Deok-Ho Kim, Ph.D.

N410G William H. Foege Building
University of Washington
3720 15th Ave NE, Box 355061
Seattle, WA 98195, USA

Tel.: +1-206-616-1133
Fax.: +1-206-685-3300
E-mail: deokho@uw.edu
http://www.openwetware.org/wiki/Kim

EDUCATION AND TRAINING

Johns Hopkins University School of Medicine, Baltimore, MD, USA, 2005 – January 2010
Ph.D. in Biomedical Engineering (Advisor: Dr. Andre Levchenko)

Korea Institute of Science and Technology, Seoul, Korea, 2000 – 2005
Research Scientist in NanoBio Research Center

Swiss Federal Institute of Technology Zurich (ETH Zurich), Zurich, Switzerland, 2003 – 2004
Visiting Scholar in Institute for Robotics and Intelligent Systems (Advisor: Dr. Bradley J. Nelson)

Seoul National University, Seoul, Korea, 2000
M.S. in Mechanical and Aerospace Engineering (Major: Control Engineering)

Pohang University of Science and Technology (POSTECH), Pohang, Korea, 1998
B.S. in Mechanical Engineering, ***Magna Cum Laude***
Exchange Student in Manufacturing and Mechanical Engineering, **University of Birmingham**, UK, 1996.

ACADEMIC POSITIONS

Assistant Professor, Department of Bioengineering, **University of Washington**, Seattle, WA, 2011 – present.
Faculty affiliations: Center for Nanotechnology, Institute for Stem Cell and Regenerative Medicine, Center for Cardiovascular Biology

Assistant Research Professor, Department of Biomedical Engineering, **Johns Hopkins University**, Baltimore, MD, USA, 2010 – 2011.

PROFESSIONAL EXPERIENCE

Graduate Researcher, **Johns Hopkins University School of Medicine**, Baltimore, MD, USA, 2005 – 2010.

- Development of lab-on-a-chip devices integrated with nanoscale substrate topography for quantitative analysis of cancer cell migration and wound healing.
- Study on interplay between extracellular topography and adhesion in optimizing rapid cell migration.
- Study on guided cell migration on micro- and nanotextured substrates with variable local density and anisotropy.
- Study on biophysical regulation of cardiac tissue structure and function by nanoarchitectured matrices.
- Development of tissue-engineered cardiac stem cell patches for repairing the infarcted heart.
- Investigation of signaling pathways and cell mechanics involved in collective migration of cancer cells and epithelial cells.
- Analysis of microrheology and directional mechanotransduction in cancer cell migration via anisotropic topographic stimulation.
- Quantitative analysis of cell responses to substrate gradient nanotopography: role of PI3K.
- Study on regulation of growth cone cytoskeleton to promote axon regeneration over inhibitory substrates.

Research Scientist, **Korea Institute of Science and Technology (KIST)**, Seoul, Korea, 2000 – 2005.
- Investigation of the role of cell-nanotopography interactions in growth and function of cardiac myocytes.
- Development of muscle-driven hybrid microsystem using micropatterned polymeric biomaterials.
- Development of a micromechanical force sensing system for cellular biomechanics studies.
- Design, fabrication, and tests of a piezoelectric polymer (PVDF)-based sensorized microgripper.
- Development of a flexible microassembly system based on visual and force feedback.
- Thrust measurements and mechanical analysis of a biomimetic tadpole robot using IPMC actuators.
- Design, control, and experimental performance evaluation of 3-DOF PZT-driven mobile microrobot.
- Modeling and simulation of AFM-based nanomanipulation.
- Biological man-machine interface for human-friendly teleoperation using EMG signals.

Visiting Scholar, **Swiss Federal Institute of Technology (ETH-Zurich)**, Switzerland, 2003 – 2004.
- High-throughput ultrasonic cell patterning; experiments with human mesenchymal stem cells (in collaboration with Prof. Jeffrey Hubbell in Laboratory of Regenerative Medicine and Pharmacobiology, EPFL)
- Mechanical property characterization of developing and pronase-treated zebrafish embryo chorion.

Consultant, NT Research Inc., Seoul, Korea, 2003.

Graduate Researcher, Institute of Advanced Machinery and Design, **Seoul National University**, Seoul, Korea, 1998 – 2000.
- Development of an adaptive control system for smooth shifting feeling in vehicle automatic transmission.
- System-level analysis and model-based simulation of a hydraulic system of the automatic transmission and continuously variable transmission.

Research Assistant, Intelligent Manufacturing Systems Laboratory, **POSTECH**, Korea, 1997.
- Worked on senior project entitled "An analytical cutting force modeling for milling operations."

Internship, Intelligent Building System team, R & D Center, **Honeywell-Korea Inc**., Chon-An, Korea, 1997.
- Conducted experiments to measure the environmental conditions of intelligent building systems

Research Assistant, Robotics and Bio-Mechatronics Laboratory, **POSTECH**, Korea, 1997.
- Worked on senior project entitled "Position control of 1-DOF direct drive robotic arm."

HONORS AND AWARDS

Perkins Coie Award for Discovery, 2011.

Finalist, Collegiate Inventors Award, National Inventors Hall of Fame and US Patent and Trademark Office, USA (www.invent.org/collegiate), 2011

Harold M. Weintraub Graduate Student Award, 2010.

