Yung Joon Jung

Mechanical and Industrial Engineering Department
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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
PhD thesis advisor: Prof. Pulickel M. Ajayan (currently at Rice University)

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

B. PROFESSIONAL EXPERIENCE

Professor (August 2017-Current)
Department of Mechanical and Industrial Engineering, *Northeastern University*, Boston, MA

Co-Faculty Director of Materials Characterization Facility Center (May 2016-Present)
Kostas Homeland Security Institute, Northeastern University, Burlington, MA

Associate Professor (August 2011-July 2017)
Department of Mechanical and Industrial Engineering, *Northeastern University*, Boston, MA

Visiting Professor (International Eminent Scholarship, March 2013-September 2013)
Department of Physics, *KyungHee University*, Seoul. Korea

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

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 University)

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

C. PUBLICATIONS

Peer-Reviewed Journal Articles

61 **published journal articles** including in **Nature**, **Nature Photonics**, **Nature Communications**, **Nano Letters, Advanced Materials, Proceeding of National Academy of Science, Small, ACS Nano, JACS** etc. and more than **3800 citations**, **'h'-index: 28**, 2 Book Chapters**.** For list below: * denotes corresponding author, # denotes graduate student/postdoctoral researcher in my group.

1. "Vapor-Phase-Gating Induced Ultrasensitive Ion Detection in Graphene and Single-Walled Carbon Nanotube Networks" J. Hao[#], B. Li[#], H. Jung[#], S. Hong[#], Y. Jung[*], and S. Kar[*]", ***Advanced Materials***, 1606883 (2017)

2. "Physisorbed vs Chemisorbed Oxygen Effect on Thermoelectric Properties of Highly Organized Single-Walled Carbon Nanotube Nanofilms" M. Yarali, J. Hao#, M. Khodadadi, H. Brahmi, S. Chen, V. Hadjiev, Y. Jung and A. Mavrokefalos*, ***RSC Advances***, 7, 14078-14087 (2017).

3. "Highly Anisotropic Adhesive Film Made from Upside-Down Flat and Uniform Vertically Aligned CNTs" Sanghyun Hong#, Troy Lundstrom, Ranajay Ghosh, Hamed Abdi, Ji Hao#, Sun Kyeong Jeoung#, Paul Su, Jonghwan Suhr, Ashkan Vaziri, Nader Jalili, and Yung Joon Jung*, ***ACS Applied Materials and Interfaces***, **8**, 34061 (2016) (Impact Factor: 7.145)

4. "Inter-allotropic Transformations in the Heterogeneous Carbon Nanotube Networks", H. Jung*, S. Jung, D. W. Kim and Y. J. Jung* ***Nanoscale***, 9, 1014-1021 (2017) (Impact Factor: 7.394)

5. "Fabrication of Core-Shell Thermally Expandable Microcapsules Using Organic and Inorganic Stabilizers and Their Application" S. Jeoung, I. Han, Y.J. Jung, S. Hong#, S. Shim, Y. Hwang, P. Lee, J. Ha*, ***Journal of Applied Polymer Science***, DOI: 10.1002 apps 44247 (2016) (Impact Factor: 1.60)

6. "Mechanical Characterization of Suspended Strips of Meshed Single-walled Carbon Nanotube" X. Wang, B. Li#, J. Hao#, Y. Jung, and K. Wan*, ***Journal of Appl. Phys.,*** **119**, 045305 (2016) (Impact Factor: 2.183)

7. "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*, ***Scientific Reports,*** **5**, Article number: 15908 (2015) doi:10.1038/srep15908 (Impact Factor: 5.578)

8. "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*, ***Nano Letters,*** **15,** 5089 (2015) (Impact Factor: 13.592)

9. "Efficient lithium storage from modified vertically aligned carbon nanotubes with open-ends", H. Jung#, S. Hong#, A Yu#, and Y. Jung*, ***RSC Advances,*** **5,** 68875 (2015) (Impact Factor: 3.84)

10. "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) (Impact Factor: 11.47)

11. "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) (Impact Factor: 32.386)

12. "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) (Impact Factor: 12.881)

13. "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) (Impact Factor: 4.107)

14. "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 Reports,*** 3**,** 2588; DOI:10.1038/srep02588 (2013). (Impact Factor: 5.578)

