

Rodney S. Ruoff

(512) 471 4691
r.ruoff@mail.utexas.edu
<http://bucky-central.me.utexas.edu/publications.html>

Address

Dept of Mechanical Engineering and the Materials Science and Engineering Program
Cockrell School of Engineering
The University of Texas at Austin
204 E. Dean Keeton Street; Stop C2200
Austin, TX 78712-1591

Education

- 1988 Ph.D. Chemical Physics, University of Illinois-Urbana
Thesis: "Fourier-Transform Microwave Spectroscopy of Hydrogen-bonded
Trimers and of Conformer Relaxation in Free Jets"
(Prof. H. S. Gutowsky, research advisor).
- 1981 B.S. Chemistry, University of Texas-Austin, High Honors

Professional Experience

- Cockrell Family Regents Chair
University of Texas at Austin Sept '07-present
- John Evans Professor of Nanoengineering
Northwestern University 2003 – Aug 2007
- Full Professor, Department of Mechanical Engineering
Director, NU BIMat Institute (A NASA URETI Institute)
Northwestern University, IL 2000 - 2007
- Associate Professor, Department of Physics
Washington University, MO 1997 - 2000
- Research Staff Scientist, Molecular Physics Laboratory
SRI International 1991 – 1996
- Postdoctoral Fellow
IBM-Watson Research Laboratory 1990 – 1991
- Fulbright Postdoctoral Fellow
Max Planck Institut fuer Stroemungsforschung, Goettingen, Germany 1989 - 1990

Professional Associations and Activities

Managing Editor and Editorial Board Member: NANO (<http://www.worldscinet.com/nano/nano.shtml>)

Editorial Advisory Board: Carbon

(http://www.elsevier.com/wps/find/journaldescription.cws_home/258/description#description)

Editorial Board Member: Composites Science & Technology

(http://www.elsevier.com/wps/find/journaldescription.cws_home/405929/description#description)

Associate Editor, IEEE Transactions on Nanotechnology

(<http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=7729>)

Editorial Board Member: Journal of Nanoengineering and Nanosystems

(<http://journals.pepublishing.com/jnn>) (founding editor until June, 2009, continuing as Member of the Editorial Board)

Scientific Advisory Board, Zyvex

External Advisory Board, Nanonet, State of Oklahoma (2004-2009)

Member, American Chemical Society

Member, American Physical Society

Member, Materials Research Society

Member, Electrochemical Society

Member of ASME

Member, The Minerals, Metals, & Materials Society

Chairman of the Fullerenes Group, Electrochemical Society 1991 – 1998

Co-organized 14 professional society meetings (2 MRS, 1 APS, and 11 ECS)

U.S. organizer of NanoForum CH-US 2003, Swiss-US Forum on Nanoscience and

Nanotechnology with a focus on nanomechanics and Single Molecule Research

U.S. organizer of Inter-Pacific Workshop on Nanoscience and Nanotechnology with a focus

Nano/Bio Interface, Hong Kong, Nov 22-24, 2004

Awards & Honors

Fulbright Fellow, 1988-89, MPI fuer Stroemungsforschung, Goettingen, Germany

Distinguished Chair Visiting Professor, 2005-2007 and 2012-now, Sung Kyun Kwan University

Advanced Institute of NanoTechnology (SAINT)

Lee Hsun Lecture Award, 2009, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, China

16th most cited materials scientist of top 100 most cited

(<http://bucky-central.me.utexas.edu/RuoffsPDFs/THE%20Top%20100%20Materials%20Scientists>)

Fellow, Materials Research Society

Fellow, American Physical Society

Fellow, American Association for the Advancement of Science (AAAS)

Languages

English, some Spanish, some German

Citizenship

U.S.

Ruoff Group Current Research Efforts

Major interests include:

- 1 Synthesis and properties of novel materials including nanostructures and 2D materials; novel carbon materials (graphene, 2D diamond, nanotubes, sp^3 - sp^2 hybrids, negative curvature carbon, carbon nanofoams, boron nitride allotropes, other advanced materials)
- 2 Global environment and energy
- 3 Fabrication and properties of nanocomposites
- 4 Nanomanipulation and nanorobotics
- 5 Instrument development ; New tools and methods for the biomedical sciences
- 6 Technology transition (Co-founder of Graphene Energy, Inc.; Founder of Nanode, Inc.; Founder of Graphene Materials, LLC.)