Samsung HumanTech Thesis Award – Silver Prize, 2009.

Keystone Symposia Travel Award (Cardiac Disease: Development, Regeneration, and Repair), 2009.

Best Poster Presentation Award, the Baltimore Life Scientists Association Annual Meeting, 2009.

KASBP-Daewoong Fellowship Award, Korean American Society in Biotech and Pharmaceuticals, 2009.

Graduate Student Travel Award, Johns Hopkins University School of Medicine, 2009.

American Heart Association Predoctoral Fellowship (Grant No. 0815104E), 2008 – 2010.

The First Baltimore Life Scientists Association (BLSA) Outstanding Scientist Award, 2008.

Graduate Student Travel Award, the Society of Physical Regulation in Biology and Medicine, 2008.

Best Presentation Award, the Korean-American Scientists and Engineers Association (KSEA)‘s Young

Generation Technical and Leadership Conference, 2008.

The First Surface Engineering Best Paper Award, the Society of Tribologists and Lubrication Engineers, 2007.

Included in Marquis Who's Who in the World, 24th edition, 2007.

Korea-U.S. Science Cooperation Center (KUSCO) Scholarship, 2006.

Scholarship Award, Seoul High School Alumni Association in the Greater Washington Region, 2006.

Whitaker Foundation Graduate Fellowship (accepted), 2005 – 2007.

Korea Research Foundation Graduate Fellowship (declined), 2005.

Cambridge Members Foundation Graduate Fellowship (declined), 2005.

Best Presentation Award, International Conference on Control, Automation, and Systems, Ilsan, Korea, 2005.

Distinguished Achievement Award of KIST ("KIST People Award"), KIST, Korea, March, 2005.

Prize for Excellent Researcher of the year, Future Technology Research Division, KIST, Korea, 2004.

Recipient of KOSEF Oversea Research Fellowship, the Korea Science and Engineering Foundation (KOSEF), to work at Swiss Federal Institute of Technology, Switzerland, 2003.

Best Student Paper Award, the Korean Society of Mechanical Engineers (KSME), Korea, 1999.

Best Student Poster Paper Award, the Korean Society of Precision Engineers (KSPE), Korea, 1999.

Silver Prize in Design Contest of Plant Controller using CEMTOOL, KOSEF Engineering Research Center for Advanced Control and Instrumentation, Korea, 1998.

Graduated *Magna Cum Laude* (GPA: 3.89/4.3), POSTECH, Korea, 1998.

Short-Term Exchange Student Fellowship, POSTECH, Korea, 1996.

Hogil-Kim Memorial Fellow Exchange Student, University of Birmingham, UK, 1996.

Education Fellowship for excellent academic achievement, Ibuk5do-Cheong Foundation, Korea, 1995 – 1996.

Honor Scholarship for top academic records, POSTECH, Korea, 1996.

Diploma of Honors for all eight semesters, POSTECH, Korea, 1994 – 1998.

Gold Tablet Award for excellent academic achievement, Alumni Association of Seoul High School, 1994.

PROFESSIONAL ACTIVITIES AND SERVICE

Program committee member, IEEE International Conference on Nano/Molecular Medicine and Engineering, 2012.

Theme co-organizer and session chair, The first USACM Thematic Conference on Multiscale Methods and Validation in Medicine and Biology: Biomechanics and Mechanobiology, 2012.

Session Chair, "Reprogramming and Stem Cell Therapy" session at the 5th International Conference on Cell Therapy, Seoul, Korea, November 1, 2011.

Session Chair, "Biology/micro-TAS, Biomimetics, Self-assembly, Chemistry" session at the 10th International Conference on Nanoimprint and Nanoprint Technology, JeJu, Korea, October 19-21, 2011.

Co-guest editor for IET Micro and Nano Letters: special issue on micro-nanoengineered platforms for mechanobiology studies, 2011.

Science Director, Baltimore Life Scientists Association (www.blsa.or.kr), Maryland, USA, 2009.

Program committee member, Annual Baltimore Life Scientists Association Conference, Maryland, 2009.

Member of an active task force for "10 Year National Initiative R&D project on Micro/Nano Robot System," supported by Ministry of Commerce, Industry and Energy, Korea, 2002.

Session Co-chair, "Microfabrication and Property" session at the 2001 IEEE Symposium on Micromechatronics

and Human Science (IEEE MHS2001), Nagoya, Japan, Sept. 9-12, 2001.

Secretariat member for the 32nd International Symposium of Robotics (ISR2001), Seoul, Korea, April, 2001.

Technical Reviews

- **Journal Reviews:**
  Advanced Functional Materials
  Angewandte Chemie
  Biomaterials
  Biophysical Journal
  Biotechnology and Bioengineering
  Cell and Tissue Research
  IEEE Transactions on Automation Science and Engineering
  IEEE Transactions on Robotics
  IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control
  Integrative Biology
  Journal of Biomechanics
  Journal of Micromechanics and Microengineering
  Lab on a Chip
  Micro and Nano Letters
  Nanotechnology
  PLoS One
  Smart Materials and Structures
  Tissue Engineering
- **Program committee and reviewer** for several annual conferences, including International Symposium on Robotics, ASME 2012 Summer Bioengineering Conference, ASME/IMECE Conference on Dynamic Systems, Measurement and Control, and IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).

