Yung Joon Jung

Mechanical and Industrial Engineering Department
Northeastern University
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A. EDUCATION

Rensselaer Polytechnic Institute, Materials Science and Engineering, Ph.D. (2003)
Thesis: Building Micro and Nanoscale Architectures with Carbon Nanotubes

Inha University, Republic of Korea, Metallurgical Engineering, B.S. (1999)

B. PROFESSIONAL EXPERIENCE

Associate Professor with Tenure (August 2011-Current)
Department of Mechanical and Industrial Engineering, *Northeastern University*, Boston, MAKostas Homeland Security Institute, *Northeastern University*, MA

Assistant Professor (August 2005-July 2011)
Department of Mechanical and Industrial Engineering, *Northeastern University*, Boston, MA

Visiting Professor (International Scholar Fellowship, March 2013-September 2013)
Department of Physics, KyungHee University, Seoul. Korea

Post-Doctoral Research Associate (August 2003- August 2005)
Department of Materials Science and Engineering
Rensselaer Polytechnic Institute, Troy, USA
Mentor: Prof. Pulickel M. Ajayan (currently at Rice Univ)

Visiting Researcher (May 2002- December 2002)
Device Physics Group, *NTT Basic Research Laboratories*, Atsugi, Japan
Mentor: Prof. Yoshikazu Homma (currently at Tokyo Univ. of Science)

Graduate Research Assistant (January 2000- July 2003)
Department of Materials Science and Engineering
Rensselaer Polytechnic Institute, Troy, USA
PhD thesis advisor: Prof. Pulickel M. Ajayan (currently at Rice Univ)

C. PUBLICATIONS

Peer-Reviewed Journal Articles

56 published journal articles including in **Nature**, **Nature Photonics**, **Nature Communications**, **Nano Letters, Proceeding of National Academy of Science, Small, ACS Nano, JACS** etc. and over **3070 citations**, **'h'-index: 27 (Google scholar)**, 2 Book Chapters**.** For list below: * denotes corresponding author

1. "Printing highly controlled suspended carbon nanotube network on micro-patterned superhydrophobic surface" B. Li, X. Wang, H. Jung, Y. Kim, J. Robinson, M. Zalalutdinov, S. Hong, J. Hao, KT. Wan, Y. Jung*, **5**, Article number: 15908 (2015) doi:10.1038/srep15908

2. "Scalable Transfer of Suspended Two Dimensional Single Crystals" Bo Li, Yongmin He, Sidong Lei, Sina Najmaei, Yongji Gong, Xin Wang, Jing Zhang, Lulu Ma, Yingchao Yang, Sanghyun Hong, Ji Hao, Gang Shi, Antony George, Kunttal Keyshar, Pei Dong, Liehui Ge, Robert Vajtai, Jun Lou, Yung Joon Jung*, Pulickel Ajayan*, *Accepted and published in* ***Nano Letters***
3. "Printing highly controlled suspended carbon nanotube network on micro-patterned superhydrophobic surface" B. Li, X. Wang, H. Jung, Y. Kim, J. Robinson, M. Zalalutdinov, S. Hong, J. Hao, KT. Wan, Y. Jung*, *Accepted and published in* ***Scientific Reports***
4. "Efficient lithium storage from modified vertically aligned carbon nanotubes with open-ends", H. Jung, S. Hong, A Yu, and ***Y. Jung****, *Accepted and published in* ***RSC Advances***
5. "Sculpting carbon bonds: allotropic transformation through solid-state re-engineering of $-sp^2$ carbon" H. Jung, P. T. Araujo, Y. Kim, S. Jung, X. Jia, S. Hong, C.W. Ahn, S. Kar, J. Kong, M. S. Dresselhaus and Y. J. Jung*, ***Nature Communications,* 5,** 4941 (2014)
6. "Voltage-switchable Photocurrents in Single-wall carbon Nanotube – Silicon Junctions for Analogue and Digital optoelectronics" Y. Kim, H. Jung, S. Park, B. Li, F. Liu, J. Hao, Y. Kwon, Y.J. Jung*, and S. Kar*, ***Nature Photonics***, 8, 239, (2014)
7. "Carbon Nanotube Core Graphitic Shell Hybrid Fiber" M. Hahm, J. Lee, A. HC Hart, S. M. Song, J. Nam, H. J. Jung, D. P. Hashim, B. Li, T. N Narayanan, C. Park, Y. Zhao, R. Vajtai, Y. A. Kim, T. Hayashi, B. Ku, M. Endo, E. Barrera, Y. J. Jung, E. L. Thomas, P. M. Ajayan, ***ACS Nano***, 7, 10971, (2013)
8. "A high-performance H_2S detection by redox reaction in semiconducting carbon nanotube-based devices" H. Jung, Y. Kim, S. Park, A. Datar, H. Lee, Jun Huang, S. Somu, A. Busnaina, Y.J. Jung* and Y. Kwon*, ***Analyst,*** 138, 7206, (2013)
9. "Liquid metal nanodroplet dynamics inside nanocontainers"H. Jung, H. Chun, S. Park, S. Kang, C. W. Ahn, Y. Kwon, M. Upmanyu, P. M. Ajayan, and Y.J. Jung*, ***Scientific,* 3,** 2588; DOI:10.1038/srep02588 (2013).
10. "Tunable Graphene–Silicon Heterojunctions for Ultrasensitive Photodetection", X. An, F. Liu, Y.J. Jung, and S. Kar, ***Nano Letters***, 13, 909, (2013)
11. "Adhesion of Graphene Sheet on Nano-patterned Substrates with Nano-pillar Array", G. Li, C. Yilmaz, X. An, S. Somu, S. Kar, Y.J. Jung, A. Busnaina, and K. Wan, ***Journal of Appl. Phys.,*** 113, 244303, (2013)
12. "A Facile Route for 3D Aerogels from Nanostructured 1D and 2D Materials", S. Jung, H. Jung, M. Dresselhaus, Y.J. Jung, and J. Kong, ***Scientific Reports,*** *2,* Article number:849, (2012)
13. "Transparent, Flexible Supercapacitors from Nano-engineered Carbon Films", H. Y. Jung, M. B. Karimi, M. G. Hahm, P. M. Ajayan, Y. J. Jung*, ***Scientific Reports***, 2, Article number: 773, (2012)
14. "Carbon Nanotube-Nanocup Hybrid Structures for High Power Supercapacitor Applications", M. G. Hahm, A. L. M. Reddy, D. P. Cole, M. Rivera, J. A. Vento, J. Nam, H. Y. Jung, Y. L. Kim, N. T. Narayanan, D. P. Hashim, C. Galande, Y. J. Jung, M. Bundy, S. Karna, P. M. Ajayan, R. Vajtai, ***Nano Letters***, 12, 5616 (2012)
15. "Large-Area Synthesis of Graphene on Palladium and their Raman Spectroscopy", X. An, F. Liu, Y. J. Jung, S. Kar, ***Journal of Physical Chemistry C***, 116(31), 16412-16420, (2012)