Ruoff Group Current Members

Research Scientists

Richard Piner

Postdoctoral Fellows

Rudresh Gosh, Yufeng Hao, Ariel Ismach, Iskandar Kholmanov, Jin Young Kim, TaeYoung Kim, Ji Won Suk

Graduate Students

Harry Chou, Alvin Lee, Carl Magnuson, Cheng Tan, Xiaohan Wang, Howard Chen

Undergraduate Students

Edmund Fung, Carolyn Ramirez, James Thachil Alieva Zeineb

Visiting Researchers

Todd Davidson, Zicheng Zuo

Ruoff Group Alumni

| | | |
|--------------|--------------------------------------|---|
| Jin Ho An | Postdoctoral Fellow (2007 - 2010) | Samsung, Seoul, South Korea |
| Sung Jin An | Postdoctoral Fellow (2008 - 2010) | Assistant Professor, Kumoh National Institute of Technology, South Korea |
| Kevin Ausman | Postdoctoral Fellow (1998 – 2000) | Assistant Professor, Department of Chemistry, Oklahoma State University, Stillwater, OK |

| | | |
|--------------------|--|---|
| Colin Beal | Ph.D Student (2008-2011) | Engineering Consultant |
| Weiwei Cai | Postdoctoral Fellow (2006 - 2010) | Professor, Department of Physics, Xiamen University, China |
| Donald Cantrell | Ph.D. Student (2004 – 2009) | |
| Shanshan Chen | Postdoctoral Fellow (2011 - 2012) | Associate Professor, Department of Pysics, Xiamen Unversity, China |
| Jaehyun Chung | Ph.D. Student (co-advisor) Postdoctoral Fellow (2004 – 2005) | Associate Professor, Department of Mechanical Engineering, University of Washington, Seattle, WA |
| Weiqiang Ding | Ph.D. Student & Postdoctoral Fellow (2000 – 2005) | Assistant Professor, Department of Mechanical & Aeronautical Engineering, Clarkson University, Clarkson, NY |
| Geoffrey Dommett | Ph.D. Student (Physics) (2002 - 2007) | |
| Jonathan Edgeworth | Postdoctoral Fellow (2010 – 2011) | |
| Frank Fisher | Postdoctoral Fellow (2002 – 2004) | Associate Professor, Nanomechanic and Nanomaterials Lab, Department of Mechanical Engineering, Stevens Institute of Technology, Castle Point on Hudson, Hoboken, NJ |
| Hui Huang | Postdoctoral Fellow (1998 – 2000) | Research Scientist, BioArray Solutions, Ltd., Warren, NJ |
| Zebin Huang | Master's Student (2002 – 2004) | Senior Engineer, Qualcomm, San Diego, CA |
| Steven Irons | Postdoctoral Fellow (1998 - 2000) | Lecturer / Director Instructional Labs, Yale University, New Haven, CT |
| Hengxing Ji | Postdoctoral Fellow (2010 – 2013) | Professor, 100-Talents, Chinese Academy of Sciences, University of Science and Technology, Hefei, China |
| Inhwa Jung | Ph.D. Student & | Assistant Professor, Department of |