Proposal Reviewer for: *NIH Interdisciplinary Molecular Sciences and Training (IMST) Study Section; European Research Council (ERC) Grant 3rd Call-2010; New Zealand Research Council Grant; the New Eurasia Foundation (FNE), Moscow; The International Bureau (IB) of the German Ministry of Education and Science located at the German Aerospace Center (DLR) has been contracted as partner for the administration of the Russian call "Measures to Attract Leading Scientists to Russian Educational Institutions" by the New Eurasia Foundation.*

Professional societies: American Association for the Advancement of Science (AAAS); Biomedical Engineering Society (BMES); American Society of Mechanical Engineers (ASME); Institute of Electrical and Electronics Engineers (IEEE); American Society for Cell Biology (ASCB); Society of Physical Regulation in Biology and Medicine (SPRBM); American Academy of Nanomedicine (AANM); Korean-American Scientists and Engineers Association (KSEA); Baltimore Life Scientists Association (BLSA).

PATENTS

1. **D.-H. Kim** and A. Jiao, "A device for organized, aligned, and patterned cell culture using polymeric nano-patterned surfaces," United States Provisional Patent #61/567,911, 2011.
2. **D.-H. Kim** and K. Kim "Multi-Degrees-of Freedom Dexterous Telerobotic System for Microassembly," Korean Patent #0483790, issued April 8, 2005.
3. **D.-H. Kim**, B. Kim, J.Y. Park, and J.O. Park, "Autonomous Bio-Manipulation Factory System for

Manipulating Single Cells," Korea Patent #0475098, issued February 24, 2005.

4. **D.-H. Kim**, K. Kim, E.H. Song, and H.J. Kang, "Method and Device for Assembling MEMS Components," Korean Patent #0473348, issued February 16, 2005.
5. **D.-H. Kim**, K. Kim, S.J. Lee, and G.T. Park, "Apparatus and Method for Assembling MEMS Components Using Image of Multiple Magnification," Korea Patent #0466095, issued January 4, 2005.
6. **D.-H. Kim**, B. Kim, Y.H. Kim, and J.O. Park, "Smart Pipette System and Method for Manipulating Individual Bio Cells," Korea Patent #0466094, issued January 4, 2005.
7. **D.-H. Kim**, B. Kim, K. Kim, J.H. Shim, S.M. Kim and S.H. Lee, "Microrobot Gripping Apparatus," Korea Patent #10-0505145, issued July 22, 2005.
8. **D.-H. Kim**, B. Kim, J.Y. Park, and J.O. Park, "Autonomous Bio-Manipulation Factory System for Manipulating Single Cells," United States Patent #7011970, issued March 14, 2006.
9. **D.-H. Kim**, J.Y. Park, B. Kim, B.K. Ju, and Y. Sun, "Cell Separation System Using Ultrasound Field and Traveling Wave Dielectrophoresis," Korea Patent #10-0594408, issued June 21, 2006.
10. **D.-H. Kim**, B. Kim, Y.H. Kim, and J.O. Park, "Smart Pipette for Cell Manipulation and Manipulation Method for Using the Smart Pipette," United States Patent #7501096 B2, issued March 10, 2009 (Application date: 2004.3.22, Application No.: 10/805,871).
11. **D.-H. Kim** and K. Kim "Multi-Degrees-of Freedom Dexterous Telerobotic System for Microassembly," United States Patent (Application date: 2002. 9.17, Application No.: 10/245,067).

PUBLICATIONS [Total citations = 935; H-index = 18]

A. Thesis:

D.H. Kim, "Mechanochemical regulation of cellular and multicellular form and function with nanoscale cues: implications for cancer metastasis, wound repair, and tissue engineering," Ph.D. Thesis, Department of Biomedical Engineering, Johns Hopkins University School of Medicine, Baltimore, MD, 2010. (Advisor: Dr. Andre Levchenko)

D.H. Kim, "Development of smooth shift control system with adaptive compensation," M.S. Thesis, Department of Mechanical Design and Production Engineering, Seoul National University, Seoul, Feb. 2000. (Advisor: Prof. Kyo-Il Lee)