16. "Chemical vapor deposition-grown vertically aligned single-walled carbon nanotubes length assurance", H. Abuhimd, G. M. Uddin, A. Zeid, Y. J. Jung, S. Kamarthi, ***The International Journal of Advanced Manufacturing Technology***, DOI 10.1007/s00170-012-4426-3, (2012)
17. "Bundling Dynamics Regulates the Active Mechanics and Transport in Carbon Nanotube Networks and their Nanocomposites", M. G. Hahm, H. Wang, H. Y. Jung, S. Hong, S. G. Lee, S. R. Kim, M. Upmanyu, and Y. J. Jung*, ***Nanoscale***, 4, 3584, (2012)-***Cover Page***
18. "Towards Engineering Nanoporous Platinum Thin Film for Highly Efficient Catalytic Applications", H. Jung, D. Kim, H. Chun, S. Kim, J. Byun, and Y.J. Jung*, ***Advanced Energy Materials***, 1, 1126, (2011)
19. "Highly Organized Two- and Three- Dimensional Single-Walled Carbon Nanotubes-Polymer Hybrid Architectures," B. Li, M. G. Hahm, Y. L. Kim, H. Y. Jung, S. Kar, and Y. J. Jung*, ***ACS Nano,*** 5, 4826, (2011)
20. M. C. Strus, A. N. Chiaramonti, Y. L. Kim, Y. J. Jung, and R. R. Keller, "Accelerated Reliability Testing of Highly Aligned Single-Walled Carbon Nanotube Networks Subjected to DC Electrical Stressing", ***Nanotechnology***, 22, 265713, (2011)
21. "Ultra-thin SWNTs Films with Tunable, Anisotropic Transport Properties" B. Li , H. Y. Jung , H. Wang, Y. L. Kim, T. Kim, M. G. Hahm, A. Busnaina, M. Upmanyu , and Y. J. Jung *, ***Advanced Functional Materials***, 21, 1810, (2011)
22. "Cleaning Organized Single-walled Carbon Nanotube Interconnect Structures for Reduced Interfacial Contact Resistance", Y. L. Kim, H. Y. Jung, S. Kar, and Y. J. Jung *, ***Carbon***, 49, 2450, (2011)
23. "Investigation of Electrical Transport in Hydrogenated Multiwalled Carbon Nanotubes", A. L. Friedman, H. Chun, D. Heiman, Y. J. Jung, and L. Menon, ***Physica B,*** 406, 841 (2011)
24. "Structure Controlled Synthesis of Vertically Aligned Carbon Nanotubes using Thermal Chemical Vapor Deposition Process", M. Hahm, Y. Kwon, A. Busnaina, and Y. Jung*****, ***Journal of Heat Transfer***, 13, 031001(2011)
25. "Topological transitions in carbon nanotube networks via nanoscale confinement", S. Somu, H. Wang, Y. Kim, L. Jaberansari, T. Kim, M. G. Hahm, B. Li, X. Xiong, Y. J. Jung*****, M. Upmanyu, and A. Busnaina, ***ACS Nano***, 4, 4142-4148 (2010)
26. "Possible Room-Temperature Ferromagnetism in Hydrogenated Carbon Nanotubes", A. L. Friedman, H. Chun, Y. J. Jung, D. Heiman, E. R. Glaser, and L. Menon, ***Physical Review B***, 81, 115461-115464 (2010)
27. "Highly Aligned Scalable All-metallic Singlewalled Carbon Nanotubes Arrays for Electrical Nanoscale Interconnects", Y. Kim, B. Li, X. An, M. Hahm, L. Chen, M. Washington, P. Ajayan, S. Nayak, A. Busnaina, S. Kar, and Y. Jung*****, ***ACS Nano***, 3, 2818-2826 (2009)
28. "Connected Nanowire/Nanotube and Nanotube/Nanowire/Nanotube Heterojunctions with Branched Topology", G. Meng, F. Han, X. Zhao, B. Chen, D. Yang, J. Liu, M. Kong, X. Zhu, Q. Xu, Y. J. Jung, Y. Yang, Z. Chu, M. Ye, S. Kar, R. Vajtai, and P. M. Ajayan, ***Angewandte Chemie***, 48, 1-6 (2009)
29. "Directed Assembly of High-Density Single-Walled Carbon Nanotube Patterns on Flexible Polymer Substrates", X. Xiong, C. Chen, P. Ryan, A. Busnaina, Y. J. Jung and M. R. Dokmeci, ***Nanotechnology,*** 20, 295302-295307 (2009)
30. "Engineering Low-aspect Ratio Carbon Nanostructures: Nanocups, Nanorings, and Nanocontainers**",** H. Chun, M. Hahm, Y. Homma, R. Meritz, K. Kuramochi, L. Menon, L. Ci, P. Ajayan, and Y. Jung*****, ***ACS Nano***, 3, 1274-1278 (2009)

