

Philip Kim

Professor

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(i) Professional Preparation:

Post-Doctoral Fellow (Physics) University of California, Berkeley, 1999-2001
Ph.D., Harvard University (Applied Physics) 1999
M.A., Harvard University (Applied Physics) 1996
S.M., Seoul National University (Physics) 1992
B.S., Seoul National University (Physics) 1990

(ii) Experience & Employment

Professor, Department of Physics, Columbia University, 2009- Present
Associate Professor, Department of Physics, Columbia University, 2006-2009
Assistant Professor, Department of Physics, Columbia University, 2002-2006
Miller Postdoctoral Fellow in Physics, University of California, Berkeley 1999-2001
Research Assistant and Teaching Fellow, Harvard University, 1995-1999
Research Assistant, Seoul National University, 1993-1994

(iii) Honors and Awards

Ho-Am Science Prize, 2008
American Physical Society Fellow, 2007
Columbia University Distinguished Faculty Award, 2007
Recipient Scientific American 50, 2006
National Science Foundation Faculty Career Award, 2004
Outstanding Young Researcher Award, Association of Korean Physicists in America, 2002
Miller Research Fellowship, University of California at Berkeley, 1999-2001

(iv) Publications:

- Journals

1. L. Shi, J. Zhou, P. Kim, A. Bachtold, A. Majumdar and P. L. McEuen, "Thermal probing of energy dissipation in current-carrying carbon nanotubes," *Journal of Applied Physics* **105**, 104306 (2009)
2. B. Chandra, J. Bhattacharjee, M. Purewal, Y.-W. Son, Y. Wu, M. Huang, H. Yan, T. F. Heinz, P. Kim, J. B. Neaton and J. Hone, "Molecular-Scale Quantum Dots from Carbon Nanotube Heterojunctions," *Nano Letters*, **9** (4), 1544-1548 (2009)
3. Y. M. Zuev, W. Chang, and P. Kim, "Thermoelectric and magnetothermoelectric transport measurements of graphene," *Phys. Rev. Lett.* **102**, 096807 (2009).
4. A. F. Young and P. Kim, "Quantum interference and carrier collimation in graphene heterojunctions," *Nature Physics* **5**, 222 (2009).

5. K. S. Kim, Y. Zhao, H. Jang, S. Y. Lee, J. M. Kim, K. S. Kim, J. H. Ahn, P. Kim, J. Choi, and B. H. Hong, "Large-scale pattern growth of graphene films for stretchable transparent electrodes," *Nature* **457**, 706 (2009)
6. C. Lee, G.-C. Yi, Y. M. Zuev, and P. Kim, "Thermoelectric power measurements of wide band gap semiconducting nanowires," *Appl. Phys. Lett.* **94**, 022106 (2009).
7. E. Stolyarova, D. Stolyarov, K. Bolotin, S. Ryu, L. Liu, K. T. Rim, M. Klima, M. Hybertsen, I. Pogorelsky, O. Pavlishin, K. Kusche, J. Hone, P. Kim, H. L. Stormer, V. Yakimenko, and G. Flynn, "Observation of graphene bubbles and effective mass transport under graphene film," *Nano Letters* **9**, 332 (2009).
8. S. Ryu, M. Y. Han, J. Maultzsch, T. F. Heinz, P. Kim, M. L. Steigerwald, and L. E. Brus, "Reversible basal plane hydrogenation of graphene," *Nano Letters* **8**, 4597 (2008).
9. K. R. Knox, S. Wang, A. Morgante, D. Cvetko, A. Locatelli, T. O. Menten, M. A. Nino, P. Kim, and R. Osgood, "Spectromicroscopy of single and multilayer graphene supported by a weakly interacting substrate," *Phys. Rev. B.* **78**, 201408(R) (2008).
10. J. Yan, E. A. Henriksen, P. Kim, and A. Pinczuk, "Observation of Anomalous Phonon Softening in Bilayer Graphene" *Phys. Rev. Lett.* **101**, 136804 (2008)
11. I. Meric, M. Han, A. F. Young, B. Oezylmaz, P. Kim and K. L. Shepard, "Current saturation in zero-bandgap, top-gated graphene field-effect transistors," *Nature Nanotech.* **3**, 654 (2008)
12. K. I. Bolotin, K. J. Sikes, J. Hone, H. L. Stormer and P. Kim, "Temperature dependent transport in suspended graphene," *Phys. Rev. Lett.* **101**, 096802 (2008).
13. Z. Q. Li, E. A. Henriksen, Z. Jiang, Z. Hao, M. C. Martin, P. Kim, H. L. Stormer, D. N. Basov, "Dirac charge dynamics in graphene by infrared spectroscopy," *Nature Physics* **4**, 532-535 (2008)
14. K. I. Bolotin, K. J. Sikes, Z. Jiang, G. Fundenberg, J. Hone, P. Kim, and H. L. Stormer, "Ultrahigh electron mobility in suspended graphene," *Solid State Communications* **146**, 351-355 (2008).
15. A. K. Geim and P. Kim, "Carbon Wonderland," *Scientific American* **298** (4), 68-75 (2008).
16. E. A. Henriksen, Z. Jiang, L. -C. Tung, M. E. Schwartz, M. Takita, Y.-J. Wang, P. Kim, and H. L. Stormer, "Cyclotron Resonance in Bilayer Graphene," *Phys. Rev. Lett.* **100**, 087403 (2008)
17. Y. -W. Tan, Y. Zhang, K. Bolotin, Y. Zhao, S. Adam, E. H. Hwang, S. Das Sarma, H. L. Stormer, and P. Kim, "Measurement of Scattering Rate and Minimum Conductivity in Graphene," *Phys. Rev. Lett.* **99**, 246803 (2007).
18. B. Oezylmaz, P. Jarillo-Herrero, D. Efetov, and, P. Kim, "Electronic transport in locally gated graphene nanoconstrictions," *Appl. Phys. Lett.* **91**, 192107 (2007)
19. B. Oezylmaz, P. Jarillo-Herrero, D. Efetov, D. Abanin, L. S. Levitov, and, P. Kim, "Electronic transport and quantum Hall effect in bipolar graphene p-n-p junctions," *Phys. Rev. Lett.* **99**, 166804 (2007)
20. Z. Jiang, Y. Zhang, H. L. Stormer and, P. Kim, "Quantum Hall States near the Charge Neutral Dirac Point in Graphene," *Phys. Rev. Lett.* **99**, 106802 (2007)
21. Y. -W. Tan, Y. Zhang, H. L. Stormer, and P. Kim, "Temperature Dependent Electron Transport in Graphene," *Eur. Phys. J. Special Topics* **148**, 15 (2007)

