

## SAMIR IQBAL, Ph.D., P.E.

Fellow Royal Society of Chemistry, Distinguished Lecturer IEEE-EMBS, IEEE-NTC

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(Current on 14 Jan 2018)

### EDUCATION:

- \* **Ph.D. (Direct)**, Electrical and Computer Engineering, Purdue University, West Lafayette, Indiana, USA. (2007).
- \* **B.S.**, Electrical Engineering, NED University of Engineering and Technology, Karachi, Pakistan. (1996).

### PROFESSIONAL EXPERIENCE:

<b>Professor and Chair</b>	Department of Electrical Engineering University of Texas Rio Grande Valley (UTRGV), Edinburg, Texas, USA	Since 2017
<b>Professor</b>	School of Medicine, UTRGV, Edinburg, Texas, USA	Since 2017
<b>Associate Professor (Adjunct)</b>	Department of Urology University of Texas Southwestern Medical Center at Dallas, Dallas, Texas, USA	2014 – 2017
<b>Associate Professor</b>	Departments of Electrical Engineering and Bioengineering University of Texas at Arlington (UT-Arlington) Arlington, Texas, USA	2013 – 2017
<b>Director</b>	GAANN Doctoral Fellowships Program Department of Bioengineering, UT-Arlington	2013 – 2017
<b>Assistant Professor</b>	Department of Electrical Engineering Department of Bioengineering (C) UT-Arlington	2007 – 2013 2010 – 2013
<b>Post-Doctoral Research Associate</b>	Birck Nanotechnology Center, Discovery Park Purdue University, West Lafayette, Indiana, USA	Feb – July 2007
<b>Research/Teaching Assistant</b>	School of Electrical & Computer Engineering Purdue University, West Lafayette, Indiana, USA	2002 – 2007

~\$2 million as Principal Investigator and ~\$2.5 M as Co-PI on Research Grants

140 Peer-Reviewed Conference Papers

100 Plenary, Keynote, Invited Talks, Distinguished Lectures and Seminars in ~20 Countries

13 Workshops and Tutorials Developed and Delivered around the World

1 Book and 5 Book Chapters

2 Patents Issued, 8 Patent Applications and 12 Intellectual Property Disclosures

60 Journal Publications (selected below, *h*-index = 19, *i10*-index = 33, Citations = 1633)

1. **S. M. Iqbal**, G. Balasundaram, S. Ghosh, D. E. Bergstrom and R. Bashir, "Direct Current Electrical Characterization of ds-DNA in Nanogap Junctions," *Applied Physics Letters*, 86(15), p. 153901 (3 pp) (2005).
2. H. Chang, **S. M. Iqbal**, E. A. Stach, A. H. King, N. J. Zaluzec and R. Bashir, "Fabrication and Characterization of Solid-state Nanopores using a Field Emission Scanning Electron Microscope", *Applied Physics Letters*, vol. 88, no.1, p. 103109 (3 pp) (2006).
3. **S. M. Iqbal**, D. Akin and R. Bashir, "Solid-state Nanopore Channels with DNA Selectivity," *Nature Nanotechnology*, vol. 2, no. 4, pp. 243-248 (2007).
4. Y. Wan, Y.-T. Kim, N. Li, S. K. Cho, R. Bachoo, A. D. Ellington and **S. M. Iqbal**, "Surface Immobilized Aptamers for Cancer Cell Isolation and Microscopic Cytology," *Cancer Research*, 70(22), 9371-9380 (2010).
5. W. Asghar, A. Ilyas, J. A. Billo and **S. M. Iqbal**, "Shrinking of Solid-State Nanopores by Direct Thermal Heating," *Nanoscale Research Letters*, vol. 6, no. 1, p. 372 (6 pp) (2011). DOI:10.1186/1556-276X-6-372.
6. W. Asghar, A. Ilyas, R. R. Deshmukh, S. Sumitsawan, R. B. Timmons and **S. M. Iqbal**, "Pulsed Plasma Polymerization for Controlling Shrinkage and Surface Composition of Solid-state Nanopores," *Nanotechnology*, vol. 22, no. 28, p. 285304 (8 pp) (2011).
7. Y. Wan, J. Tan, W. Asghar, Y.-T. Kim, Y. Liu and **S. M. Iqbal**, "Velocity Effect on Aptamers-based Circulating Tumor Cell Isolation in Microfluidic Devices," *Journal of Physical Chemistry B*, 115(47), 13891–13896 (2011).
8. Y. Wan, M. A. I. Mahmood, N. Li, P. B. Allen, Y.-T. Kim, R. Bachoo, A. D. Ellington and **S. M. Iqbal**, "Nano-textured Substrates with Immobilized Aptamers for Cancer Cell Isolation and Cytology," *Cancer*, vol. 118, no. 4, pp. 1145-1154 (2012). Appeared online: 15 Jul 2011. DOI: 10.1002/cncr.26349
9. W. Asghar, Y. Wan, A. Ilyas, R. Bachoo, Y.-T. Kim and **S. M. Iqbal**, "Electrical Fingerprinting, 3D Profiling and Detection of Tumor Cells with Solid-state Micropores," *Lab on a Chip*, 12(13), 2345-2352 (2012). **Cover**.
10. A. Ilyas, W. Asghar, P. B. Allen, H. Duhon, A. D. Ellington and **S. M. Iqbal**, "Electrical Detection of Cancer Biomarker using Aptamers with Nanogap Break-Junctions," *Nanotechnology*, 23, 275502 (8 pp) (2012).