31. "Large Scale Highly Organized SWNTs Networks for Electronic Devices", L. Jaberansari, M. Hahm, T. Kim, S. Somu, A. Busnaina and Y. Jung, ***Applied Physics A,*** DOI 10.1007/s00339-009-5194-2 (2009)
32. "Mechanism of Very Large Scale Assembly of SWNTs in Template Guided Fluidic Assembly Process", L. Jaber-Ansari, M. G. Hahm, S. Somu, Y. Echegoyen, A. Busnaina, Y. J. Jung*, ***Journal of the American Chemical Society***, 131, 804-808 (2009)
33. "Epitaxially Grown GaN Nanowire Networks", Z. Wu, M. G. Hahm, Y. J. Jung* and L. Menon, ***Journal of Materials Chemistry***, 19, 463-467 (2009)
34. "Diameter Selective Growth of Vertically aligned Single Wall Carbon Nanotubes and Study on Their Growth Mechanism", M. G. Hahm, Y. Kwon, E. Lee, C. W. Ahn and Y. J. Jung*, ***Journal of Physical Chemistry C***, 112, 17143-17147 (2008)
35. "Mechanical and Electrical Evaluation of Parylene-C Encapsulated Carbon Nanotube Networks on a Flexible Substrate", C. Chen, E. Lopez, Y. Jung, S. Muftu, S. Selvarasah, and M. Dokmeci, ***Applied Physics Letters***, 93, 093109-093112 (2008)
36. "Building Highly Organized SWNT Networks Using Template Guided Assembly", X. Xiong, L. Jaberansari, M. Hahm, A. Busnaina, and Y.J. Jung*, ***Small***, 3, 2006-2010 (2007)
37. "Scalable Nanotemplate Assisted Directed Assembly of SWNTs for Nanoscale Devices", P. Makaram, S. Somu, X. Xiong, A. Busnaina, N. McGruer and Y. J. Jung, ***Applied Physics Letters***, 90, 243108 -243111 (2007)
38. "Aligned Carbon Nanotube-Polymer Hybrid Architectures for Diverse Flexible Electronic Applications", Y.J. Jung*, S. Kar, S. Talapatra, C. Soldano, G. Vishwanathan, X. Li, Z. Yao, F. Ou, R. Vajtai, P.M. Ajayan, O. Nalamasu, ***Nano Letters***, 6, 413-419 (2006)
39. "Electrical Characterization of Carbon Nanotube Structures", R. Vajtai, S. Biswas, B. Wei, G. Meng, Y.J. Jung, and P.M. Ajayan, ***Nanopages***, 1, 45-68 (2006)
40. "Parallel Arrays of Individual Addressable Singlewalled Carbon Nanotube Field Effect Transistors ", S. Lastella, G. Mallick, R. Woo, S.P. Karna, Y.J. Jung, P.M. Ajayan, C. Ryu, D. Rider, and I. Manners, ***Journal of Applied Physics***, 99, 024302-024306 (2006)
41. "Bottom-up Growth of Carbon Nanotube Multilayers", S. Li, A. Cao, Y.J. Jung, R. Vajtai, and P.M. Ajayan, ***Nano Letters***, 5 (10), 1997-2000 (2005)
42. "Controlled Fabrication of Hierarchically Branched Nanopores, Nanotubes and Nanowires", G. Meng, Y.J. Jung, A. Cao, R. Vajtai, and P.M. Ajayan, ***Proceeding of National Academy of Science,*** 12(20), 7074-7078 (2005)
43. "Room Temperature Resonant Tunneling of Electrons in Carbon Nanotube Junction Quantum Well", S. Biswas, Y.J. Jung*, A. Vijayaraghavan, R. Vajtai, L. Schowalter, and P.M. Ajayan, ***Applied Physics Letters,*** 86, 183101-183104 (2005)
44. "Ordered Ni Nanowire Tip Arrays", G. Meng, A. Cao, J. Cheng, A. Vijayaraghavan, Y.J. Jung, M. Shima, and P.M. Ajayan, ***Journal of Applied Physics***, 97 (6), 064303-061407 (2005)
45. "Density Control of Single Walled Carbon Nanotubes using Patterned Iron Nanoparticle Catalysts Derived from Phase Separated Thin Films of a Polyferrocene Block Copolymer", S. Lastella, Y. J. Jung, H. Yang, R. Vajtai, P. M. Ajayan, C. Ryu, D. Ridder, and I. Manners, ***Journal of Materials Chemistry***, 14(12), 1791-1794 (2004)
46. "Straightening Suspended Single-Walled Carbon Nanotube by Ion Irradiation", Y. J. Jung, Y. Homma, R. Vajtai, Y. Kobayashi, T. Ogino, and P. M. Ajayan, ***Nano Letters***, 4(6), 1109-1113 (2004)