22. E. Stolyarova, K. T. Rim, S. Ryu, J. Maultzsch, P. Kim, L. Brus, T. Heinz, M. S. Hybertsen, and G. W. Flynn, "High-resolution scanning tunneling microscopy imaging of mesoscopic graphene sheets on an insulating surface," *Proc. Nat. Acad. Soc.* **104**, 9209 (2007).
23. M. Y. Han, B. Oezylmaz, Y. Zhang, and P. Kim, "Energy Band Gap Engineering in Graphene Nanoribbons," *Phys. Rev. Lett.* **98**, 206805 (2007).
24. Z. Jiang, E. A. Henriksen, L. C. Tung, Y. -J. Wang, M. E. Schwartz, M. Y. Han, P. Kim, and H. L. Stormer, "Infrared Spectroscopy of Landau Level in Graphene," *Phys. Rev. Lett.* **98**, 197403 (2007).
25. M. S. Purewal, B. H. Hong, A. Ravi, B. Chandra, J. Hone, and P. Kim, "Scaling of Resistance and Electron Mean Free Path of Single Walled Carbon Nanotubes," *Phys. Rev. Lett.* **98**, 196808 (2007).
26. J. Yan, Y. Zhang, P. Kim, and A. Pinczuk, "Electric Field Effect Tuning of Electron-Phonon Coupling in Graphene," *Phys. Rev. Lett.* **98**, 166802 (2007).
27. K. S. Novoselov, Z. Jiang, Y. Zhang, S. V. Morosov, H. L. Stormer, U. Zeitler, J. C. Maan, G. S. Boebinger, P. Kim, A. K. Geim, "Room Temperature Quantum Hall Effect", *Science* **315**, 1379 (2007).
28. X. Guo, M. Myers, S. Xiao, M. Lefenfeld, R. Steiner, G. S. Tulevski, J. Tang, J. Baumert, F. Leibfarth, J. T. Yardley, M. L. Steigerwald, P. Kim, and Colin Nuckolls, "Chemoresponsive Monolayer Transistors," *Proc. Nat. Acad. Soc.* **103**, 11452-11456 (2006).
29. Y. Zhang, Z. Jiang, J. P. Small, M. S. Purewal, Y.-W. Tan, M. Fazlollahi, J. D. Chudow, J. A. Jaszczak, H. L. Stormer, and P. Kim, "Landau Level Splitting in Graphene in High Magnetic Fields," *Phys. Rev. Lett.*, **96**, 136806 (2006).
30. Latha Venkataraman, Yeon Suk Hong, and P. Kim, "Electron Transport in a Multi-Channel One-Dimensional Conductor: Molybdenum Selenide Nanowires," *Phys. Rev. Lett.*, **96**, 076601 (2006).
31. X. Guo, J. P. Small, J. E. Klare, Y. Wang, M. Purewal, I. Tam, B. H. Hong, R. Caldwell, L. Huang, S. O'Brien, J. Yan, R. Breslow, S. J. Wind, J. Hone, P. Kim, and C. Nuckolls, "Recognition and Switching of Molecules Wired between Carbon Nanotube Electrodes", *Science* **311**, 356- 359 (2006).
32. Y. Zhang, Y. Tan, H. L. Stormer, and P. Kim, "Experimental Observation of Quantum Hall Effect Berry's Phase in Graphene," *Nature* **438**, 201-204 (2005).
33. Byung Hee Hong, Ju Young Lee, Tobias Beetz, Yimei Zhu, Philip Kim, Kwang S. Kim, "Quasi-Continuous Growth of Ultralong Carbon Nanotube Arrays," *J. Am. Chem. Soc. comm.* **127**, 15336-15337 (2005).
34. Xuefeng Guo, Limin Huang, Stephen O'Brien, Philip Kim, Colin Nuckolls, "Directing and Sensing Changes in Molecular Conformation on Individual Carbon Nanotube Field Effect Transistors," *J. Am. Chem. Soc. comm.* **127**, 15045-15047 (2005).
35. B. H. Hong, J. O. Small M. S. Purewal, A. Mulokandov, M. Y. Sfeir, F. Wang, J. Y. Lee, T. F. Heinz, L. E. Brus, P. Kim, and K. S. Kim, "Extracting subnanometer single shells from ultralong multiwalled carbon nanotubes," *Proc. Nat. Acad. Soc.* **102**, 14155-14158 (2005).
36. Y. Zhang, J. P. Small, M. E. S. Amori, and P. Kim, "Electric Field Modulation of Galvanomagnetic Properties of Mesoscopic Graphite," *Phys. Rev. Lett.* **94**, 176803 (2005).