11. Y. Wan, Y. Liu, P. B. Allen, W. Asghar, M. A. I. Mahmood, J. Tan, H. Duhon, Y.-T. Kim, A. D. Ellington and **S. M. Iqbal**, "Capture, Isolation and Release of Cancer Cells with Aptamer-functionalized Glass Beads," *Lab on a Chip*, vol. 12, no. 22, pp. 4693-4701 (2012). **Cover**.
12. W. Asghar, Y.-T. Kim, A. Ilyas, J. Sankaran, Y. Wan and **S. M. Iqbal**, "Synthesis of nano-textured biocompatible scaffolds from chicken eggshells," *Nanotechnology*, vol. 23, no. 47, p. 475601 (9 pp) (2012).
13. Y. Wan, D. Tamuly, P. B. Allen, Y.-T. Kim, R. Bachoo, A. D. Ellington and **S. M. Iqbal**, "Proliferation and migration of tumor cells in tapered channels," *Biomedical Microdevices*, vol. 15, pp. 635-643 (2013).
14. Q. Zheng, **S. M. Iqbal** and Y. Wan, "Cell Detachment: Post-isolation Challenges," *Journal of Biotechnology Advances*, vol. 31, no. 8, pp. 1664-1675 (2013).
15. M. A. I. Mahmood, W. Ali, A. Adnan and **S. M. Iqbal**, "3D Structural Integrity and Interactions of Single-stranded Protein-binding DNA in a Functionalized Nanopore," *The Journal of Physical Chemistry*, vol. 118, no. 22, pp. 5799–5806 (2014). DOI: 10.1021/jp411820w
16. M. M. Bellah, M. Islam, A. Ilyas, A. D. Ellington, Y.-T. Kim and **S. M. Iqbal**, "Differential behavior of EGFR-overexpressing cancer cells through aptamer-functionalized micropores," *Microfluidics and Nanofluidics*, vol. 17, no. 6, pp. 983-992 (2014). DOI: 10.1007/s10404-014-1402-2
17. A. Ilyas, W. Asghar, Y.-T. Kim and **S. M. Iqbal**, "Parallel Recognition of Cancer Cells using Addressable Array of Solid-state Micropores," *Biosensors and Bioelectronics*, vol. 62, pp. 343-349 (2014).
18. M. A. I. Mahmood, Y. Wan, M. Islam, W. Ali, M. Hanif, Y.-T. Kim and **S. M. Iqbal**, "Micro+nanotexturing of substrates to enhance ligand-assisted cancer cell isolation," *Nanotechnology*, 25(47), 475102 (9 pp) (2014).
19. H. Ma, L. Wang, M. M. Ali, M. A. I. Mahmood, L. Labanieh, M. Mu, **S. M. Iqbal**, Q. Zhang, W. Zhao, and Y. Wan, "Nucleic Acid Aptamers in Cancer Research, Diagnosis and Therapy," *Chemical Society Reviews*, vol. 44, pp. 1240-1256 (2015). DOI: 10.1039/C4CS00357H
20. M. Islam, M. M. Bellah, A. Sajid, M. R. Hasan, Y.-T. Kim and **S. M. Iqbal**, "Effects of Nanotexture on Electrical Profiling of Single Tumor Cell and Detection of Cancer from Blood in Microfluidic Channels," *Scientific Reports*, 5, 13031 (9 pp) (2015). DOI: 10.1038/srep13031
21. W. Ali, A. Ilyas, L. Bui, B. Sayles, Y. Hur, Y.-T. Kim and **S. M. Iqbal**, "Differentiating Metastatic and Non-metastatic Tumor Cells from their Translocation Profile through Solid-state Micropores," *Langmuir*, vol. 32, no. 19, pp 4924–4934 (2016). DOI: 10.1021/acs.langmuir.6b00016
22. M. Hanif, A. Hafeez, Y. Suleman, M. M. Rafique, A. R. Butt and **S. M. Iqbal**, "Accelerated Framework for the Classification of Biological Targets from Solid-state Micropore Data," *Computer Methods And Programs In Biomedicine*, vol. 134, pp. 53-67 (2016). DOI: 10.1016/j.cmpb.2016.06.001
23. M. R. Hasan, N. Hassan, Y.-T. Kim, R. Khan and **S. M. Iqbal**, "Classification of Cancer Cells using Computational Analysis of Dynamic Morphology," *Computer Methods and Programs in Biomedicine*, vol. 156, pp 105-112 (2018). Online 7 Dec 2017. DOI: 10.1016/j.cmpb.2017.12.003
24. N. Mansur, M. R. Hasan, Y.-T. Kim and **S. M. Iqbal**, "Functionalization of Nanotextured Substrates for Enhanced Identification of Metastatic Breast Cancer Cells," *Nanotechnology*, vol. 28, no. 38, pp. 385101 (11 pp) (2017). DOI: 10.1088/1361-6528/aa7f84
25. N. Mansur, M. R. Hasan, Z. I. Shah, F. J. Villarreal, Y.-T. Kim, and **S. M. Iqbal**, "Discrimination of Metastatic Breast Cancer Cells from Indolent Cells on Aptamer-functionalized Surface with Imaging-based Contour Following Techniques," *Biomedical Physics & Engineering Express*, Online 17 Oct 2017, (12 pp) (2017).