47. "Building and Testing Organized Architectures of Carbon Nanotubes", R. Vajtai, B. Q. Wei, Y. J. Jung, A. Cao, S. K. Biswas, G. Ramanath and P. M. Ajayan, ***IEEE Transactions on Nanotechnology***, Invited Paper, 2, 355-364 (2003)
48. "Role of Transition Metal Catalysts in Single-Walled Carbon Nanotube Growth in Chemical Vapor Deposition", Y. Homma, Y. Kobayashi, T. Ogino, D. Takagi, Y.J. Jung, and P.M. Ajayan, ***The Journal of Physical Chemistry B***, 107, 12161-12164 (2003)
49. "High-density, Large Area Single-Walled Carbon Nanotube Networks on Nano-Scale Patterned Substrates", Y. J. Jung*, Y. Homma, T. Ogino, Y. Kobayashi, D. Takagi, B. Wei, R. Vajtai, and P. M. Ajayan, ***The Journal of Physical Chemistry B***, 107, 6859-6864 (2003)
50. "Mechanism on Selective Growth of Carbon Nanotubes on SiO_2/Si Patterns", Y. J. Jung*, B. Wei, R. Vajtai, P. M. Ajayan, Y. Homma, K. Prabhakaran, and T. Ogino**, *Nano Letters***, 3 (4), 561-564 (2003)
51. "Assembly of Highly Organized Carbon Nanotube Architectures by Chemical Vapor Deposition", B. Q. Wei, R. Vajtai, Y. Jung, J. Ward, G. Ramanath, and P. M. Ajayan, ***Chemistry of Materials***, 15, 1598-1606 (2003)
52. "Building Carbon Nanotubes and their Smart Architectures", R. Vajtai, B.Q. Wei, Z.J. Zhang, Y. Jung, G. Ramanath, and P.M. Ajayan, ***Smart Materials and Structures***, 11, 691-698 (2002)
53. "Growth of Aligned Carbon Nanotubes on Self-Similar Macroscopic Templates", A. Cao, B.Q. Wei, Y. Jung, R. Vajtai, P.M. Ajayan, and G. Ramanath, ***Applied Physics Letters***, 81, 1297-1299 (2002)
54. "Massive Boron Carbide Crystals with Five-Fold Symmetry", B.Q. Wei, R. Vajtai, Y.J. Jung, F. Banhart, G. Ramanath, and P. M. Ajayan, ***The Journal of Physical Chemistry B***, 106, 23-25 (2002)
55. "Organized Assembly of Carbon Nanotubes", B. Q. Wei, R. Vajtai, Y. Jung, J. Ward, Y. Zhang, G. Ramanath and P. M. Ajayan, ***Nature***, 416, 495-496 (2002)
56. "Controlling Growth of Carbon Microtrees", Y. J. Jung*, B.Q. Wei, J. Nugent and P.M. Ajayan, ***Carbon***, 39, 2195-2201 (2001)