37. Y. Zhang, J. P. Small, W. V. Pontius, and P. Kim, "Fabrication and Electric Field Dependent Transport Measurements of Mesoscopic Graphite Devices," *Appl. Phys. Lett.* **86**, 073104 (2005).
38. J. Small, K. Perez, and P. Kim, "Modulation of Thermoelectric power of Individual Carbon Nanotubes", *Phys. Rev. Lett.* **91**, 256801 (2003).
39. L. Shi, D. Li, C. Yu, W. Jang, Z. Yao, P. Kim, A. Majumdar, "Measuring Thermal and Thermoelectric Properties of One-Dimensional Nanostructures Using a Microfabricated Device," *J. Heat Transfer* **125**, 881 (2003)
40. D. Li, Y. Wu, P. Kim, L. Shi, P. Yang, A. Majumdar, "Thermal Conductivity of Individual Silicon Nanowires," *Appl. Phys. Lett.* **83**, 2934 (2003).
41. J. Small, L. Shi, and P. Kim, "Mesoscopic thermal and thermoelectric measurements of individual carbon nanotubes", *Sol. State. Comm.* **127**, 181 (2003).
42. T. Someya, J. Small, P. Kim, C. Nuckolls, and J. Yardley, "Alcohol vapor sensors based on single walled carbon nanotube field effect transistors", *Nano Lett.* **3**, 877 (2003).
43. T. Someya, P. Kim, and C. Nuckolls, "Conductance measurement of single-walled carbon nanotubes in aqueous environment", *Appl. Phys. Lett.* **82**, 2338 (2003).
44. P. Kim, L. Shi, A. Majumdar, P. McEuen, "Mesoscopic thermal transport and energy dissipation in carbon nanotubes", *Physica B* **323**, 67 (2002).
45. P. Kim, L. Shi, A. Majumdar, P. McEuen, "Thermal Transport Measurements of Individual Multiwalled Nanotubes", *Phys. Rev. Lett.* **87**, 215502 (2001).
46. P. Kim, T.W. Odom, J.-L. Huang and C.M. Lieber, " STM study of single-walled carbon nanotubes ", *Carbon* **38**, 1741-1744 (2000).
47. T.W. Odom, J.-L. Huang, P. Kim, M. Ouyang and C.M. Lieber, " Structure and electronic properties of carbon nanotubes", *J. Phys. Chem. B* **104**, 2794-2809 (2000).
48. P. Kim and C. M. Lieber, "Nanotube Nanotweezers", *Science* **286**, 2148 - 2150 (1999).
49. P. Kim, Z. Yao, C.A. Bolle and C.M. Lieber, "Structure of flux line lattices with weak disorder at large length scales", *Physical Review B* **60**, 12589-12592 (1999)
50. P. Kim, T.W. Odom, J.-L. Huang and C.M. Lieber, "Electronic Density of States of Atomically-Resolved Single-Walled Carbon Nanotubes: Van Hove Singularities and End States", *Phys. Rev. Lett.* **82**, 1225-1228 (1999).
51. S. S. Wong, A. T. Woolley, T. W. Odom, J. L. Huang, P. Kim, D. V. Vezenov, and C. M. Lieber, "Single-walled carbon nanotubes probes for high-resolution nanostructure imaging", *App. Phys. Lett.* **73**, 3465-3467 (1998).
52. T. W. Odom, J. Huang, P. Kim and C.M. Lieber, "Atomic structure and electronic properties of single-walled carbon nanotubes", *Nature* **391**, 62-64 (1998).
53. P. Kim, Z. Yao, and C.M. Lieber, "Vortex Lattice Structure in Bi₂Sr₂CaCu₂O_{8+d} at High Temperatures", *Phys. Rev. Lett.*, **77**, 5118-5121 (1996).
54. J. Zhang, J. Liu, J. Huang, P. Kim and C.M. Lieber, "Creation of Nanocrystals via a STM Tip-Induced Solid-Solid Phase Transition", *Science* **274**, 757-760 (1996).