#### AWARDS:

- Elected *Distinguished Lecturer*, Institute of Electrical and Electronics Engineers Nanotechnology Council (IEEE-NTC), 2018.
- *Education Award*, Tarrant County Asian American Chamber of Commerce, Arlington, Texas, 2017.
- Elected *Presidential Research Fellow*, University of Texas at Arlington, 2017-18. \$20,000 Prize.
- Elected *Fellow*, The NANOSMAT Society, UK, 2017.
- Elected *Fellow*, Royal Society of Chemistry, UK, 2016.
- UT-Arlington College of Engineering, Excellence in Research Award, 2016. \$5,000 Prize.
- Elected *Distinguished Lecturer*, IEEE — Engineering in Medicine and Biology Society (IEEE-EMBS), 2016-17.
- Sigma Xi *Best Research Advisor* Award 2015.
- Sigma Xi Scientific Research Society *Outstanding ACES Mentor* Award 2014.
- *Recognized Professor*, Phi Kappa Phi, 2011.
- *Best Poster Award* at From DNA-Inspired Physics to Physics-Inspired Biology, The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy, 2009.
- *CAREER* Award, National Science Foundation, 2009: "Nanoelectronic Microfluidic Biochip for Ultrasensitive Detection of Selective Protein Biomarkers." Grant \$468,000.
- 2003-2004 *Magoon Award for Excellence in Teaching*. Award carried cash prize, certificate and a citation. Awardees were chosen from the teaching assistants of 13 engineering schools.
- 1990 *Merit Scholarship* in Bachelor's of Science from Punjab University, Lahore, Pakistan.

## CONFERENCE LEADERSHIP:

- **General Chair**, *3rd US International Conference on Surfaces, Coatings and Nanostructured Materials—NANOSMAT-USA 2016*, Arlington, TX, USA, (May 18 – 20, 2016).
- **General Co-Chair**, *Third Conference on Nanotechnology for Biological and Biomedical Applications (Nano-Bio-Med 2015)*, the Indian Institute of Technology-Bombay (IIT-B), Mumbai, India (December 1 – 4, 2015). <https://www.ee.iitb.ac.in/~nanobiomed/>
- **General Co-Chair** and Member Organizing Committee, *2nd US International Conference on Surfaces, Coatings and Nanostructured Materials—NANOSMAT-USA 2014*, Houston, TX, USA, (May 19 – 22, 2014).
- **General Co-Chair**, *Second Conference on Nanotechnology for Biological and Biomedical Applications (Nano-Bio-Med 2013)*, the Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy (October 14 – 18, 2013). <http://indico.ictp.it/event/a12217/>
- **General Co-Chair**, “Nanoengineering and Nanocomputing Applications for Pervasive Health Environments of the Future Workshop” at the *2nd International Conference on Pervasive Technologies Related to Assistive Environments*, Corfu, Greece, (Jun 6, 2009).
- **Co-Founder** and **General Co-Chair** of *Conference on Nanotechnology for Biological and Biomedical Applications (Nano-Bio-Med)*, the Abdus Salam ICTP, Trieste, Italy, (October 10 – 14, 2011). <http://indico.ictp.it/event/a10173/>