Manuscripts Under Review

1. "Printing highly controlled suspended carbon nanotube network on micro-patterned superhydrophobic surface" B. Li, X. Wang, H. Jung, Y. Kim, J. Robinson, M. Zalalutdinov, S. Hong, J. Hao, KT. Wan, Y. Jung*, *under revision in Scientific Reports*
2. **"**Ultrafast structural transformation in sp^2 carbon by femtosecond laser irradiation" J. Ha, H. Jung, J. Hao, B. Li, P. Ajayan, D. Kim*, Y. Jung*, *submitted to Small*

Book Chapters

1. Nanomanufacturing (Ahmed Busnaina), Chapter 4: Controlled Synthesis of Carbon Nanotubes, 79-106, ***CRC Press***, New York, 2006
2. "Highly Organized Single-Walled Carbon Nanotube Networks and Their Electrical Transport Properties", ***Dekker Encyclopedia of Nanoscience and Nanotechnology***, Y. L. Kim, L. Jaber-Ansari, M. C Strus, H. Wang, X. Xiong, S. Somu, A. N Chiaramonti, A. Busnaina, R. R Keller, M. Upmanyu, S. Kar and Y. J. Jung, CRC, 2012

D. PATENTS

1. Meng G, Ajayan P, Jung YJ. Controlled Fabrication of Hierarchically Branched Nanopores, Nanotubes, and Nanowires", US Patent 20100075130 A1, 2010 (Awarded)

2. Xiong X, Busnaina A, Jung YJ, Jaberansari L, Somu S, Upmanyu M. Building Highly Organized Single-walled Carbon Nanotube Networks using Template Guided Fluidic Assembly. US Patent 20100183844 A1, 2010 (Awarded)
3. Jung YJ, Chun H, Menon L. Low Aspect Ratio Carbon Nanostructure. US Patent 20120027681 A1 (Under review), WO2010105058 A1 (Awarded), 2012
4. Busnaina A, Jung YJ, Somu S, Kim Y, Dartar A. Chemical Sensor based on Highly Organized SWNT Network**.** US Patent 20140197046 A1 (Under review), 2013
5. Jung YJ, Jung H, Ajayan P. Fabrication of Flexible and Transparent Supercapacitors using Thin-film Carbon Electrodes with Controlled Morphologies. PCT/US13/36586 (Under review), 2013
6. Jung YJ, Hong S, Jung H, Lee S. High Density Aligned Silicon Nanowire. WO2013192623 A3 (Under review), 2013
7. Kim Y, Jung H, Jung YJ, Kar S. Photoresponse in Heterojunction Structure of Single-walled Carbon Nanotubes and Silicon for Optoelectronics. WO2014092830 A3 (Under review), 2013
8. Jung YJ, Jung H, Kar S, Arujo P, Dresselhaus M. Allotropic Transformation Through Solid-State Re-Engineering of -sp2 Carbon. US provisional patent 61/832,347, 2013
9. Li B, Hao J, Jung H, Jung YJ, Kar S. Ultra Sensitive Ion Detector Using Carbon Nanotube and Graphene. WO2014075064 A3 (Under review), 2013