- Reviews and Book chapters

1. Z. Jiang, Y. Zhang, Y. –W. Tan, H. L. Stormer, and P. Kim, “Quantum Hall effect in graphene,” *Sol. State. Comm.* **143**, 14 (2007)
2. Y. Kwon and P. Kim, “Unusually High Thermal Conductivity in Carbon Nanotubes”, a chapter in , “*High Thermal Conductivity Materials*”, edited by S. Shinde and J. Goela, Springer-Verlag: New York (2005).
3. P. Kim, J. Zhang, and C. M. Lieber, "Charge Density Wave Formation in Nanocrystals", a chapter in "*Solid State Physics* ", Vol. 55, edited by H. Ehrenreich and F. Spaepen, Academic Press: San Diego, (2000).

- Conference Proceedings

1. M. S. Purewal, Y. Zhang, and P. Kim, “Unusual transport properties in carbon based nanoscaled materials: nanotubes and graphene”, *Phys. Stat. Sol. (b)* **243**, 3418-3422 (2006).
2. J. Hone, P. Kim, X. M. H. Huang, B. Chandra, R. Caldwell, J. Small, B. H. Hong, T. Someya, L. Huang, S. O'Brien, and C. P. Nuckolls, “Growth of nanotubes and chemical sensor applications”, *SPIE Proc.* 5593, 1-12 (2004).
3. J. Small, and P. Kim, "Thermopower measurement of individual single walled nanotubes", *Microscale Thermophysical Engineering* **8**, 1 (2004).
4. L. Shi, P. Kim, P. L. McEuen and A. Majumdar, “A Microdevice for Measuring Thermophysical properties of Nanotubes and Nanowires,” *Proc. ASME Int. Mech. Eng. Congress & Exposition*, HTD-24141 (2001).
5. L. Shi, P. Kim, S. Plyasunov, A. Bachtold, P. L. McEuen and A. Majumdar, “Scanning Thermal Microscopy of Dissipation in Current-Carrying Carbon Nanotubes,” *Proc. ASME Int. Mech. Eng. Congress & Exposition*, HTD-24401 (2001).
6. T.W. Odom, J.-L. Huang, P. Kim, M. Ouyang and C.M. Lieber, "Scanning tunneling microscopy and spectroscopy studies of single wall carbon nanotubes", *J. Mater. Res.* **13**, 2380-2388 (1998).
7. P. Kim, T.W. Odom, J.-L. Huang and C.M. Lieber, "Electronic Structures and Applications of Carbon Nanotubes", in *Electronic Properties of Novel Materials Science and Technology of Molecular Nanostructures: Xiii International Winterschool (AIP Conference Proceedings)*, H. Kuzmany, J. Fink, M. Mehring, and S. Roth, eds. (Springer Verlag, 1999).
8. J. Zhang, J. Liu, J. Huang, P. Kim and C.M. Lieber, "Creation of Nanocrystals Via a Tip-Induced Solid-Solid Transformation", *Mat. Res. Soc. Symp. Proc.* **466**, 89-94 (1997).
9. P. Kim, Z. Yao and C.M. Lieber , “Structure of Vortex Arrays by Magnetic Decoration”, *8th IWCC Conf. Proc.* 3-10 (World Scientific Publishing Co.: Singapore, 1996).