## CONFERENCE COMMITTEES, SESSION/TRACK CHAIR, SERVICE:

- Judge of Student Presentations and Posters, *2017 Annual Biomedical Research Conference for Minority Students (ABRCMS 2017)*, Phoenix, AZ, USA, (November 1 – 4, 2017).
- Session Chair for “Nanobiotechnology & Nanomedicine” at the *12th International Conference on Surfaces, Coatings and Nanostructured Materials (NANOSMAT 2017)*, Paris, France, (September 11 – 13, 2017).
- Member Organization Committee and Session Chair, *3rd International Workshop on Persistent and Photostimulable Phosphors*, Arlington, TX, USA, (November 9 – 13, 2015).
- Session Chair for “T15 Nanotechnology” at the *2015 American Physical Society (APS) March Meeting*, San Antonio, TX, USA, (March 2 – 6, 2015).
- Session Chair for “Microtechnologies for Cancer” in “Cancer Technologies, Nano to Micro Technologies” Track at the *2014 BMES Annual Meeting*, San Antonio, TX, USA, (October 22 – 25, 2014).
- Session Chair for “Biomedical Sensors & Actuators” in “Device Technologies and Biomedical Robotics, Translational Biomedical Engineering” Track at the *2014 BMES Annual Meeting*, San Antonio, TX, USA, (October 22 – 25, 2014).
- Member TPC, *6th Annual IEEE Green Technologies Conference 2014 (IEEE GREENTECH 2014)* “S(olar)O(cean)W(ind) the Seeds of Our Future,” Corpus Christi, TX, USA, (April 3 – 4, 2014).
- Member Program Committee of *2013 ASEE Gulf Southwest Annual Regional Conference – Engineering Education Without Borders*, Arlington, TX, USA, (March 21 – 23, 2013).
- Track Chair of “Bioinstrumentation/MEMS” at *27th Southern Biomedical Engineering Conference (SBEC)*, Arlington, TX, USA, (April 29 – May 1, 2011).
- Session Chair for “Bioinstrumentation and Devices” at *Institute of Biological Engineering 2011 Annual Conference*, Atlanta, GA, USA, (March 3 – 5, 2011).
- Session Chair for “Nano to Micro: Fluidic Technologies” at the *2010 BMES Annual Meeting*, Austin, TX, USA, (October 6 – 9, 2010).
- Member Technical Program Committee, *2nd Annual IEEE Green Technologies Conference 2010 (IEEE GREENTECH 2010)*, Grapevine, TX, USA, (April 15 – 16, 2010).
- Session Chair for “Nano-/Micro-fluidics for Medical Diagnostics and Therapeutics” at *ASME First Global Congress on NanoEngineering for Medicine and Biology (NEMB2010)*, Houston, TX, USA (Feb 7 – 10, 2010).
- Judge, *Honors Undergraduate Research and Creative Activity Symposium*, The Honors College, University of Texas at Arlington, Arlington, TX, USA, (November 20, 2009).
- Session Chair for “Nano to Microfluidic Technology Advances” at *2009 BMES Annual Meeting*, Pittsburgh, PA, USA, (October 7 – 10, 2009).
- Member Technical Program Committee, *IEEE Antennas and Propagation Society (APS) Mini Symposium on Emerging Technologies*, Richardson, TX, (2008, 2009).
- Member TPC of *8th International Conference on Nanotechnology (IEEE Nano 2008)*, and Session Chair for “Nano Carbon, Nano Diamond, and Carbon Nanotube-based Technologies,” TX, USA, (Aug 18 – 21, 2008).
- Session Chair for “Nanotechnology Application in Biology and Medicine” and “Microfabricated Implants” at the *2007 BMES Annual Meeting*, Los Angeles, CA, USA, (September 26 – 29, 2007).