B. Book and Book Chapters:

1. Y. Sun, **D.H. Kim**, and A. Hashemi, "Biological cell sorting automation," ***Life Science Automation: Fundamentals and Applications***, M.J. Zhang, B.J. Nelson and R.A. Felder (Eds.), Artech House Publishers, *invited chapter*, pp. 411-434, 2007.
2. **D.H. Kim**, A. Levchenko, and K.Y. Suh, "Engineered surface nanotopography for controlling cell-substrate interactions," ***Micro- and Nanoengineering of the Cell Microenvironment: Technologies and Applications***, A. Khademhosseini, J. Borenstein, S. Takayama, and M. Toner (Eds.), Artech House Publishers, *invited chapter*, pp. 185-208, 2008.
3. K.J. Chang, **D.H. Kim**, S.M. Kim, A. Levchenko, and K.Y. Suh, "Micropatterned polymer structures for cell and tissue engineering," ***Biological Responsive Hybrid Biomaterials***, E. Jabbari and A. Khademhosseini (Eds.), Artech House Publishers, *invited chapter*, pp. 101-120, 2010.
4. K. Gupta, **D.H. Kim**[#], D. Allison, C. Smith, and A. Levchenko[#], "Using lab-on-a-chip technologies for stem cell biology," ***Stem Cells and Regenerative Medicine***, K. Appasani (Eds.), Springer Science (Humana) Press, *invited chapter*, pp. 483-498, 2010. (# corresponding authors)
5. R. Singh, E.S. Yoon, K.Y. Suh, and **D.H. Kim**, "Biomimetic surfaces for tribological applications in micro/nano-devices," ***Nano-Tribology and Materials Issues in MEMS***, S.S. Kumar, N. Satyanarayana, S.C. Lim (Eds.), Springer-Verlag, *invited chapter*, 2011.
6. E. Jabbari, A. Khademhosseini, Luke Lee, **D.H. Kim**, and A. Ghaemmaghami, Editors, "Handbook of Biomimetics and Bioinspiration," World Scientific Publishers, 2012.

C. Journal Publications: *(* denotes equal contribution by authors).*

1. J. K. Kim, W. H. Lee, and **D.H. Kim**, "Microfluidic platform for drug design, production, and screening," ***Advanced Drug Delivery Review*** (invited).
2. J. H. Kim, K. S. Choi, Y. Kim, K.-T. Lim, H. Seonwoo, Y. Park, **D.H. Kim**, P.H. Choung, C.-S. Cho, S.Y. Kim, Y.H. Choung, and J. H. Chung, "Graphene oxide as an artificial extracellular matrix for adhesion, proliferation, and differentiation of human mesenchymal stem cells," ***Tissue Engineering Part C*** (under review).
3. H. N. Kim, A. Jiao, N. Hwang, **D.H. Kim**, and K. Suh, "Smart through nanoscale surface: Nano-guided biology," ***Advanced Drug Delivery Review*** (invited).

4. **D.H. Kim**[*], K. Gupta[*], R. Smith, P. Kim, H. N. Kim, E.H. Ahn, K.Y. Suh, E. Marban, and A. Levchenko, "Nanopatterned cardiac stem cell patch for myocardial regeneration," ***Advanced Functional Materials*** (under review).

5. K. Gupta, J.S. Park, W. Helen, A.J. Engler, A. Levchenko, and **D.H. Kim**[#], "Control of stem cell signaling and function by engineering stem cell niches" ***Integrative Biology***, 2012. (under review). (# corresponding author)

6. Kshitiz, M.E. Hubbi, E.H. Ahn, J. Downey, **D.H. Kim**, S. Rey, J. Afzal, A. Kundo, G.L. Semenza, R. M. Abraham, and A. Levchenko, "Matrix rigidity controls endothelial differentiation and morphogenesis of cardiac precursors," ***Science*** (under review).

7. T. Garzon-Muvdi, C. Aprhys, C. Smith, **D.H. Kim**, L. Kone, S.H. Farber, S. An, A. Levchenko, and A. Quinones-Hinojosa, "Regulation of brain tumor dispersal by NKCC1 through a novel role in focal adhesion regulation," ***PLoS Biology*** (under review).

8. J. Kim, **D.H. Kim**, K.T. Lim, H. Seonwoo, S.H. Park, Y.R. Kim, Y.H. Choung, P.H. Choung, and J.H. Chung, "Charged nanomatrices as efficient platforms for modulating cell adhesion and shape," ***Tissue Engineering Part C*** (under review).

9. **D.H. Kim**[#], P. Provenzano, C.L. Smith, and A. Levchenko[#], "Matrix nanotopography as regulator of cell function," ***Journal of Cell Biology*** (in press). (# corresponding authors)

10. J.S. Park, H.N. Kim, **D.H. Kim**, A. Levchenko, and K.Y. Suh, "Quantitative analysis of the combined effect of substrate rigidity and topographic guidance on cell morphology," ***IEEE Transactions on Nanobioscience*** (in press).

11. H. N. Kim, D.H. Kang, M.S. Kim, A. Jiao, **D.H. Kim**, and K. Suh, "Patterning methods for polymers in cell and tissue engineering," ***Annals of Biomedical Engineering*** (DOI: 10.1007/s10439-012-0510-y).

12. J.K. Kim, I. Hwang, D.M. Britain, T.D. Chung, Y. Sun, and **D.H. Kim**[#], "Microfluidic approaches for gene delivery and gene therapy," ***Lab on a Chip***, vol. 11, pp. 3941-3948, 2011.

13. E. Hur[*], I.H. Yang[*], **D.H. Kim**[*], J. Byun, W.-L. Xu, S. Jilafu, R. Cheong, A. Levchenko, N. Thakor, and F. Zhou, "Engineering neuronal growth cone to promote axon regeneration over inhibitory molecules," ***Proceedings of the National Academy of Sciences USA***, vol. 108, pp. 5057-5062, 2011.

14. **D.H. Kim** and Y. Sun, "Micro- and nanoengineered tools as emerging platforms for cell mechanobiology," ***IET Micro and Nano Letters***, vol. 6, pp. 289, Editorial, 2011.