| | | |
|----------------|--------------------------------------|--|
| | Postdoctoral Fellow (2004 - 2008) | Mechanical Engineering, Kyung Hee University, South Korea |
| Kevin Kohlhas | Master's Student (2003 – 2005) | Samsung |
| Xianghua Kong | Postdoctoral Fellow (2012 – 2013) | Chinese Academy of Sciences, University of Science and Technology, Hefei, China |
| Wi Hyoung Lee | Postdoctoral Fellow (2010 – 2012) | Assistant Professor, Department of Textile Engineering, Konkuk University, South Korea |
| Xuesong Li | Postdoctoral Fellow (2007-2010) | Sr. Postdoctoral Fellow, TJ Watson Research Center, IBM, Yorktown Heights, NY |
| Oleg Lourie | Postdoctoral Fellow (1999 – 2001) | Applications Manager, GATAN Inc. Pleasanton, CA |
| Shaoning Lu | Ph.D. Student (2000 – 2005) | Senior Pad Engineer, Cabot Micro- electronics, Aurora, IL |
| Xuekun Lu | Postdoctoral Fellow (1997 – 2000) | Senior Research Associate, University of Minnesota, Minneapolis, MN |
| Will McBride | Master's Student (2002 – 2004) | |
| Shanthi Murali | Ph.D Student (2009-2012) | Senior Associate, iRunway, Austin, TX |
| Sungjin Park | Postdoctoral Fellow (2008-2010) | Associate Professor, Department of Chemistry, Inha University, Incheon, South Korea |
| Richard Piner | Postdoctoral Fellow (1999-2004) | Research Scientist, The University of Texas at Austin, Austin, TX |
| Jeff Potts | Ph.D Student (2009-2012) | Baker Hughes, Houston, TX |
| Henry Rohrs | Postdoctoral Fellow (1998 – 2000) | Instrumentation Specialist, NIH/NCRR Biomedical Mass Spectrometry Facility |

Washington University, St. Louis, MO

| | | |
|---------------------------|--------------------------------------|--|
| Meryl Stoller | Ph.D Student (2008–2011) | |
| Sasha Stankovich | Postdoctoral Fellow (2003-2007) | Research Chemist, Milliken Company Spartanburg, South Carolina |
| Abel Thangawng | Ph.D. Student (2002-2007) | Research Mechanical Engineer, Naval Research Laboratory, Washington, D.C. |
| Aruna Velamakanni | Postdoctoral Fellow (2007-2010) | Senior Research Chemist, Goodyear Tire and Rubber Company, Akron, OH |
| Supinda Watchar- Otone | Master's Student (2004 – 2006) | National Nanotechnology Center (NANOTEC) Thailand |
| Hyoung Wook Ha | Postdoctoral Fellow (2009-2011) | Research Scientist, Samsung, Seoul, South Korea |
| Ting (Terry) Xu | Ph.D. Student (2000 – 2005) | Associate Professor, Department of Mechanical Engineering, University of North Carolina-Charlotte; Charlotte, NC |
| Dongxing Yang | Postdoctoral Fellow | Patent Attorney, Beijing, China |
| Jongpil Ye | Postdoctoral Fellow (2011-2012) | Professor, Department of Materials Science & Engineering, Inha University, Incheon, South Korea |
| Min-Feng Yu | Ph.D. Student (1997 – 2000) | Professor, School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA |
| Li Li Zhang | Postdoctoral Fellow (2011 – 2012) | Research Scientist, Institute of Chemical and Engineering Sciences, Singapore |
| Yanwu Zhu | Postdoctoral Fellow (2009 – 2011) | Professor of Materials Physics, Department of Materials Science and Engineering, University of Science and Technology of China, Hefei China |
| Eric Zimney | Master's Student (2003-2006) | Stress Analyst, The Boeing Company, Seattle, WA |

