TURGUT FETTAH KOSAR, PH.D.

700 Huron Ave, Apt 19M, Cambridge, MA 02138
(617) 694-8109 • fkosar@cns.fas.harvard.edu

SUMMARY

- Diverse educational and technical background in nanotechnology, bioengineering, chemical engineering, materials science, microfabrication, and microfluidics.
- Highly interdisciplinary knowledge and skills bridging engineering to biological sciences.
- Extensive work experience in cleanrooms, nanotechnology facilities, and biological laboratory settings.
- Broad management and leadership experience gained in academic as well as industrial settings.
- Efficient team player with outstanding communication and presentation skills.
- Well-versed in technology innovation, intellectual property protection, and corporate entrepreneurship.

EDUCATION

2002-2005 **PhD Bioengineering and Nanotechnology** (Dual Degree Program), University of Washington. "Nanofluidic Delivery Device for Probing Single Cells" (Advisor: Prof. Albert Folch, Bioengineering)

2003-2005 **Technology Entrepreneurship Certificate** (TEC), Center for Innovation and Entrepreneurship, University of Washington Business School

1999-2002 **MS Bioengineering,** University of Washington. "Synchronization of Bacterial Cultures in a Microsystem" (Advisor: Prof. Deirdre R. Meldrum, Electrical Engineering)

1991-1993 **MSE Chemical Engineering and Materials Science,** University of California, Davis. "Measurement of Hindered Diffusion by Holographic Interferometry" (Advisor: Prof. Ronald J. Phillips, Chemical Engineering and Materials Science)

1987-1991 **BS Chemical Engineering,** Bogazici University, Istanbul, Turkey. Thrust Area: Polymer Science

EMPLOYMENT HISTORY AND WORK EXPERIENCE

2008-present **Principal Scientist/Facility Manager**, Center for Nanoscale Systems, Harvard University
Managing the Material Synthesis and Characterization Facilities and a team of six staff members, in addition to the responsibilities as a Principal Scientist.

2006-2007 **Principal Scientist**, Center for Nanoscale Systems, Harvard University
Acted as the Soft Lithography Specialist and Liaison for National Nanotechnology Infrastructure Network (NNIN). Trained and assisted students, postdoctoral fellows, and researchers. Planned and founded the new Nanoparticles Facility. Procured and set up new equipment and processes. Developed new standard operating procedures, process recipes, and training documents. Organized workshops and seminars.

2005-2006 **Senior Fellow,** Yager Lab, University of Washington
Worked on the microfluidic device design and immunoassay development aspects of a point-of-care system for the diagnosis of life-threatening infectious diseases in third-world countries (funded by the Bill & Melinda Gates Foundation Grand Challenges in Global Health Initiative). Applied for one patent as a co-inventor ("Method and Device for Rapid Parallel Microfluidic Molecular Affinity Assays").

2004 Summer **WRF Capital/Gates Fellow,** University of Washington Business School
Assessed several early-stage technologies from University of Washington, Battelle, and Boeing for their business potential. As a member of a four-member team, developed a business model and plan to commercialize a novel ultrasound technology for diagnosing coronary artery disease.

2002-2005 **Research Assistant,** Folch Lab, University of Washington
Designed and fabricated a microfluidic device incorporating an array of nanoholes for parallel patch-clamping and focal biochemical delivery to individual cells. Initiated the patenting efforts and applied for two patents as a co-inventor ("Microwell Arrays Incorporating Micro- and Nanoholes for Cellular Analysis" and "Arrays of Microfluidically-Addressable Nanoholes for Cellular Analysis").

2000-2002 **Research Assistant,** Genomation Lab, University of Washington
Developed, built and tested a MEMS-based device exploiting dielectrophoresis and electrokinetic alignment for the synchronization of rod-shaped bacteria. Applied for one patent as a co-inventor ("MEMS-Based Cell Cycle Synchronizer for Bacterial Cultures").

1997-1999 **Vice President,** Kosar Leather Company (Kosar Deri San.), Istanbul, Turkey

Managed the wet production facilities of the company while supervising the R&D Department.