(v) Invited Presentations:

July 1, 2009	Invited Speaker, Recent Progress in Graphene Research	Seoul, Korea
Jun 25, 2009	Department Colloquium, Ecole Normal Supreme	Paris, France
Jun 24, 2009	Invited Speaker, Nanoschool II del France	Paris, France
May 26, 2009	Invited Speaker, ECS 215 th meeting	San Francisco, CA
May 1, 2009	Jack Fischer Festival, University of Pennsylvania	Philadelphia, PA

April 15, 2009	Physics Department Colloquium Speaker, Georgia Tech	Atlanta, GA
April 3, 2009	Physics Department Colloquium Speaker, University of Alberta	Alberta, CA
April. 1, 2009	Physics Department Colloquium Speaker, University of Texas at Austin	Austin, TX
Mar. 25, 2009	Physics Department Colloquium Speaker, Indiana University	Bloomington, IN
Mar. 16, 2009	American Physical Society, March Meeting, Invited Speaker	Pittsburg, PA
Feb. 26, 2009	Invited Speaker, KITP Low Dimensional Electron Systems	Santa Barbara, CA
Jan. 15, 2009	Department Colloquium, MSE Department, University of Pennsylvania	Philadelphia, PA
Dec. 10, 2008	Department Colloquium, MSE Department, KAIST	Daejeon, Korea
Dec. 5, 2008	Invited speaker, The 18 th Workshop on Nanoscale and Mesoscopic Systems	Pohang, Korea
Nov. 27, 2008	Department Colloquium, Physics Department, Kyung Hee University	Seoul, Korea
Nov. 21, 2008	Seminar at APCTP	Seoul, Korea
Nov. 5, 2008	Department Colloquium, Physics Department, Yeonsei University	Seoul, Korea
Nov. 4, 2008	Department Colloquium, Physics Department, Sejong University	Seoul, Korea
Oct 29, 2008	Invited speaker, MPI-Korea Symposium	Pohang, Korea
Oct. 24, 2008	Tutorial speaker, KPS Fall meeting 2008	Kwangju, Korea
Oct. 23, 2008	Invited speaker, SAIT Forum	Suwon, Korea
Oct 19, 2008	Invited speaker, KCIST 08	Phoenix Par, Korea
Oct 17, 2008	Department Colloquium, Physics Department, Sungkeunkwan University	Suwon, Korea
Sept 27, 2008	Invited speaker, ICNME 2008	Dalin, China
Sept 22, 2008	Invited speaker, ERD Graphene Workshop	Tsukuba, Japan
Sept 19, 2008	Department Colloquium, MSE department, GIST	Kwangju, Korea
Sept 17, 2008	Department Colloquium, Physics Department, Ewha Women's University	Seoul, Korea
Sept 12, 2008	Invited speaker, Neo Eureka Forum	Seoul, Korea
August 25, 2008	Invited speaker, Graphene Week 2008	Trieste, Italy
July 31, 2008	Plenary Speaker, ICPS 2008	Rio de Janeiro, Brazil
July 7, 2008	Keynote Speaker, YESS08	Washington, DC
Jun 23, 2008	Plenary Speaker, Device Research Conference 2008	Santa Barbara, CA
Jun 17, 2008	Invited Talk, Graphene Week, Aspen Physics Center	Aspen, CO
Jun 5, 2008	Ho-Am Prize Ceremonial Seminar, Seoul National University	Seoul, Korea
May 28, 2008	Plenary Speaker, EIPBN 2008 meeting	Portland, OR

May 13, 2008	Department Seminar, Michigan Technology University	Hancock, MI
May 8, 2008	Invited Presentation, NRI/FCRP Graphene Workshop	Cambridge, MA
April 30, 2008	Department Colloquium, University of Massachusetts, Lowell	Lowell, MA
April 23, 2008	Frontiers in Nanotechnology Seminar, Northwestern University	Evanston, Illinois
April 9, 2008	American Chemical Society Meeting, Invited Talk	New Orleans, LA
March 26, 2008	Materials Research Society Invited Talk	San Francisco, CA
March 20, 2008	Department Colloquium, Michigan State University	East Lansing, MI
March 11, 2008	American Physical Society March Invited Talk	New Orleans, LA
March 9, 2008	American Physical Society March Meeting Tutorial	New Orleans, LA
Feb 18, 2008	Invited Talk, Mauterndorf Winterschool	Salzburg, Austria
Feb 13, 2008	Department Colloquium, University of Rochester	Rochester, NY
Jan 17, 2008	Department Colloquium, University of California at San Diego	San Diego, CA
Jan 11, 2008	2008 International Winter School: Beyond Moore's Law	Kenting, Taiwan
Jan 8, 2008	FENST Workshop on Nanoelectronics and Nanophotonics	Basel, Swiss
Dec 10, 2007	Condensed Matter Physics Seminar, Princeton University	Princeton, NJ
Dec 6, 2007	Physics Department Colloquium, Lehigh University	Bethlehem, PA
Nov 28, 2007	Physics Department Colloquium, CUNY	New York, NY
Nov 26, 2007	Condensed Matter Physics Seminar at Berkeley	Berkeley, CA
Nov 23, 2007	Yukawa International Symposium 2007	Kyoto, Japan
Nov 19, 2007	FENA/ONAMI Workshop	Los Angeles, CA
Nov 15, 2007	Division of Engineering Seminar at Brown University	Providence, RI
Oct 31, 2007	Solid State Physics Seminar at Yale University	New Haven, Connecticut
Oct 29, 2007	Departmental Seminar, University of Toronto	Toronto, Canada
Oct 19, 2007	Invited Speaker, New England Division of APS Meeting	Storrs, Connecticut
Oct 15, 2007	Vienna Physics Colloquium	Vienna, Austria
Oct 11, 2007	Physics Department Colloquium, New York University	New York, NY
Sept 28, 2007	Invited Speaker, COE21 Workshop on "Strongly Correlated Systems"	Tokyo, Japan
Sept 10, 2007	Physics Department Colloquium, University of Tennessee	Knoxville, Tennessee
Aug 30, 2007	Invited Speaker, NanoKorea 2007	Seoul, Korea
July 17, 2007	Plenary Speaker, EP2DS 17	Genoa, Italy
July 9, 2007	Invited Speaker, Research Workshop on Advances in Physics and Applications of Low-Dimensional Systems	Brasilia, Brazil
Jun 21, 2007	Invited Speaker, Spin Tech IV	Maui, Hawaii
Jun 14, 2007	Invited Talk, Emergent Phenomena in Quantum Hall Systems	Pennsylvania State University, PA