15. K. Gupta, **D.H. Kim**, D. Beebe, and A. Levchenko, "Micro and nanoengineering for stem cell biology: the promise with a caution," ***Trends in Biotechnology***, vol. 29, pp. 399-408, 2011.

16. **D.H. Kim**, H.J. Lee, Y.K. Lee, J.M. Nam, and A. Levchenko, "Biomimetic nanopatterns as enabling tools for analysis and control of live cells," ***Advanced Materials***, vol. 22, pp. 4551-4566, 2010.

17. K. Gupta[*], **D.H. Kim**[*], D. Ellison, C. Smith, A. Kundu, K.Y. Suh, J. Tuan, and A. Levchenko, "Lab-on-a-chip devices as an emerging platform for stem cell biology," ***Lab on a Chip***, vol. 10, pp.2019-2031, 2010. **(selected as one of the top ten accessed Lab on a Chip articles in August)**

18. M.H. You, M.K. Kwak, **D.H. Kim**, K. Kim, A. Levchenko, D.Y. Kim, and K.Y. Suh, "Synergistically enhanced osteogenic differentiation of human mesenchymal stem cells by culture on nanostructured surfaces with induction media," ***Biomacromolecules***, vol. 11, pp.1856-1862, 2010.

19. **D.H. Kim**, E. Lipke, P. Kim, R. Cheong, S. Thompson, M. Delannoy, K.Y. Suh, L.Tung, and A. Levchenko, "Nanoscale cues regulate the structure and function of macroscopic cardiac tissue constructs," ***Proceedings of the National Academy of Sciences USA***, vol.107, pp. 565-570, 2010. **(Press released)**

20. J.Y. Park[*], **D.H. Kim[*]**, G. Kim, Y.H. Kim, E.P. Choi, and A. Levchenko, "Simple haptotactic gradient generation within a triangular microfluidic channel," ***Lab on a Chip***, vol. 10, pp.2130-2138, 2010.

21. **D.H. Kim[#]**, P. Wong, J.Y. Park, A. Levchenko, and Y. Sun[#], "Microengineered platforms for cell mechanobiology," ***Annual Review of Biomedical Engineering***, vol. 11, pp.203-233, 2009. (# denotes corresponding authors)

22. **D.H. Kim**, C. Seo, K. Han, K. Kwon, A. Levchenko and K.Y. Suh, "Guided cell migration on microtextured substrates with variable local density and anisotropy," ***Advanced Functional Materials***, vol.19, pp.1579-1586, 2009. **(Featured as a frontispiece)**

23. **D.H. Kim**, K. Han, K. Gupta, K. Kwon, K.Y. Suh, and A. Levchenko, "Mechanosensitivity of fibroblast cell shape and movement to anisotropic substratum topography gradients," ***Biomaterials***, vol. 30, pp. 5433-5444, 2009.

24. J. Kim, M. Junkin, **D.H. Kim**, S.L. Kwon, Y.S. Shin, P. K. Wong, and B. K. Gale, "Applications, techniques, and microfluidic interfacing for nanoscale biosensing," ***Microfluidics and Nanofluidics***, vol. 7, pp. 149-167, 2009.

25. **D.H. Kim**, J.Y. Park, M.K. Kim, and K.S. Hong, "AFM-based identification of the dynamic properties of globular proteins: simulation study," ***Journal of Mechanical Science and Technology***, vol. 22, no.11, pp. 2203-2212, 2008.

26. K.Y. Suh, H.E. Jeong, **D.H. Kim**, A.R. Singh, and E.S. Yoon, "Capillarity-assisted fabrication of nanostructures using less permeable mold for nanotribological applications," ***Journal of Applied Physics***, vol.100, 034303, 2006.

27. **D.H. Kim,** J.Y. Park, K.Y. Suh, P. Kim, S.K. Choi. S.C. Ryu, S.H. Park, S.H. Lee and B. Kim, "Fabrication of patterned micromuscles with high activity for powering biohybrid microdevices," ***Sensors and Actuators B:Chemical***, vol.117, pp.391-400, 2006.

28. S. Park, S. Ryu, S. Ryu, **D.H. Kim**, and B. Kim, "Contractile force measurements of cardiac myocytes using a micro-manipulation system," ***Journal of Mechanical Science and Technology***, vol.20, no.5, pp.668-674, 2006.

29. **D.H. Kim**, P. Kim, I.S. Song, J.M. Cha, S.H. Lee, B. Kim, and K.Y. Suh, "Guided three-dimensional growth of functional cardiomyocytes on polyethylene glycol nanostructures," ***Langmuir***, vol.22, no.12, pp.5419-5426, 2006.

30. **D.H. Kim**, C.N. Hwang, Y. Sun, B. Kim, S.H. Lee, and B. Nelson, "Mechanical analysis of chorion softening in pre-hatching stages of zebrafish embryos," ***IEEE Transactions on Nanobioscience***, vol.5, no.2, pp.89-94, 2006.

31. **D.H. Kim**, K.S. Hong, and K.S. Yi, "Driving load estimation with the use of estimated turbine torque," ***JSME International Journal Series C***, vol.49, pp.163-171, 2006.

