# FAISAL SHAIKH

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## EDUCATION

**Ph.D.**, Chemical Engineering [2002-2008]
Artie McFerrin Department of Chemical Engineering, Texas A&M University, College Station, Texas, GPA: 3.57/4.0
*Research Advisor:* Dr. Victor M. Ugaz
*Dissertation topic:* Concentration and Focusing of DNA in Microchannels using Microfabricated Electrode Arrays for Medical Diagnostics Applications
*Other projects:* Label-Free DNA and Protein Detection in Free Solution (*patent pending*); Developing Programmable Handheld Diagnostics Devices

**B.Chem.Engg.**, Chemical Engineering [1998-2002]
Institute of Chemical Technology, University of Mumbai, Mumbai, India, GPA: 3.66/4.0
*Senior Year Project:* Prepared a Preliminary Feasibility Report for the Manufacture of Ginseng Extract
*Summer Research:* Tested an Unconventional Raw Material for the Manufacture of Paper at the Central Institute of Research in Cotton Technology, Mumbai, India [Summer 2000]

## EXPERIENCE

- *Assistant Professor*, Qatar University [Fall 2008-present]
  Courses instructed:
  - Chemical Reaction Engineering
  - Heat Transfer
  - Numerical Methods

  Committee member:
  - Quality Assurance Committee
- *Visiting Professor*, Qatar University [Spring 2008]
  Courses instructed:
  - Chemical Reaction Engineering
  - Chemical Engineering Lab III
- *Assistant to Course Instructor,* Texas A&M University
  - Conservation Principles in Engineering Mechanics [Fall 2005]
  - Chemical Engineering Fluid Operations [Summer 2004]
  - Chemical Engineering Unit Operations Lab [Fall 2003]
- *Research Assistant,* Chemical Engineering Department, Texas A&M University [Jan. 2003- Present]
- *Undergraduate Internship,* Reliance Industries Limited, Hazira, India [Summer 2001]
  - Worked in the Mono Ethylene Glycol unit of one of the major petrochemical companies of India, studying the detailed workings of the plant
  - Troubleshot an Effluent Treatment Plant that was working inefficiently and came up with a solution that the management implemented

## ACQUIRED SKILLS

- *Software*
  - Hysys, Matlab, C, C++, Fortran, Comsol (Finite Element Analysis), Maple, Cerius2, Gaussian, Openlab, L-Edit Pro, Adobe: Photoshop, Premiere and Illustrator, Aspen Plus, MS Office
  - Operating systems: Windows, Unix, Mac OSX

- *Graduate Coursework*
    - Chemical Engineering Kinetics, Application of Thermodynamics to Chemical Engineering, Advanced Process Integration, Advanced Transport Phenomena, Introduction to Microfabrication and Microfluidics, Methods in Applied Mathematics, Molecular Modeling, Electrophoresis

## AWARDS

- *$10,000 Deisler Graduate Fellowship* awarded by the Artie McFerrin Department of Chemical Engineering for outstanding published research in the department, November 2007
- *Lamiya Zahin Memorial Safety Scholarship* awarded by the Artie McFerrin Department of Chemical Engineering and the Mary Kay O'Connor Process Safety Center, October 2007
- *Second place* in the American Electrophoresis Society graduate student poster competition, 2004 Annual Meeting of the American Institute of Chemical Engineers, Austin, TX, November 9, 2004
- *Second place* at the national level in paper presentation titled: "Life Cycle Analysis: Solving the paper bag vs. plastic bag debate", Anantapur, India, 2001
- *Graduate student travel awards* to various research conferences
    - Gordon Conference on the Physics and Chemistry of Microfluidics. Waterville Valley, NH, 2007
    - Lab Automation 2006. Palm Springs, CA, January 23, 2006
    - American Electrophoresis Society Travel Grant, Annual Meeting of the AIChE. Cincinnati, OH, 2005
- *Third place* for a presentation on "*Micro-chemical Engineering*" at the UICT Alumni Association sponsored oral presentation competition, UICT, India, 2001
- *Best All Round Student* awarded in the final year of high school, St. Xavier's High School, Mumbai, India, 1996

## SELECTED PUBLICATIONS

- "Collection, Focusing, and Metering of DNA in Microchannels using Addressable Electrode Arrays for Portable Low-Power Bioanalysis", Shaikh, F.A. and Ugaz, V.M., **PNAS**, 103: 4825-30, 2006
    - Top 20 most read engineering papers of PNAS in March 2006
    - Highlighted in *Analytical Chemistry* [Vol. 78 (2006): 3483]
    - Highlighted in *Lab on a Chip* [Vol. 6 (2006): 709]
- "Label-Free Optical Detection of DNA In Microchannels by Reversible Electric Field Confinement in Free Solution", Shaikh, F.A. and Ugaz, V.M., Proceedings of the 11$^{th}$ International Conference on Miniaturized Systems for Chemistry and Life Sciences, Micro-Total Analysis Systems, Paris, France, Oct. 2007
- "Microfabricated Electrophoresis Systems for DNA Sequencing and Genotyping Applications: Current Technology and Future Directions", Ugaz V.M., Elms R.D., Lo R.C., Shaikh F.A. and Burns M.A., Phil. Trans. Roy. Soc. Lond. A, 362: 1105-1129, 2004
- "DNA Focusing Using Microfabricated Electrode Arrays", Shaikh, F.A. and Ugaz,V.M. book chapter submitted to Methods in Molecular Biology Series edited by Lee, J.W.

## SELECTED PRESENTATIONS

- "Label-Free Optical Detection of DNA In Microchannels by Reversible Electric Field Confinement in Free Solution", The 11th International Conference on Miniaturized Systems for Chemistry and Life Sciences, MicroTAS 2007. Paris, France, October 12, 2007
- "Label-Free DNA Detection in Microchannels by Reversible Formation of a Light Diffracting Mesophase", 2007 Gordon Conference on the Physics and Chemistry of Microfluidics. Waterville Valley, NH, July 18, 2007
- "Concentration, Focusing, and Metering of DNA in Microfabricated Analysis Chips Using Addressable Electrode Arrays." Poster MP69. Lab Automation 2006. Palm Springs, CA, January 23, 2006
- "Focusing, Collection and Metering of DNA using Microfabricated Electrode Arrays", Paper 170a. 2005 Annual Meeting of the American Institute of Chemical Engineers. Cincinnati, OH, November 1, 2005
- "Enhanced Separation Performance in Microfabricated Devices by Electric Field Induced Collection and Metering of DNA", Oral Presentation Session (DNA Microfluidics). NSTI Nanotech 2005. Anaheim, CA, May 11, 2005
- "Electric Field Directed Collection and Metering of DNA in Microfluidic Devices". Poster K1-164. 2004 March Meeting of the American Physical Society. Montreal, Quebec, March 23, 2004

## REFERENCES

- Dr. Victor M. Ugaz (PhD Research Advisor)
  Associate Professor,
  Department of Chemical Engineering, Texas A&M University,
  (979) 458-1002, ugaz@tamu.edu

- Prof. Mahmoud El-Halwagi (Former Graduate Advisor and Course Instructor)
  McFerrin Professor,
  Department of Chemical Engineering, Texas A&M University,
  (979) 845-3484, el-halwagi@tamu.edu

- Dr. Arul Jayaraman (PhD Research Committee Member)
  Assistant Professor,
  Department of Chemical Engineering, Texas A&M University,
  (979) 845-3306, arulj@tamu.edu