Jun 4, 2007	Invited Talk, Conference on Quantum Phenomena in Confined Dimensions	Trieste, Italy
May 29, 2007	Invited Talk, European Materials Research Society Meeting	Strasbourg, France
May 18, 2007	Physics Department Colloquium, Northwestern University	Evanston, Illinois
May 3, 2007	Condensed Matter and Surface Science Seminar, University of Ohio, Athens	Athens, OH
April 27, 2007	Science Colloquium, IBM Almadan Research Center	San Jose, CA
March 5, 2007	American Physical Society March Meeting Tutorial	Denver, CO
Feb. 22, 2007	Physical Chemistry Seminar, Harvard University	Cambridge, MA
Feb. 20, 2007	Physics Department Colloquium, University of Maryland	University Park, Maryland
Feb 8, 2007	Invited Talk, Mesilla Conference	Mesilla, New Mexico
Jan 15, 2007	Physics and Chemistry of Semiconductor Interface	Salt Lake City, Utah
Jan. 8, 2007	KITP miniworkshop on graphene, UCSB	Santa Barbara, California
Jan. 4, 2007	Physics Department Colloquium, Caltech	Pasadena, California
Dec. 16, 2006	US-Taiwan Workshop, Invited Speaker	Taipei, Taiwan
Dec. 6, 2006	Physics Department Colloquium, University of Colorado	Boulder, Colorado
Nov 30, 2006	Invited Talk, Material Research Society Meeting	Boston, Massachusetts
Nov 2006	Physics Department Colloquium, Delaware University	Newark, Delaware
Nov 2006	Canadian Institute of Advanced Research, Nanoelectronics Workshop	Banff, Canada
Nov 2006	Physics Department Colloquium, Boston University	Boston, Massachusetts
Nov 2006	Physics Department Colloquium, Johns Hopkins University	Baltimore, Maryland
Oct 2006	Physics Department Colloquium, University of North Carolina at Chapel Hill	Chapel Hill, North Carolina
Oct 2006	Special Seminar, Naval Research Laboratory	Washington DC
Oct. 2006	Physics Department Colloquium, Ohio State University	Columbus, Ohio
Oct. 2006	IBM Physical Seminar	Yorktown Heights, NY
Oct. 2006	Chemistry Department Seminar, Lehigh University	Bethlehem, Pennsylvania
Sept 2006	Workshop on Dynamics and Relaxation in Complex Quantum and Classical Systems and Nanostructures	Dresden, Germany
Sept 2006	Physics Department Colloquium, University of Wisconsin	Madison, Wisconsin
Sept 2006	Physics Department Colloquium, Columbia University	New York, New York
Aug 2006	ICTP-ICTS College on Science at Nanoscale	Beijing, China
Aug 2006	CMT Departmental Seminar, Seoul National University	Seoul, Korea
Aug 2006	Nanowire Workshop, Invited Speaker	Seoul, Korea
Jul. 2006	Special Department Seminar, KAIST	Taejeon, Korea
Jul. 2006	Gordon Research Conference on Nanofabrications	Tilton, New Hampshire
Jul. 2006	4 th Stig Lundqvist Conference on Advancing Frontiers of Condensed Matter Physics	Trieste, Italy