Journal Articles Published

363. Odkhuu, Dorj; Shin, Dongbin; Ruoff, Rodney S.; Park, Noejung; **Conversion of Multilayer Graphene Into Continuous Ultrathin sp³-bonded Carbon Films on Metal Surfaces Density**. Scientific Reports (2013), DOI: 10.1038/srep03276.
362. Hao, Yufeng; Bharathi, M. S.; Wang, Lei; Liu, Yuanyue; Chen, Hua; Nie, Shu; Wang, Xiaohan; Chou, Harry; Tan, Cheng; Fallahazad, Babak; Ramanarayan, H.; Magnuson, Carl W.; Tutuc, Emanuel; Yakobson, Boris I.; McCarty, Kevin F.; Zhang, Yong-Wei; Kim, Philip; Hone, James; Colombo, Luigi; Ruoff, Rodney S.; **The Role of Surface Oxygen in the Growth of Large Single-Crystal Graphene on Copper**. Science (2013), 342 (6159) 720-723.
361. Ghaffari, M.; Kinsman, W.; Zhou, Y.; Murali, S; Burlingame, Q.; Lin, M.; Ruoff, Rodney S.; Zhang, Q. M.; **Aligned Nano-Porous Microwave Exfoliated Graphite Oxide Ionic Actuators with High Strain and Elastic Energy Density**. Advanced Materials (2013), DOI: 10.1002/adma.201301370.
360. Tao, Li; Lee, Jongho; Piner, Richard; Ruoff, Rodney S.; Akinwande, Deji; **Inductively Heated Synthesized Graphene With Record Transistor Mobility on Oxidized Silicon Substrates at Room Temperature**. Applied Physics Letters (2013), 103 , 183115-1 - 183115-4.
359. Piner, Richard; Li, Huifeng; Kong, Xianghua; Kholmanov, Iskandar; Ji, Hengxing; Lee, Wi Hyoung; Suk, Ji Won; Ye, Jongpil; Hao, Yufeng; Chen, Shanshan; Magnuson, Carl W.; Ismach, Ariel; Akinwande, Deji; Ruoff, Rodney S.; **Graphene Synthesis via Magnetic Inductive Heating of Copper Substrates**. ACS Nano (2013), 7 (9), Aug. 2013 , 7495-7499.
358. Hong, Young Joon; Yang, Jae Won; Lee, Wi Hyoung; Ruoff, Rodney S.; Kim, Kwang S.; Fuki, Takashi; **Van der Waals Epitaxial Double Heterostructure: InAs/Single-Layer Graphene/InAs**. Advanced Materials (2013), DOI: 10.1002/adma.201302312
357. Swartz, Adrian G.; McCreary, Kathleen M.; Han, Wei; Wong, Jared J. I.; Odenthal, Patrick M.; Wen, Hua; Chen, Jen-Ru; Kawakami, Roland K.; Hao, Yufeng; Ruoff, Rodney S.; Fabian, Jaroslav; **Integrating MBE Materials with Graphene to Induce Novel Spin-based Phenomena**. Journal of Vacuum Science & Technology B (2013), DOI: 10.1116/1.4803843
356. Kong, Xianghua; Ji, Hengxing; Piner, Richard D.; Li, Huifeng; Magnuson, Carl W.; Tan, Cheng; Ismach, Ariel; Chou, Harry; Ruoff, Rodney S.; **Non-destructive and Rapid Evaluation of Chemical Vapor Deposition Graphene by Dark Field Optical Microscopy**. Applied Physics Letters (2013), 103 (4), Jul. 2013, Article Number: 043119
355. Yoon, Ki Y.; An, Sung J.; Chen, Yunshen; Lee, Jae H.; Bryant, Steven L.; Ruoff, Rodney S.; Huh, Chun; Johnston, Keith P.; **Graphene Oxide nanoplatelet Dispersions in Concentrated NaCl and Stabilization of Oil/Water Emulsions**. Journal of Colloid and Interface Science (2013), 403, Aug. 2013, 1-6
354. Kim, TaeYoung; Jung, Gyujin; Yoo, Seonmi; Suh, Dwang S.; Ruoff, Rodney S.; **Activated Graphene-Based Carbons as Supercapacitor Electrodes with Macro- and Mesopores**. ACS Nano (2013), 7 (8), Aug. 2013, 6899-6905.
353. Ghaffari, Mehdi; Zhou, Yue; Xu, Haiping; Lin, Minren; Kim, TaeYoung; Ruoff, Rodney S.; Zhang, Qiming; **High-Volumetric Performance Aligned Nano-Porous Microwave Exfoliated Graphite**