15. "Tunable Graphene–Silicon Heterojunctions for Ultrasensitive Photodetection", X. An, F. Liu, Y.J. Jung, and S. Kar*, ***Nano Letters***, 13, 909, (2013) (Impact Factor: 13.592)

16. "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) (Impact Factor: 2.183)
17. "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) (Impact Factor: 5.578)
18. "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) (Impact Factor: 5.578)
19. "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) (Impact Factor: 13.592)
20. "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) (Impact Factor: 4.772)
21. "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) (Impact Factor: 1.779)
22. "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*** (Impact Factor: 7.394)
23. "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) (Impact Factor: 16.146)
24. "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) (Impact Factor: 12.881)
25. "Accelerated Reliability Testing of Highly Aligned Single-Walled Carbon Nanotube Networks Subjected to DC Electrical Stressing", M. C. Strus, A. N. Chiaramonti, Y. L. Kim#, Y. J. Jung, and R. R. Keller*, ***Nanotechnology***, 22, 265713, (2011) (Impact Factor: 3.821)
26. "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) (Impact Factor: 11.805)
27. "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) (Impact Factor: 6.196)
28. "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) (Impact Factor: 1.319)
29. "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) (Impact Factor: 1.83)

30. "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) (Impact Factor: 12.881)
31. "Possible Room-Temperature Ferromagnetism in Hydrogenated Carbon Nanotubes", L. Friedman, H. Chun#, Y. J. Jung#, D. Heiman, E. R. Glaser, and L. Menon*, ***Physical Review B***, 81, 115461-115464 (2010) (Impact Factor: 3.736)
32. "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) (Impact Factor: 12.881)
33. "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) (Impact Factor: 11.261)
34. "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) (Impact Factor: 3.821)
35. "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) (Impact Factor: 12.881)
36. "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) (Impact Factor: 1.694)
37. "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) (Impact Factor: 12.113)
38. "Epitaxially Grown GaN Nanowire Networks", Z. Wu, M. G. Hahm#, Y. J. Jung* and L. Menon, ***Journal of Materials Chemistry***, 19, 463-467 (2009) (Impact Factor: 6.626)
39. "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) (Impact Factor: 4.772)
40. "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) (Impact Factor: 3.302)
41. "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) (Impact Factor: 8.368)
42. "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) (Impact Factor: 3.302)
43. "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) (Impact Factor: 13.592)

44. "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)
45. "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) (Impact Factor: 2.183)
46. "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) (Impact Factor: 13.592)
47. "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) (Impact Factor: 9.674)
48. "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) (Impact Factor: 3.302)
49. "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) (Impact Factor: 2.183)
50. "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) (Impact Factor: 6.626)
51. "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) (Impact Factor: 13.592)
52. "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) (Impact Factor: 1.825)
53. "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) (Impact Factor: 3.302)
54. "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) (Impact Factor: 3.302)
55. "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) (Impact Factor: 13.592)
56. "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) (Impact Factor: 8.354)
57. "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) (Impact Factor: 2.502)
58. "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) (Impact Factor: 3.302)

59. "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) (Impact Factor: 3.302)
60. "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) (Impact Factor: 41.456)
61. "Controlling Growth of Carbon Microtrees", Y. J. Jung*, B.Q. Wei, J. Nugent and P.M. Ajayan, ***Carbon***, 39, 2195-2201 (2001) (Impact Factor: 6.196)

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) **Published**

2. Xiong X, Busnaina A, Jung YJ, Jaberansari L, Somu S, Upmanyu M. "Highly organized single-walled carbon nanotube networks and method of making using template guided fluidic assembly", US Patent 8784673 B2 (2014) **Awarded**

3. Jung YJ, Chun H, Menon L. "Low Aspect Ratio Carbon Nanostructure", US Patent 20120027681, (2012) **Published**

4. Jung YJ, Jung H, Ajayan P. "Flexible and Transparent Supercapacitors and Fabrication Using Thin Film Carbon Electrodes with Controlled Morphologies", US Patent 20150332868 A1 (2015) **Published**

5. Jung YJ, Hong S, Jung H, Lee S. "High Density Aligned Silicon Nanowire", US Patent 20150337438 A1 (2015) **Published**

6. Kim Y, Jung H, Jung YJ, Kar S. "Photoresponse in Heterojunction Structure of Single-walled Carbon Nanotubes and Silicon for Optoelectronics", US Patent 20150228917 A1 (2015) **Published**