32. E.S. Yoon, R.A. Singh, H.S. Kong, B. Kim, **D.H. Kim**, H.E. Jeong, and K.Y. Suh, "Tribological properties of bio-mimetic nano-patterned polymeric surfaces on silicon wafer," ***Tribology Letters***, vol.21, pp.31-37, 2006.

(Surface Engineering Best Paper Award from the Society of Tribologists and Lubrication Engineers)

33. B. Kim, H.J. Kang, **D.H. Kim**, and J.O. Park, "A flexible microassembly system based on hybrid manipulation scheme for manufacturing photonics components," ***International Journal of Advanced Manufacturing Technology***, vol.28, pp.379-386, 2006.
34. J.Y. Park, S.M. Kim, **D.H. Kim**, B. Kim, S.J. Kwon, J.O. Park, and K.I. Lee, "Identification and control of a sensorized microgripper for micromanipulation," ***IEEE/ASME Transactions on Mechatronics***, vol.10, no.5, pp.601-606, 2005.
35. B. Kim, **D.H. Kim**, J.H. Jung, and J.O. Park, "A biomimetic undulatory tadpole robot using ionic polymer-metal composite actuators," ***Smart Materials and Structures***, vol.14, pp.1579-1585, 2005.
36. **D.H. Kim**, M.G. Lee, B. Kim, and Y. Sun, "A superelastic alloy microgripper with embedded electromagnetic actuators and piezoelectric force sensors: a numerical and experimental study," ***Smart Materials and Structures***, vol.14, pp.1265-1272, 2005.
37. P. Kim, **D.H. Kim**, B. Kim, S.K. Choi, S.H. Lee, A. Khademhosseini, R. Langer, and K.Y. Suh, "Fabrication of nanostructures of polyethylene glycol for applications to protein adsorption and cell adhesion," ***Nanotechnology***, vol.16, pp.2420-2426, 2005.
38. **D.H. Kim**, Y. Sun, S. Yun, S.H. Lee, and B. Kim, "Investigating chorion softening of zebrafish embryos with a microrobotic force sensing system," ***Journal of Biomechanics***, vol.38, no.6, pp.1359-1363, 2005.
39. A. Haake, A. Neild, **D.H. Kim**, J.E. Ihm, Y. Sun, J. Dual, and B.K. Ju, "Manipulation of cells using an ultrasonic pressure field," ***Ultrasound in Medicine and Biology***, vol.31, no.6, pp.1359-1363, 2005.
40. **D.H. Kim,** B. Kim, B.K. Ju, and J.O. Park, "State of the art in nano-biomanipulation technologies," ***Journal of Control, Automation and Systems Engineering***, vol.11, no.4, pp.353-362, 2005.
41. **D.H. Kim**, B. Kim, and H.J. Kang, "Development of a piezoelectric polymer-based sensorized microgripper for micromanipulation and microassembly," ***Microsystem Technologies***, vol.10, no.4, pp.275-280, 2004.
42. **D.H. Kim**, B. Kim, and J.O. Park, "Implementation of a piezoresistive MEMS cantilever for nanoscale force measurements in micro/nano robotic applications," ***Journal of Mechanical Science and Technology***, vol.18, no.5, 789-797, 2004.
43. **D.H. Kim**, K.-J. Yang, K.S. Hong, J.O. Hahn, and K.I. Lee, "Smooth shift control of automatic transmissions using a robust adaptive scheme with intelligent supervision," ***International Journal of Vehicle Design***, vol.32, no.3/4, pp.250-272, 2003.
44. J.Y. Park, **D.H. Kim**, T.S. Kim, B. Kim, and K.I. Lee "Design and performance evaluation of a 3-DOF mobile microrobot for micro manipulation," ***Journal of Mechanical Science and Technology***, vol.17, no.9, pp.1268-1275, 2003.
45. **D.H. Kim**, B. Kim, S. Youn, and H.J. Kang, "Cellular force sensing for force feedback-based biological cell injection," ***Transactions of the KSME***, *A*, vol.27, no.12, pp.2079-2084, 2003.
46. **D.H. Kim**, B. Kim, H.J. Kang, and S.M. Kim, "Design, fabrication and performance evaluation of a sensorized superelastic alloy microrobot gripper," ***Transactions of the KSME***, *A*, vol.27, no.10, pp.1772-1777, 2003.