- Oxide-based Electrochemical Capacitors.** *Advanced Materials* (2013), DOI: 10.1002/adma.201301243.
352. Domingues, Sergio H.; Kholmanov, Iskandar N.; Kim, TaeYoung; Kim, JinYoung; Tan, Cheng; Chou, Harry; Alieva, Zeineb A.; Piner, Richard; Zabin, Aldo J.G.; Ruoff, Rodney S.; **Reduction of Graphene Oxide Films on Al Foil for Hybrid Transparent Conductive Film Applications.** *Carbon* (2013), 63, Nov. 454-459.
351. Colombo, Luigi; Wallace, Robert M.; Ruoff, Rodney S.; **Graphene Growth and Device Integration.** *Proceedings of the IEEE* (2013), 101 (7), 1536-1556.
350. Ye, Jongpil; Ruoff, Rodney S.; **Graphite Fountain: Modeling of Growth on Transition Metals Under a Thermal Gradient.** *Journal of Applied Physics* (2013), DOI: 10.1063/1.4812730.
349. Ji, Junyi; Zhang, Li Li; Ji, Hengxing; Li, Yang; Bai, Xin; Fan, Xiaobin; Zhang, Fengbao; Ruoff, Rodney S.; **Nanoporous Ni(OH)₂ Thin Film on 3D Ultrathin-Graphite Foam for Asymmetric Supercapacitor.** *ACS Nano* (2013), DOI:10.1021/nn4021955.
348. Wang, Min; Jang, Sung Kyu; Jang, Won-Jun; Kim, Minwoo; Park, Seong-Yong; Kim, Sang-Woo; Kahng, Se-Jong; Choi, Jae-Young; Ruoff, Rodney S.; Song, Young Jae; Lee, Sungjoo; **A Platform for Large-Scale Graphene Electronics - CVD Growth of Single-Layer Graphene on CVD-Grown Hexagonal Boron Nitride.** *Advanced Materials* (2013), DOI:10.1002/adma.201204904.
347. Zhang, Yan; Zhu, Yanwu; Lin, Gui; Ruoff, Rodney S.; Hu, Naiping; Schaefer, Dale W.; Mark, James E.; **What Factors Control the Mechanical Properties of Poly (Dimethylsiloxane)Reinforced with Nanosheets of 3-aminopropyltriethoxysilane Modified Graphene Oxide?.** *Polymer* (2013), DOI:10.1016/j.polymer.2013.04.057.
346. Butler, Sheneve Z.; Hollen, Shawna M.; Cao, Linyou; Cui, Yi; Gupta, Jay A.; Gutierrez, Humberto R.; Heinz, Tony F.; Hong, Seung Sae; Huang, Jiaying; Ismach, Ariel F.; Johnston-Halperin, Ezekiel; Kuno, Masaru; Plashnitsa, Vladimir V.; Robinson, Richard D.; Ruoff, Rodney S.; Salahuddin, Sayeef; Shan, Jie; Shi, Li; Spencer, Michael G.; Terrones, Mauricio; Windl, Wolfgang; Goldberger, Joshua E.; **Progress, Challenges, and Opportunities in Two-Dimensional Materials Beyond Graphene.** *ACS Nano* (2013), 7 (4), 2898-2926.
345. Zhang, Yupeng; Li, Delong; Tan, Xiaojian; Zhang, Bin; Ruan, Xuefeng; Liu, Huijun; Pan, Chunxu; Liao, Lei; Zhai, Tianyou; Bando, Yoshio; Chen, Shanshan; Cai, Weiwei; Ruoff, Rodney S. **High quality graphene sheets from graphene oxide by hot-pressing.** *Carbon* (2013), 54, 143-148.
344. Alam, Todd M; Dreyer, Daniel R.; Bielawski, Christopher W.; Ruoff, Rodney S. **Combined Measurement of Translational and Rotational Diffusion in Quaternary Acyclic Ammonium and Cyclic Pyrrolidinium Ionic Liquids.** *Journal of Physical Chemistry B* (2013), 117 (6), 1967-1977.
343. Han, Jangwoo; Zhang, Li Li; Lee, Seungjun; Oh, Junghoon; Lee, Kyoung-Seok; Potts, Jeffery R.; Ji, Junyi; Zhao, Xin; Ruoff, Rodney S.; Park, Sungjin **Generation of B-Doped Graphene Nanoplatelets Using a Solution Process and Their Supercapacitor Applications.** *ACS Nano* (2013), 7 (1), 19-26.
342. Mousavi, S. Hossein; Kholmanov, Iskandar; Alici, Kamil B.; Purtseladze, David; Arju, Nihal; Tatar, Kaya; Fozdar, David Y.; Suk, Ji Won; Hao, Yufeng; Khanikaev, Alexander B.; Ruoff, Rodney S.;