Jun 2006	Key note lecture, Nanotube 2006	Nagano, Japan
May 2006	Department Seminar, POSTECH Physics Department	Pohang, Korea
May 2006	FENA Colloquium, UCLA	Los Angeles, CA
May 2006	Condensed Matter Physics Seminar, University of Maryland	University Park, MD
Apr. 2006	Condensed Matter Physics Seminar, UIUC	Urbana-Champaign, IL
Apr. 2006	Department Seminar, Canadian National Research Council	Ottawa, Canada
Mar. 2006	American Physical Society March Meeting	Baltimore, Maryland
Mar. 2006	International Winter School of Electronic Properties of Novel Materials	Kirchberg, Austria
Feb. 2006	Department Colloquium, Cornell University	Ithaca, New York
Feb. 2006	Condensed Matter Physics Seminar, Pennsylvania State University	College Park, Pennsylvania
Feb. 2006	Condensed Matter Physics Seminar, Rutgers University	New Brunswick, New Jersey
Jan. 2006	New York Nanoscience Discussion Group, New York University	New York, New York
Jan. 2006	Nanoelectronics 2006, Lancaster University	Lancaster, United Kingdom
Jan. 2006	Interaction and Dynamics in Low Dimensional Quantum Systems Conference, Weizmann Institute	Rehovot, Israel
Nov. 2005	Condensed Matter Physics Seminar, SUNY Stony Brook	Stony Brook, New York
Nov. 2005	Department Colloquium, Princeton University	Princeton, New Jersey
Nov. 2005	Condensed Matter Physics Seminar, Case Western Reserve University	Cleveland, Ohio
Oct. 2005	Chez Pierre Seminar, MIT	Cambridge, Massachusetts
Oct. 2005	Physics Department Seminar, Yale University	New Haven, Connecticut
Oct. 2005	Graduate Seminar, University of Pittsburgh	Pittsburgh, Pennsylvania
Sep. 2005	Condensed Matter Physics Seminar, University of Pennsylvania	Philadelphia, Pennsylvania
Jul. 2005	Molecular Conduction and Sensor Workshop, Purdue University	Lafayette, Indiana
Jul. 2005	Summer School on Condensed Matter Physics, Princeton Center for Complex Materials	Princeton, New Jersey
May. 2005	Device Research Conference	Santa Barbara, California
Apr. 2005	Korean Physical Society Meeting	Seoul, Korea
Feb. 2005	Materials Science Department Seminar, Rensselaer Polytechnic Institute	Troy, New York
Feb. 2005	Materials Science Division Seminar, Brookhaven National Laboratory	Brookhaven, New York
Jan. 2005	Workshop on Strongly Correlated Electronic Materials	Princeton, New Jersey
Jan. 2005	Lecture in Nanotechnology, University of Washington	Seattle, Washington
Dec. 2004	2 nd International Symposium on Nanostructured Materials	Seoul, Korea

Oct. 2004	Optics East 2004	Philadelphia, Pennsylvania
Jun. 2004	ICTP Spring College on Science at Nanoscale	Trieste, Italy
May 2004	American Electro Chemical Society Meeting	San Antonio, Texas
Mar. 2004	American Physical Society March Meeting	Montreal, Canada
Dec. 2003	International Conference on Advanced Materials and Devices	Jeju, Korea
Oct. 2003	International Thermal Conductivity Conferences	Knoxville, Tennessee
Sep. 2003	Physics Colloquium, Hunter College	New York, New York
Aug. 2003	Stig Lundqvist Conference on Advancing Frontiers of Condensed Matter Physics	Trieste, Italy
Jul. 2003	Special Departmental Seminar, Dept of Material Science, POSTECH	Pohang, Korea
Jul. 2003	International conference on the science and application of nanotubes	Seoul, Korea
Jul. 2003	Departmental Seminar, Dept of Applied Physics, University of Tokyo	Tokyo, Japan
May. 2003	Workshop on carbon-nanotube FETs	Chicago, Illinois
May. 2003	Condensed matter physics seminar, Brookhaven National Laboratory	Brookhaven, New York
Apr. 2003	Condensed matter physics seminar, University of Massachusetts, Amherst	Amherst, Massachusetts
Apr. 2003	Departmental Condensed Matter Physics Seminar, University of Virginia	Charlottesville, Virginia
Feb. 2003	EMD and condensed matter physics seminar, Princeton University,	Princeton, New Jersey
Oct. 2002	MARTECH seminar, Florida State University,	Tallahassee, Florida
Jul. 2002	Quantum phases at the nanoscale	Erice, Italy
Jun. 2002	US-Japan Nanothermal Seminar: Nanoscale Thermal Science and Engineering	Berkeley, California
Apr. 2002	Special Symposium honoring Sumio Iijima for Franklin Medal of Physics, University of Pennsylvania	Philadelphia, Pennsylvania,
Jul. 2001	Department of Chemistry, Korea Advanced Institute of Science and Technology	Taejeon, Korea
Jul. 2001	Departmental Seminar, Department of Physics, Seoul National University	Seoul, Korea
Mar. 2001	Departmental Seminar, Department of Materials Science and Engineering, Berkeley	Berkeley, California
Mar. 2001	Condensed Matter Seminar, Department of Physics, Boston University	Boston, Massachusetts