D. Conference Proceedings and Abstracts:

1. J. Kim, **D.H. Kim**, K.T. Lim, H. Seonwoo, S.H. Park, Y.R. Kim, Y.H. Choung, P.H. Choung, and J.H. Chung, "Charged nanomatrices as efficient platforms for modulating cell adhesion and shape," 5th *IEEE* International Conference on Nano/Molecular Medicine and Engineering, Jeju, Korea, November 9-12, 2011.
2. H.S. Yang, S.H. Bhang, **D.H. Kim**, and B.S. Kim, "In situ cardiomyogenic differentiation of implanted bone marrow mononuclear cells by heparin-conjugated PLGA nanosphere with transforming growth factor-beta1," *International Society for Stem Cell Research 9th Annual Meeting*, Toronto, Ontario, Canada June 15-18, 2011.
3. K. Yuan, D.A. Chesler, **D.H. Kim**, C. Shaifer, C. Pendleton, A. Levchenko, A. Quinones-Hinojosa, "Glioblastoma-derived hepatocyte growth factor / c-Met axis in human adipocyte-derived mesenchymal stem cell migration," *Maryland Stem Cell Research Symposium*, MD USA, September 22, 2010.
4. T. Garzon-Muvdi, C. Aprhys, C. Smith, **D.H. Kim**, L. Kone, H. Farber, A. Levchenko, and A. Quinones-Hinojosa, "Role of the interaction between EGF and Cation-Chloride cotransporter (NKCC1) in glioblastoma multiforme invasion and migration," *Maryland Stem Cell Research Symposium*, MD USA, September 22, 2010.
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17. **D.H. Kim[*]**, E. Lipke[*], P. Kim, M. Delannoy, K.Y. Suh, L. Tung, and A. Levchenko "Fabrication and functional characterization of nanoengineered cardiac tissues," *Keystone Symposium on Tissue Engineering and Developmental Biology*, Snowbird, Utah, USA, April 12-17, 2007.

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42. B. Kim, H.J. Kang, **D.H. Kim**, G.T. Park, and J.O. Park, "Flexible Microassembly System based on Hybrid Manipulation Scheme," *IEEE/RSJ International Conference on Intelligent Robots and Systems*, pp.2061-2066, Las Vegas, USA, October 27-November 1, 2003.
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INVITED TALKS AND SEMINARS (selected)

1. "Mechanobiological regulation of cell function and tissue regeneration with nanoengineered matrix cues," Department of Mechanical Engineering, *University of Washington*, Seattle, WA, USA, November 22, 2011.
2. "Biomimetic nanopatterns as enabling tools for analysis and control of cell function and tissue regeneration," Department of Chemistry and Nanoscience, *Ewha Womans University*, Seoul, Korea, Nov., 4, 2011.
3. "Biomimetic nanopatterns as enabling tools for analysis and control of cell function and muscle regeneration," Department of Biochemistry and Cell Biology, *Kyungbook National University*, Daegu, Korea, Nov., 4, 2011.
4. "Controlling Cardiac Function on the Nano-Scale: A Biomimetic Approach and Intervention," The 5th International Conference on Cell Therapy, Seoul, Korea, November 1, 2011.
5. "Biomimetic nanopatterns as enabling tools for analysis and control of cell function and tissue regeneration," The 10th International Conference on Nanoimprint and Nanoprint Technology, JeJu, Korea, October 19-21, 2011.
6. "Nanotopographically-defined biomaterials for analysis and control of cell function and tissue regeneration," Department of Chemical Engineering, *University of Washington*, Seattle, WA, USA, May 26, 2011.

7. “Micro and nanotechnologies for bioengineering regenerative medicine,” Department of Bioengineering, *University of Washington*, Seattle, WA, USA, May 17, 2011.
8. "Biomimetic nanopatterns as enabling tools for analysis and control of cell function and tissue regeneration,” Department of Bioengineering, *University of Washington*, Seattle, WA, USA, May 5, 2010.
9. "Analysis and control of cell function and tissue regeneration with nanoscale cues,” Department of Chemical Engineering and Materials Science, *Chung Ang University*, Seoul, Korea, December 9, 2010.
10. "Engineering cellular function and tissue regeneration with local matrix cues: implications for wound healing, cancer invasion, and stem cell therapy,” Department of Bioengineering, *Hanyang University*, Seoul, Korea, December 8, 2010.
11. "Analysis and control of cellular function and tissue regeneration with nanoscale matrix cues,” Department of Bionano Engineering, *Hanyang University*, An-San, Korea, December 7, 2010.
12. "Regulation of cell function and tissue regeneration with matrix cues: implications for wound healing, cancer invasion, and tissue engineering,” College of Bionano Technology, *Kyungwon University*, Sungnam, Korea, December 6, 2010.
13. "Nanoscale material cues regulate the structure and function of stem cells and macroscopic cardiac tissue construct,” School of Material Science and Engineering, *Gwangju Institute of Science and Technology*, Gwangju, Korea, December 3, 2010.
14. "Regulation of cellular and multicellular form and function with nanoscale cues: implications for wound healing, cancer metastasis, and tissue engineering,” College of Pharmacy, *Kyung Hee University*, Seoul, Korea, December 2, 2010.
15. "Controlling cellular function and tissue regeneration with nanoscale matrix cues,” Department of Mechanical Engineering, *Sogang University*, Seoul, Korea, December 1, 2010.
16. "Controlling cellular function and tissue regeneration with nanoscale material cues,” Department of Material Science and Engineering, *KAIST*, Daejon, Korea, November 30, 2010.
17. "Engineering cellular function and tissue regeneration with local matrix cues: implications for wound healing, cancer invasion, and stem cell therapy,” *Samsung Medical Center*, Seoul, Korea, November 29, 2010.
18. "Control of cellular and multicellular function with nanoscale matrix cues: implications for wound healing, cancer invasion, and tissue engineering,” Department of Biotechnology, *Yonsei University*, Seoul, Korea, November 25, 2010.
19. "Engineering cellular function and tissue regeneration with local matrix cues: implications for wound healing, cancer invasion, and stem cell therapy,” Division of Biomedical Science, *Korea Institute of Science and Technology*, Seoul, Korea, November 24, 2010.
20. "Nanoscale matrix cues regulates the structure and function of macroscopic cardiac tissue constructs,” Annual Bioscience and Engineering Symposium (ABES), *Natcher Auditorium, National Institute of Health (NIH) Campus*, Bethesda, MD, USA, November 6, 2010.
21. "Regulation of cellular and multicellular form and function with nanoscale cues: implications for wound healing, cancer metastasis, and tissue engineering,” Department of Bioengineering, *University of Washington*, Seattle, WA, USA, May 20, 2010.
22. "Mechanical control of cellular function and tissue regeneration,” Department of Mechanical Engineering,

Stanford University, Stanford, CA, USA, May 13, 2010.

