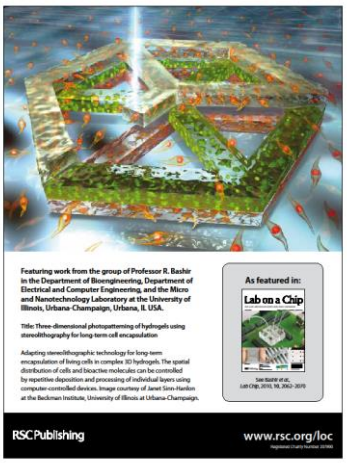

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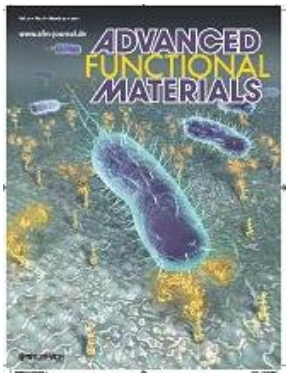

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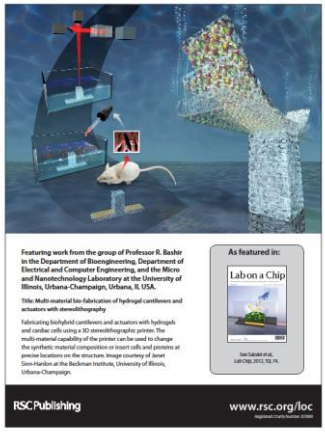

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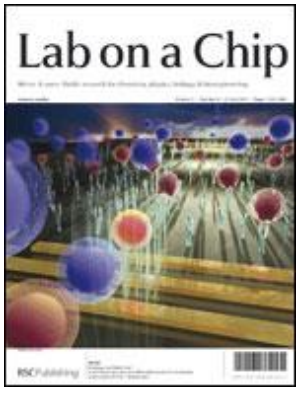

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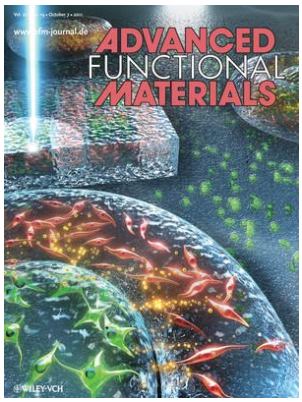

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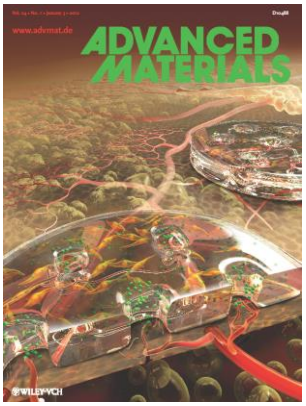

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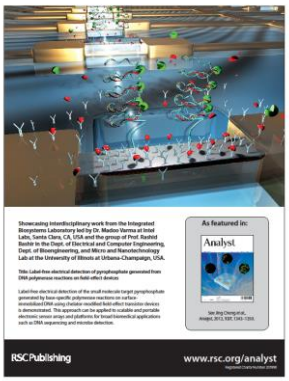

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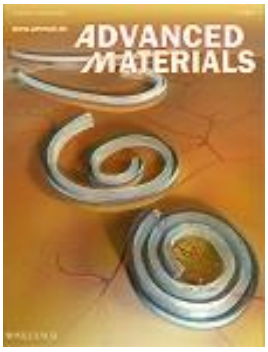

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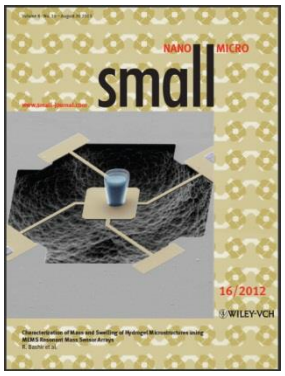

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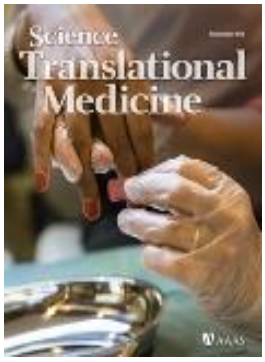

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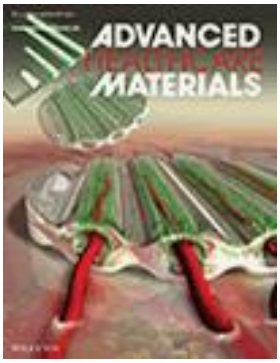

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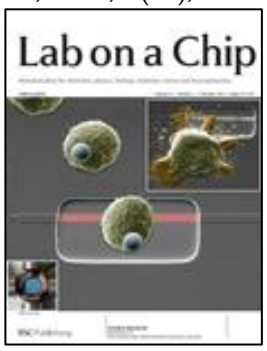

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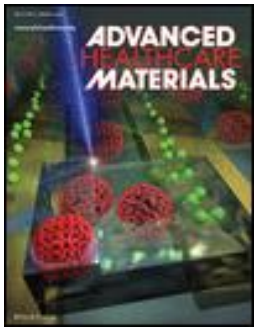

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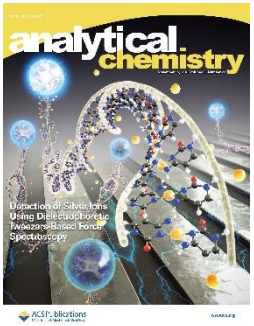

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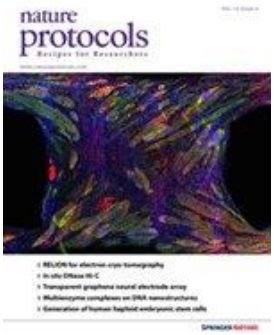

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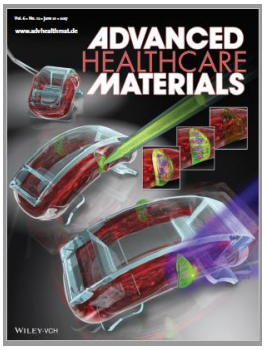

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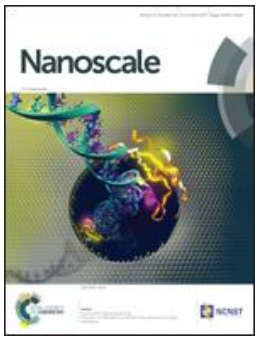

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