E. AWARDED RESEARCH GRANTS

Grants and Contracts

1. Engineering Strong and Highly Conductive Nanotube Fibers via Fusion **PI**, ***NSF-DMREF*****, 2014-2018, $1,267,461,**
2. Developing Strong, High thermal resistant, and Light Weight Materials and their Processing for the High Performance Automotive Lighting System, **PI**, ***Ministry of Trade, Industry and Energy (Republic of Korea)*****, 2014-2019, $450,000**
3. Strategic Materials, **Co-PI**, **Army Research Lab**, **2015-2017, $650,000**
4. High performance photoswitches using carbon nanotube - Si Heterojunctions for Optoelectronic Logic devices, **Co-PI, *NSF-ECCS*, 2012-2016, $308,907**
5. Flexible electrode and catalyst support using nanocarbon**, PI**, ***Korea Institute of Science and Technology (KIST*****), 2013-2014, $26,786**
6. Highly organized two and three dimensional SWNT- polymer hybrid structures for diverse flexible devices and systems, **PI, *NSF-CMMI-Nanomanufacturing*, 2009-2012, $208,090**
7. Collaborative Research: Ultra-high performance carbon nanotube "Parallel Nanotube Architectures" (PNAs) for on-chip gigascale local and global interconnects, **PI, *NSF-ECCS*, 2009-2012, $99,999,**
8. The Center for High-Rate Nanomanufacturing (CHM)-Northeastern University, **Co-PI, *NSF-NSEC*, 2009-2014, $2,450,000**
9. Controlled synthesis of carbon nanotubes for the highly effective thermal dissipation in chemical materials, **PI, *Korea Research Institute of Chemical Technology*** *(South Korea: Ministry of Knowledge and Economy-Materials Fundamental Technology Development Program),* **2009-2013, $250,000**

10. Nanoporous Pt film on silicon wafer and engineering their nanopore structure, **PI, *Korea Institute of Science and Technology (KIST)*, 2009-2013, $200,000**
11. Development of multifunctional chemical sensor based on highly organized SWNT networks, **Co-PI, *Advanced Energy Consortium (AEC)*, 2009-2012, $756,256**
12. Fabrication of "all metallic" aligned SWNT architectures for nanoscale interconnects, **PI, *Semiconducting Research Corporation (SRC)-CSR*, 2008-2009, $40,000**
13. CNT integrated sensing system for driver state detection, **Co-PI, *NSF-CMMI-Sensors and Sensing Systems*, 2008-2011, $220,000**
14. NSEC international workshop on nanomanufacturing, **Co-PI, *NSF*, 2007, $36,200**
15. Controlled synthesis of hierarchical one dimensional heterostructures for nanodevices applications, **PI, *NSF-NER* 2006-2007, $120,001**
16. Development of chirality and length controlled SWNTs synthesis process using water-assisted chemical vapor deposition and highly defined catalyst/substrate system, **PI, *NSF-NSEC Seed Research Funding, University of Massachusetts at Lowell*, 2006-2007, $50,000 (non-overhead),**

Internal Grant/ External Research Gifts

1. Investigating Structures and Electronic Property of Novel Graphic Nanomaterials (Short Nanotube, Nanocup, and Nanoring) for Advanced Nanoelectronic Devices, *Northeastern University Provost Research Grant, 2007-2008, Total Amount Awarded: $15,000, PI (100%)*
2. Organized carbon nanotube-parylene multifunctional active thin film for flexible electronic applications, *Northeastern University Provost Research Grant, 2006-2007, Total Amount Awarded: $25,200*
3. Schlumberger Limited, *Research Gift*: *$10,000*
4. Raytheon, *Research Gift: $20,000*

F. RESEARCH COLLABORATORS

Dr. Chiwon Ahn (National Nano Fabrication Center-KAIST, Korea), **Prof. Pulickel M. Ajayan** (Rice University, USA), **Dr. Jiyoung Byun** (Korea Institute of Science and Technology, Korea), **Dr. Ann Chiramonti** (NIST, USA), **Prof. Hak Soo Choi** (Harvard University, USA), **Prof. George H. Gilmer** (Colorado School of Mines, USA), **Prof. Yoshikazu Homma** (Tokyo University of Science, Japan), Prof. David Kaeli (Northeastern University, USA), **Prof. Swastik Kar** (Northeastern University, USA), **Dr. Robert Keller** (NIST, USA), **Prof. Dongsik Kim** (POSTECH, Korea), **Dr. Sanghoon Kim** (Korea Institute of Science and Technology, Korea), **Prof. Young-Kyun Kwon** (KyungHee University, Korea), **Dr. Eunah Lee** (Horiba Jobin Yvon Co.), **Dr. Sung-Goo Lee** (Korea Research Institute of Chemical Technology, Korea), **Prof. Carol Livermore** (Northeastern University, USA), **Prof. David Luzzi** (Northeastern University, USA), **Prof. Anastassios Mavrokefalos** (University of Houston, USA), **Prof. Guowen Meng** (Chinese Academy of Science, China), **Prof. Latika Menon** (Northeastern University, USA), **Dr. Jeremy Robinson** (Naval Research Laboratories, USA), **Prof. Jonghwan Suhr** (Sungkyunkwan University, Korea), Prof. **Humberto Terrones** (RPI, USA), **Prof. Moneesh Upmanyu** (Northeastern University, USA), **Prof. Robert Vajtai** (Rice University, USA), **Prof. Ashkan Vaziri** (Northeastern University), **Prof. Kai-tak Wan**, (Northeastern University, USA), **Prof. Bingqing Wei** (University of Delaware, USA)