Feb. 2001	Condensed Matter Physics Seminar, Department of Astronomy and Physics, University of Pennsylvania	Philadelphia, Pennsylvania
Feb. 2000	Institute Seminar, Lawrence Livermore National Laboratory, February 28, 2000.	Livermore, California
Oct. 1999	Special Seminar, Zyvex	Richardson, Texas
Aug. 1999	International Interdisciplinary Colloquium on the Science and Technology of the Fullerenes, , August 29, 1999.	Toulouse, France
Mar. 1999	International Winter School of Electronic Properties of Novel Materials	Kirchberg, Austria

(vi) University and Community Services:

Departmental Committees: Student-faculty issues, Machine Shop, Graduate Student Seminar, Nevis Retreat, Graduate Advising Committee, Machinshop Committee, Graduate Curriculum Committee, Building Committee, Condensed Matter Physics Junior faculty search committee.

Outside Department: Nanocenter Microfabrication Facility Committee.

Synergetic Activities: led a discussion of nanoscience and technology and introduced condensed matter physics experimental laboratories and microfabrication facilities to the participants of “Science Invitational” events at Columbia College(08/09/2002); participated in Nano Engineering and Investing Trends Conference held at New York University Stern School of Business as an invited panelist (06/20/2003);); invited panelist for NSF MRI committee (10/20/2004); invited discussion leaders in Gordon research conference (07/22/2005);

Symposium Organizers: the focus session, “fundamental challenges in transport properties in nanostructures” at American Physical Society March Meeting, 2004. the focus session, “Thermal, thermoelectric and mass transport at nanoscale” at American Physical Society March Meeting, 2006. Guest editor of Solid State Communication (2007); Major advocator of Carbon based electronics in Emerging Research Device-working group meeting (2008);

(vii) Collaborations and Other Affiliations

(a) Collaborators and Co-Editors (5 Years): Louis Brus (Columbia); George Flynn (Columbia); Andre Geim (Manchester); Tony Heinz (Columbia); James Hone (Columbia); K.S. Kim (POSTECH); Charles Lieber (Harvard); Paul McEuen (Cornell); Arun Majumdar (UC Berkeley); Colin Nuckolls (Columbia); Aron Pinczuk (Columbia); Stephan O’Brien (Columbia); Teri Odom (Northwest University); Li Shi (UT Austin); Takao Someya (University of Tokyo); Horst Stormer (Columbia University); Zhen Yao (UT Austin); James Yardley (Columbia University); Gyu-Chul Yi (POSTECH); Yimei Zhu (BNL);

(b) Graduate Student Advisors: Charles M. Lieber (Harvard)

(c) Postgraduate-Scholar Sponsor: Paul L. McEuen (Berkeley, now at Cornell)

(viii) Student Advising

Graduate Thesis: Joshua P. Small (May 2006); Yuanbo Zhang (June 2006); Meninder Purewal (May 2008)

Graduate Thesis in Progress: Meninder S. Purewal (Applied Physics, Columbia University); Melinda Han (Applied Physics, Columbia University); Yuri Zuev (Applied Physics, Columbia

University); Yue Zhao (Physics), Andrea Young (Physics), Mitsuhide Takekoshi (Electrical Engineering)

Undergraduate: Jeremy Amai-Dolan (Haverford College), Laura Berzak (Dartmouth), Elizabeth Gabor (Columbia), Laura Newburgh (Barnard College), Nada Petrovic (Columbia), Kerstin Perez (Columbia Univ), Josh Wittenberg (Berkeley), William Pontius (Columbia), Ani Rabi (Columbia), Joel Chudow (Columbia); Asher Mullokandov (Columbia); Solomon Endrich (Columbia)

Post-doc: Kirill Bolotin, Namdong Kim, Young Jun Yu, Vikram Deshpande

Visiting Scientists: Ju-young Lee (POSTECH, Korea), Chul Ho Lee (POSTECH, Korea), Stijn Goosen (DELFT, Netherlands), Juliana Brant (CNPq, Brazil)

Thesis Committee: Ioana Gat (Physics), Andrei Savici (Physics), Feng Wang (Physics), Ben Levitt (Applied Physics), Xuan Gao (Applied Physics), Yi Gu (Applied Physics); Chin Miao (Chemistry); Yiliang Wang (Chemistry); Peter Russo (Physics); Yang Wu (Physics);

(ix) Teaching

Fall, 2002, 2003, & 2004: Physics 1403, "Introduction to Classical and Quantum Waves"

Spring 2003, 2004, & 2005; Physics 1402, "Introduction to Electromagnetism and Optics"

Fall 2005, 2006, 2007: Physics 4021, "Introduction to Quantum Physics I"

Spring 2006, 2007, 2008: Physics 4022, "Introduction to Quantum Physics II"

Spring 2009: Physics G6082, "Condensed Matter Physics I"