1995-1997 **Chief of R&D,** Kosar Leather Company (Kosar Deri San.), Istanbul, Turkey
Planned and established a new R&D Department for the factory. Modernized and optimized the manufacturing processes.

1994-1995 **Postgraduate Researcher,** Phillips Lab, University of California, Davis
Studied protein diffusion in gels using holographic interferometry.

1992-1993 **Research Assistant,** Phillips Lab, University of California, Davis
Developed, assembled and tested a holographic laser interferometry system for studying hindered diffusion of proteins in polymer solutions and gels.

1991-1993 **Teaching Assistant,** Chemical Engineering, University of California, Davis
Taught 'Chemical Engineering Laboratory' and assisted 'Introduction to Fluid Mechanics'.

RECENT TECHNICAL EXPERIENCE

Microfabrication, nanofabrication, cleanroom experience, photolithography, electron-beam lithography, soft lithography, microfluidics, optical microscopy, scanning electron microscopy (SEM), focused ion beam (FIB), X-ray imaging and computed tomography (CT), dynamic light scattering (DLS), cell culture laboratory experience.

HONORS AND ACCOMPLISHMENTS

- Conceived and started up the Nanoparticles Facility at the Center for Nanoscale Systems at Harvard University in 2007.
- Organized and led the Soft Lithography Technical Forum in autumn 2006 at Harvard University.
- Invited member of the Steering Committee organizing the 2006 University of Washington Business Plan Competition.
- Member of the team that won the 1st Place at the University of Washington Business Plan Competition in 2005.
- Leader of the team that won the 3rd Place at the University of Washington Business Plan Competition in 2004.
- Co-wrote a successful Research and Technology Development (RTD) Phase I grant proposal for a start-up company.
- Received the prestigious WRF Capital/Gates Fellowship for 2004 from the Center for Technology Entrepreneurship at the University of Washington Business School.
- Was nominated for the 2004-05 Graduate School Medalist Award at the University of Washington.
- Won 2nd Place at the Fourth Annual Nanoscale Science and Technology Workshop Poster Competition in 2004, and 3rd Place at the University of Washington Rushmer Poster Competitions in 2004 and 2005.
- Developed a new student seminar course at the University of Washington for Winter Quarter 2004 (CHEM560D / BIOEN599P Student Seminars in Nanoscience).
- Received University Initiatives Fund (UIF) Fellowships for 2002-03 and 2003-04 academic years.
- Was elected and served as the President of NaNSA (Nanotechnology and Nanoscience Student Association) for 2003-04.
- Received Non-resident Tuition Fellowships for 1991-92 and 1992-93 academic years.
- Received Certificate of Honor for graduating in 2nd rank among the Class of 1991.
- Fluent in English and Turkish, conversational in German.

PUBLICATIONS

- Hasenbank MS, Edwards T, Fu E, Garzon R, **Kosar TF**, Look M, Mashadi-Hossein A, Yager P, "Demonstration of Multi-Analyte Patterning Using Piezoelectric Inkjet Printing of Multiple Layers," *Analytica Chimica Acta*, **611**, 80 (2008).
- **Kosar TF**, Tourovskaia A, Figueroa-Masot X, Adams M, Folch A, "A Nanofabricated Planar Aperture as a Mimic of the Nerve-Muscle Contact During Synaptogenesis," *Lab Chip*, **6**, 632 (2006).
- Tourovskaia A, **Kosar TF**, Folch A, "Local Induction of Acetylcholine Receptor Clustering in Myotube Cultures Using Microfluidic Application of Agrin," *Biophys J*, **90**, 2192 (2006).
- Stucky NL, Chen C, **Kosar TF**, Folch A, "Fabrication of Microfluidically-Accessible Planar Nanoholes on Elastomeric Substrates," *J Biomed Nanotech*, **1**, 384 (2005).