G. RESEARCH SUPERVISION

Former Post-Doctoral Researchers, Visiting Scholar, and Graduated Students (Thesis/Research Supervision)

Dr. Hyunyoung Jung, Postdoctoral Researcher (February 2010-Feb 2015; Current position-*Assistant Professor at Kyeongnam National University of Science and Technology, Korea*), **Myung Gwan Hahm, PhD** (January 2006-August 2010; Current position-*Assistant Professor at Shinshu Univ., Japan*), **Bo Li, PhD** (September 2008-April 2013; Current position-*Postdoctoral Research Associate at Rice University, TX*), **Younglae Kim, PhD** (September 2008-May 2013; Current position-*Senior Engineer at Intel Co., Portland, OR*), **Dr. Kazuki Yamada, Visiting Scholar** (2010-2011; Current position-*Tokyo Electronics*) **Laila Jaber-ansari, MS** (September 2006-August 2008; Current position-*PhD student at Northwestern University, IL*), **Fabrizio Martini, MS** (November 2011-April 2013; Current position-*Senior engineer* at *Fastcap System Co.*), **A-Mi Yu, MS** (September 2011-April 2013)**, Rebecca Meritz, BS** (June 2008-December 2009; Current position-*Karma Co.*)**, Sangwon You, MS** (March 2006-December 2006; Current position-*LG Corporation, Korea*), **Juan Delhoyo, UG Research** (September-December 2014)

Current Post-Doctoral Researchers and Visiting

Dr. Sunkyung Jeoung, Visiting Scholar (March 2015-Current-Vice President in Korea Automotive Technology), **Dr. Rodrigo Lavall, Postdoctoral Researcher** (August 2015-Current)

Current Students

Sanghyun Hong, PhD (January 2010-Current; High density, aligned silicon nanowires for energy application), **Ji Hao, PhD** (January 2012-Current; Engineering SWCNT for optoelectronic device applications, **Hyehee Kim, PhD** (September 2014-Current; High performance and flexible photodetectors with high quantum efficiency), **Sen Gao, PhD** (September 2015-Current), **Jeonghoon Nam, PhD** (September 2015-Current), **Zane Gavin, UG Research** (September, 2014-Current), **Alexander Keklak, UG Research** (April 2015-Current)

H. COURSE TAUGHT

1. MATL 7350: Mechanical Behavior of Materials and Strengthening Mechanism (2006-Current)
2. ME 2340: Introduction to Materials Science and Engineering (2006-Current)
3. ME 2341: Laboratory for Materials Science and Engineering (2006-Current)
4. MIMU701: Senior Capstone Project (2008)
5. MTMG262: Nanomanufacturing (2006-2007)

I. RECOGNITIONS

1. Keynote Speaker, Korean-American Scientists and Engineers Association (KSEA) 2015 Annual Symposium, Feb 28 (2015) MIT (Cambridge) (Building and Engineering Carbon Nanostructured Architectures)
2. Keynote Speaker, 1st International Workshop on Engineering and Applications of Nanocarbon Materials, Feb 1 (2015) Jinan, China (Engineering Carbon Nanostructured Architectures for Multifunctional Applications)
3. Paper published in Nature Photonics (2014) was highlighted in R& D Magazine (***Want your computer to go faster? Just add light***), Nanowerk and Phys.org (***New approach to chip design***

could yield light speed computing), IEEE spectrum (***Nanotubes Make Logic Circuits that Use Both Light and Current***), Materials Today etc.