23. "Mechanochemical regulation of cellular and multicellular form and function using nanoengineered extracellular matrices: implications for wound repair, cancer metastasis, and tissue engineering", *2010 Weintraub Award Symposium*, Seattle, May 7, 2010.
24. "Regulation of cellular and multicellular form and function with nanoscale cues: implications for wound healing, cancer metastasis, and tissue engineering," Department of Bio and Brain Engineering, *KAIST*, Daejeon, Korea, April 29, 2010.
25. "Nanotopographically-defined biomaterials for controlling cell function and tissue regeneration," Department of Bioengineering, *University of California at Riverside*, Riverside, CA, USA, April 26, 2010.
26. "Mechanochemical regulation of cellular and multicellular form and function with nanoscale cues: implications for wound healing, cancer metastasis, and tissue engineering," Department of Mechanical Science and Engineering, *University of Illinois at Urbana-Champaign*, Champaign, IL, USA, April 22, 2010.
27. "Mechanochemical regulation of cellular and multicellular form and function with nanoscale cues: implications for wound healing, cancer metastasis, and tissue engineering," Department of Biomedical Engineering, *The State University of New York at Buffalo*, Buffalo, NY, USA, April 19, 2010.
28. "Mechanochemical regulation of cellular and multicellular form and function with nanoscale cues: implications for wound repair, cancer metastasis, and tissue engineering," *Johns Hopkins School of Medicine and the Whiting School of Engineering*, Baltimore, MD, USA, March, 30, 2010.
29. "Mechanochemical regulation of multicellular form and function with nanoscale cues: implications for cancer metastasis, wound repair, and tissue engineering," *Baltimore Life Scientists Association*, Baltimore, MD, USA, Feb., 23, 2010.
30. "Multi-scale mechanobiology for cell and tissue engineering using nano/micropatterned biomaterials," *Korea Institute of Machine and Materials*, Daejeon, Korea, Feb., 6, 2009.
31. "Multi-scale mechanobiology for cell and tissue engineering using nano/micropatterned biomaterials," Adult Stem Cell Research Center, College of Veterinary Medicine, *Seoul National University*, Seoul, Korea, Feb., 3, 2009.
32. "Analysis and engineering of cell function with nanoscale cues", BME Student Seminar Series, *Johns Hopkins University*, Baltimore, January 23, 2009.
33. "Regulation of cell function by local force and geometry sensing: implications for biology and regenerative medicine," Department of Chemistry and Nanoscience, *Ewha Womans University*, Seoul, Korea, Dec., 11, 2008.
34. "Regulation of cell function by local force and geometry sensing: implications for biology and regenerative medicine," Department of Biomedical Engineering, *Korea University*, Seoul, Korea, Dec., 11, 2008.
35. "Regulation of cell function by local force and geometry sensing: implications for integrative biology and regenerative medicine," Department of Mechanical Engineering, *POSTECH*, Pohang, Korea, Dec., 10, 2008.
36. "Sensing by touch in tumors, hearts, and stem cells: contact-mediated signaling and function of living cells on chips," Nano-Bio Research Center, *Korea Institute of Science and Technology*, Seoul, Korea, Dec., 9, 2008.
37. "Regulation of cell function by local force and geometry sensing: implications for tissue engineering and biology," Department of Mechanical Engineering, *KAIST*, Daejeon, Korea, Dec., 8, 2008.

38. “Sensing by touch: contact-mediated signaling and function of living cells on chips,” Interdisciplinary Graduate Program of Bioengineering and Micro Thermal System Research Center, *Seoul National University*, Seoul, Korea, Dec., 5, 2008.

39. “Nano-engineering the cell-matrix interface: implications for tissue engineering and cell-based regenerative therapies,” *Baltimore Life Scientists Association*, Baltimore, MD, USA, Nov., 15, 2008.

40. “Biomicrorobotics and BioMEMS for cell bioengineering: from single cell manipulation to cell separation,” Laboratoire d'Automatique de Besançon (LAB), *UMR CNRS*, France, April 15, 2004.

41. “Microrobotic devices and MEMS-based cell chips for biomedical applications,” Laboratoire de systèmes robotiques, Institut de Production et Robotique, *Swiss Federal Institute of Technology* (EPFL), Lausanne, Switzerland, Feb. 24, 2004.

42. “Micromechatronics for microassembly and biomanipulation,” Institute of Robotics and Intelligent Systems, *Swiss Federal Institute of Technology* – Zurich (ETH Zurich), Switzerland, Nov., 28, 2003.

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