- **Kosar TF**, Chen C, Stucky NL, Folch A, "Arrays of Microfluidically-Addressable Nanoholes," *J Biomed Nanotech*, **1**, 161 (2005).
- **Kosar TF**, Tourovskaia A, Stucky NL, "Nanoparticles Administered to the Human Body: Impacts and Implications," *News from the Bottom*, vol. 1, iss. 1 (2005).
- Kong DD, **Kosar TF**, Dungan SR, Phillips RJ, "Diffusion of Proteins and Nonionic Micelles in Agarose Gels by Holographic Interferometry," *AIChE J*, **43**, 25 (1997).
- **Kosar TF**, Phillips RJ, "Measurement of Protein Diffusion in Dextran Solutions by Holographic Interferometry," *AIChE J*, **41**, 701 (1995).

CONFERENCE PAPERS AND PRESENTATIONS

- **Kosar TF**, "Soft Lithography for Fabricating Microfluidic Devices," Invited Presentation, *Industrial Partnership Workshop, New Concepts in Microfluidics: Theory and Application*, Harvard University, Cambridge, MA (2007).
- **Kosar TF**, "Biology on a Chip: Miniaturization of Cellular and Immunological Assays," Invited Presentation, *Fens Seminars*, Sabanci University, Istanbul, Turkey (2006).
- **Kosar TF**, "Nanofluidic Delivery Device for Probing Single Cells," Invited Presentation, *IBN Seminar Series*, Institute of Bioengineering and Nanotechnology, Singapore (2005).
- Keenan T, **Kosar TF**, Boggy G, Folch A, "Nanohole Devices for Chemotaxis Studies," *Fourth Annual Nanoscale Science and Technology Workshop*, Seattle, WA (2004).
- **Kosar TF**, Stucky NL, Chen C, Kim KJ, Folch A, "Nanohole Arrays for Parallel Patch-Clamping and Focal Delivery of Biochemical Factors to Cells," *Proceedings of the Micro Total Analysis Systems*, Squaw Valley, CA (2003).
- **Kosar TF**, Chen C, Stucky NL, Folch A, "Arrays of Microfluidically-Addressable Nanoholes," *Third Annual Nanoscale Science and Technology Workshop*, Seattle, WA (2003).
- Stucky NL, **Kosar TF**, Chen C, Folch A, "3D PDMS-Based Arrays of Nanoholes for Cellular Analysis," *Third Annual Nanoscale Science and Technology Workshop*, Seattle, WA (2003).
- Keenan T, Li N, **Kosar TF**, Neils C, Spilker M, Folch A, "Combinatorial Nanofluidic Delivery of Axon Guidance Factors to Embryonic Neurons," *Third Annual Nanoscale Science and Technology Workshop*, Seattle, WA (2003).
- Meldrum DR, Holl M, Seriburi P, Phillips S, Chao J, Jang L, **Kosar TF**, "MEMS Modules for Life-On-A-Chip," *IEEE International Symposium on Circuits and Systems*, Bangkok, Thailand (2003).
- **Kosar TF**, Meldrum DR, Holl MR, "Synchronization of Bacterial Cultures in a Microsystem," *Proceedings of the Micro Total Analysis Systems*, Nara, Japan (2002).
- Holl M, Friedman N, Rabkin B, Gibbons E, **Kosar TF**, Meldrum D, "Fluorescence-Based Quantitative PCR for Determining Minimal Residual Disease using Disposable Microfluidic Cartridges," *Biomedical Engineering Society Annual Meeting*, Seattle, WA (2000).
- Holl M, Paulson T, Rabkin B, Gibbons E, **Kosar TF**, Meldrum D, "Integrated Microsystem for Classification, Sorting, and Storage of Cellular Nuclei Based on DNA Content from a Tissue Biopsy," *Biomedical Engineering Society Annual Meeting*, Seattle, WA (2000).
- **Kosar TF**, Phillips RJ, "Measurement of Hindered Diffusion by Holographic Interferometry," *206th American Chemical Society National Meeting*, Chicago, IL (1993).

PATENTS

- Yager P, **Kosar TF**, Look MW, Mashadi-Hossein A, McKenzie K, Nelson KE, Spicar-Mihalic P, Stevens D, Thariani R, "Method and Device for Rapid Parallel Microfluidic Molecular Affinity Assays," patent pending (filed: 2007).
- Folch A, **Kosar TF**, "Microwell Arrays with Nanoholes," U.S. Patent No. 7,501,279 (issued: March 10, 2009).