7. Jung YJ, Jung H, Kar S, Arujo P, Dresselhaus M. "Fabrication of Carbon Nanoribbons from Carbon Nanotube Arrays" US provisional patent 61/832,347, (2013) and WO2016040948 A1 (2016) **Published**

8. Li B, Hao J, Jung H, Jung YJ, Kar S. "Ultra Sensitive Ion Detector Using Carbon Nanotube and Graphene", US Patent 20150276677 A1 (2015) **Published**

9. Hao J, Kar S, Jung YJ. "Vapour-Phase Gating Induced Single-Ion Detection In Graphene And Single-Wall Carbon Nanotube Networks', US provisional patent 62/385,919 (2016)

10. Busnaina A, Jung YJ, Somu S, Kim Y, Dartar A. "Chemical Sensor based on Highly Organized SWNT Network**",** US Patent 20140197046 A1 (2013) **Awarded**

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 and share $443,611.35**
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: $370,000**
3. Strategic Materials, **Co-PI**, **Army Research Lab**, **2015-2017: $650,000 and share $104,000**
4. High-performance Photoswitches using Carbon Nanotube - Si Heterojunctions for Optoelectronic Logic devices, **Co-PI, *NSF-ECCS*, 2012-2016: $308,907 and share $123,562**
5. Transparent and Flexible Carbon Nanotubes Film for EMI Shielding, **Co-PI, Army Research Office (ARDEC), 2012-2013: $100,000 and share $36,989**
6. Carbon Nanotube Directed Assembly for the Next Generation of Rechargeable Batteries, Co-PI, **National Reconnaissance Office, 2012-2013: $1,588,998 and share $158,900**
7. Flexible electrode and catalyst support using nanocarbon**, PI**, ***Korea Institute of Science and Technology (KIST)*, 2013-2014: $26,786**
8. Highly organized two and three dimensional SWNT- polymer hybrid structures for diverse flexible devices and systems, **PI, *NSF-CMMI-Nanomanufacturing*, 2009-2012: $208,090**
9. 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**
10. The Center for High-Rate Nanomanufacturing (CHM)-Northeastern University, **Co-PI, *NSF-NSEC*, 2009-2014: $2,450,000 and share $122,500**
11. 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**
12. Nanoporous Pt film on silicon wafer and engineering their nanopore structure, **PI, *Korea Institute of Science and Technology (KIST)*, 2009-2013: $200,000**
13. Development of multifunctional chemical sensor based on highly organized SWNT networks, **Co-PI, *Advanced Energy Consortium (AEC)*, 2009-2012: $756,256 and share $249,564**
14. Fabrication of "all metallic" aligned SWNT architectures for nanoscale interconnects, **PI, *Semiconducting Research Corporation (SRC)-CSR*, 2008-2009: $40,000**
15. CNT integrated sensing system for driver state detection, **Co-PI, *NSF-CMMI-Sensors and Sensing Systems*, 2008-2011: $220,000 and share $88,000**
16. NSEC international workshop on nanomanufacturing, **Co-PI, *NSF*, 2007: $36,200 and share $18,100**
17. Controlled synthesis of hierarchical one dimensional heterostructures for nanodevices applications, **PI, *NSF-NER* 2006-2007: $120,001 and share $96,001**
18. 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) and share: $25,000**

F. RESEARCH SUPERVISION

Current Post-Doctoral Researchers and Students

Dr. Rodrigo Lavall, Postdoctoral Researcher (August 2015-Current)**, Sanghyun Hong, Postdoctoral Researcher** (September 2016-Current), **Ji Hao, PhD** (January 2012-Current; Engineering SWCNT and graphene for ion sensor, expected 2017 Summer), **Hyehee Kim, PhD** (September 2014-Current; High performance and flexible supercapacitor), **Sen Gao, PhD** (September 2015-Current), **Paul Asare Agyapong, MS** (May 2016-Current: Draper Lab Fellowship-West Point BS), **Zane Gavin, UG Research** (September, 2014-Current), **Alexander Keklak, UG Research** (April 2015-Current)

Former Post-Doctoral Researchers and PhD Students (Thesis/Research Supervision)