4. Paper published in Nature Communications (2014) was highlighted in Technobahn, Science Newslines, Eureka Alrert, Nanowerk (*Northeastern University Researchers Develop Novel Method for Working with Nanotubes*), IEEE spectrum (*Electricity Makes Mortar for Nanotube Bricks),* R&D Magazine *(**Materials experts construct precise inter-nanotube junctions)***, Phys.org (*Small transformation yields big changes*) etc.
5. Nominated by Northeastern University for Blavatnik Award for Young Scientist, 2014
6. A Recipient of international scholar fellowship, KyungHee Univ. Korea, 2013
7. Paper published in Scientific Reports (2012) was highlighted in Nanowerk (*For energy-storage devices, thin is in*). The paper is #1 cited paper in flexible supercapacitor field since 2012 (BioMed). So far it has been cited 58 times (google scholar) including review papers and papers published in high impact journals such as Nature Communications, Nano Letters, ACS Nano, Advanced Materials, Small etc.
8. PhD Student, Bo Li received Outstanding Graduate Student Award in Research at Northeastern University, 2012
9. Publication in ACS Nano (vol. 3, page 1274, 2009) was highlighted in *Nanowerk.com* "New morphologies of graphitic carbon in nanotechnology applications"
10. Publication in JACS (vol. 131, page 804, 2009) was highlighted in *physorg and newswise*
11. Publication in Journal of Materials Chemistry (vol. 19, page 463, 2009) and Nanoscale (vol. 4, 2012) were selected as a cover and featured in media
12. Invited talk in MRS Spring 2009 was featured in *MRS website*
13. Interviews on carbon nanotube growth was featured in *Small Times* September/October, 2007, "A growing need nanotube synthesis tools await electronics applications"
14. Selected as one of 2006 US-Japan Young Researchers in Nanotechnology and Nanomanufacturing, sponsored jointly by the *NSF, USA and MEXT*, Japan
15. Publication in Nano Letters (vol. 6, page 413, 2006) recognized as one of the most cited papers in 2006 of the journal by publisher and featured in ***Nature****: "Display of flexibility", Laszlo Forro*, Vol 441, 414 (2006) , ***Technology Review*** *"Flexible CRT display"* (2006), ***Materials Today*** *"Direct Route to flexible composites"* Vol 9, 22 (2006), ***Discovery Channel News*** *etc*

J. SERVICES AND PROFESSIONAL ACTIVITIES

Journal Article Peer Reviews (Selected)

1. ACS Nano (American Chemical Society)
2. Advanced Functional Materials (Wiley InterScience)
3. Advanced Materials (Wiley InterScience)
4. Applied Physics Letters (American Institute of Physics)
5. Carbon (Elsevier)
6. Chemistry of Materials (American Chemical Society)

7. IEEE Transactions on Nanotechnology (IEEE)
8. Journal of American Chemical Society (American Chemical Society)
9. Journal of Applied Physics (American Institute of Physics)
10. Journal of Materials Chemistry (Royal Society of Chemistry)
11. Journal of Nanoscience and Nanotechnology (American Scientific Publisher)
12. Journal of Physical Chemistry B (American Chemical Society)
13. Langmuir (American Chemical Society)
14. Journal of Physical Chemistry C (American Chemical Society)
15. Nano Letters (American Chemical Society)
16. Nanoscale (RSC)
17. Nature Nanotechnology (Nature Group)
18. Nature Communications (Nature Group)
19. Nature Materials (Nature Group)
20. Nanotechnology (Institute of Physics Science)
21. Scientific Reports (Nature Group)

Federal Grant Proposal Peer Reviews

1. Invited Panel Reviewer for National Science Foundation, CMMI 2006
2. Invited Proposal Reviewer for National Science Foundation, DMR 2008
3. Invited Panel Reviewer for National Science Foundation, CMMI 2009
4. Invited Panel Reviewer for National Science Foundation, CMMI 2011
5. Invited Proposal Reviewer for Canadian Institutes of Health Research (CIHR)
6. Invited Proposal Reviewer for Pilot Funding for New Research in Louisiana State, 2012-2014

Service to the Profession

1. An Editorial Board Member & Review Editor of Frontiers
2. A Scientific Committee Member for International Symposium for Energy Challenges and Mechanics, Aberdeen, Scotland, United Kingdom
3. An Editorial Board Member of Nanotechnology, Hindawi
4. A visiting Associate Editor of Journal of Energy Resources Technology, ASME
5. An Editorial Board Member of Applied Chemistry for Engineering (The Korean Society of Industrial and Engineering Chemistry)
6. A co-organizer and session chair, Nanomanufacturing at ASME Congress 2008, Boston
7. An invited presenter and panel member for 1st international conference for nanomanufacturing sponsored by NSF and KOSEF, Seoul Korea 2007
8. An Invited presenter and panel member for 3rd US-KOREA Nano-forum in Korea sponsored by NSF and Ministry of Science and Technology, Seoul, Korea 2006.

Service to Northeastern University

1. Established MOU between CoE NEU and KAIST National Nanofabrication Center (Korea) for student exchange and research collaborations.
2. Sabbatical Leave Committee for CoE (2014-Present),
3. Faculty Search Committee for Nanomanufacturing (2013)
4. Faculty Search Committee for Nanodevices (2013)

5. Co-Faculty Advisor for MRS student chapter in NEU.
6. Founding faculty advisor for Undergraduate Korean Student Associate at NEU (2005- Present)
7. Founding faculty advisor for Graduate Korean Student Associate at NEU (2005-2010)
8. Organizer, NSF NSEC-NEU Distinguished Lecture Series (2005-2008)
9. A Member of COOP Liaison Committee in Mechanical and Industrial Department
10. A Judge of Northeastern University Research Expo (2010-2012)