1. **Prof. Hyunyoung Jung**, Postdoctoral Researcher (February 2010-Feb 2015): Current Position-***Assistant Professor at Dept. of Energy Engineering, KyeongNam National University of Science and Technology, Korea***
2. **Prof. Myung Gwan Hahm**, PhD (January 2006-August 2010): Current Position-***Assistant Professor at Materials Science and Engineering, Inha University, Korea***
3. **Prof. Bo Li**, PhD (September 2008-April 2013): Current Position- ***Assistant Professor at Dept. of Mechanical Engineering, Villanova University. PA, USA***
4. **Dr. Young Lae Kim**, PhD (September 2008-May 2013): Current Position-***Senior Engineer at Intel Co., Portland, OR*, USA**
5. **Dr. Sanghyun Hong**, PhD (January 2010-August 2016): Current Position-***Postdoctoral Researcher at Jung's laboratory in Northeastern University*, MA, USA**
6. **Dr. Sunkyung Jeoung, Research Professor** (March 2015-March 2016): Current Position-***Vice President at Korea Automotive Technology Institute (National Laboratory), Korea***
7. **Dr. Kazuki Yamada, Visiting Scholar** (2010-2011): Current position- ***Senior Engineer at Tokyo Electronics, Japan***

Former MS and Undergraduate Research Students

- **Laila Jaber-ansari, MS** (September 2006-August 2008)
- **Fabrizio Martini, MS** (November 2011-April 2013)
- **A-Mi Yu, MS** (September 2011-April 2013)
- **Rebecca Meritz, BS** (June 2008-December 2009)
- **Sangwon You, MS** (March 2006-December 2006)
- **Juan Delhoyo, UG Research** (September-December 2014)

G. COURSE TAUGHT (Since 2011)

- SP2011-MATL7350: Mechanical Behavior and Strengthening Mechanism of Material-**9** students
- SP2011-ME2340: Introduction to Materials Science and Engineering-**57** students
- FL2011-MATL7350: Mechanical Behavior and Strengthening Mechanism of Material-**7** students
- SP2012-ME2340: Introduction to Materials Science and Engineering-**57** students (Total 2 sections)
- FL2012-MATL7350: Mechanical Behavior and Strengthening Mechanism of Material-**13** students
- FL2013-MATL7350: Mechanical Behavior and Strengthening Mechanism of Material-**18** students

- SP2014-ME2340: Introduction to Materials Science and Engineering-**58** students (Total 2 sections)
- FL2014-MATL7350: Mechanical Behavior and Strengthening Mechanism of Material-**10** students
- SP2015-ME2340: Introduction to Materials Science and Engineering-**70** students (Total 2 sections)
- FL2015-ME2340: Introduction to Materials Science and Engineering-**72** students (Total 2 sections)
- SP2016-MATL7350: Mechanical Behavior and Strengthening Mechanism of Material-**17** students
- FL2016-ME2340: Introduction to Materials Science and Engineering-**91** students (Total 2 sections)

H. 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. Nominee by Northeastern University (Provost Office) for Blavatnik Award for Young Scientist, 2014
6. A Recipient of International Eminent Scholarship, 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 88 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 (Provost Office) 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.*

I. 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. Science Advances (Science)
22. Scientific Reports (Nature Group)

Service to the Profession

1. **Editorial Board Member** of Journal of Nanomedicine
2. **Editorial Board Member** of Frontiers
3. **Review Editor** of Frontiers

4. **Scientific Committee Member** for International Symposium for Energy Challenges and Mechanics, Aberdeen, Scotland, United Kingdom (2015-current)
5. **Editorial Board Member** of Nanotechnology, Hindawi
6. **Visiting Associate Editor** of Journal of Energy Resources Technology, ASME
7. **Editorial Board Member** of Applied Chemistry for Engineering
8. **Invited presenter and panel member** for 13th US-Korea Nano-forum 2016 sponsored by National Science Foundation
9. **Organizing Committee and Co-organizer,** Korea-China-USA Nano Forum 2015**,** ***Nano Korea 2015***, Seoul, Korea
10. **Co-organizer and session chair**, Nanomanufacturing at ASME Congress 2008, Boston
11. **Invited presenter and panel member** for 1st international conference for nanomanufacturing sponsored by NSF and KOSEF, Seoul Korea 2007
12. **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.
13. **Advisory Board** for KAIST (Korea) and Drexel University (USA) First Nano Coop Center (2015-current)