Shvets, Gennady **Inductive Tuning of Fano-Resonant Metasurfaces Using Plasmonic Response of Graphene in the Mid-Infrared.** *Nano Letters* (2013), 13 (3), 1111-1117

341. Jegal, Seonyoung; Hao, Yufeng; Yoon, Duhee; Ruoff, Rodney S.; Yun, Hoyeol; Lee, Sang Wook; Cheong, Hyeonsik **Crystallographic orientation of early domains in CVD graphene studied by Raman spectroscopy.** *Chemical Physics Letters* (2013), DOI: 10.1016/j.cplett.2013.03.043
340. Suk, Ji Won; Wi Hyoung; Lee, Jongho; Chou, Harry; Piner, Richard D.; Hao, Yufeng; Akinwande, Deji; Ruoff, Rodney S. **Enhancement of the Electrical Properties of Graphene Grown by Chemical Vapor Deposition via Controlling the Effects of Polymer Residue.** *Nano Letters* (2013), DOI: 10.1021/nl304420b
339. Murali, Shanthi; Quarles, Neil; Zhang, Li Li; Potts, Jeffrey R.; Tan, Ziqi; Lu, Yalin; Ruoff, Rodney S. **Volumetric capacitance of compressed activated microwave-expanded graphite oxide (a-MEGO) electrodes.** *Nano Energy* (2013), 2, 764-768
338. Kim, Jin-Young; Lee, Wi Hyoung; Suk, Ji Won; Potts, Jeffrey R.; Chou, Harry; Kholmanov, Iskandar N.; Piner, Richard D.; Lee, Jongho; Akinwande, Deji; Ruoff, Rodney S. **Chlorination of Reduced Graphene Oxide Enhances the Dielectric Constant of Reduced Graphene Oxide/Polymer Composites.** *Advanced Materials* (2013), DOI: 10.1002/adma.201300385
337. Chen, Shanshan; Ji, Hengxing; Chou, Harry; Li, Qiongyu; Li, Hongyang; Suk, Ji Won; Piner, Richard; Liao, Lei; Cai, Weiwei; Ruoff, Rodney S. **Millimeter-Size Single-Crystal Graphene by Suppressing Evaporative Loss of Cu During Low Pressure Chemical Vapor Deposition.** *Advanced Materials* (2013), DOI: 10.1002/adma.201204000
336. Kholmanov, Iskandar N.; Domingues, Sergio H; Chou, Harry; Wang, Xiaohan; Tan, Cheng; Kim, Jin-Young; Li, Huifeng; Piner, Richard; Zabin, Aldo JG; Ruoff, Rodney S **Reduced Graphene Oxide/Copper Nanowire Hybrid Films as High-Performance Transparent Electrodes.** *ACS Nano* (2013), 7 (2), 1811-1816.
335. Li, Qiongyu; Chou, Harry; Zhong, Jin-Hui; Liu, Jun-Yang; Dolocan, Andrei; Zhang, Junyan; Zhou, Yinghui; Ruoff, Rodney S.; Chen, Shanshan; Cai, Weiwei **Growth of adlayer graphene on Cu studied by carbon isotope labeling.** *Nano Letters* (2013), 13 (2), 486-490.
334. Tsai, Wan-Yu; Lin, Rongying; Murali, Shanthi; Zhang, LiLi; McDonough, John K.; Ruoff, Rodney S.; Taberna, Pierre-Louis; Gogotsi, Yury; Simon, Patrice **Outstanding performance of activated graphene based supercapacitors in ionic liquid electrolyte from -50 to 80 °C.** *Nano Energy* (2013), DOI: 10.1016/j.nanoen.2012.11.006.
333. Suk, Ji Won; Piner, Richard D.; An, Jinho; Ruoff, Rodney S. **Evaluation of elastic modulus of ultra-thin vermiculite membranes by contact mode atomic force microscopy imaging.** *Thin Solid Films* (2013), 527, 205-209.
332. Potts, Jeffrey R.; Shankar, Om; Murali, Shanthi; Dub, Ling; Ruoff, Rodney S. **Latex and two-roll mill processing of thermally-exfoliated graphite oxide/natural rubber nanocomposites.** *Composites Science and Technology* (2013), 74, 166-172.
331. Wu, Qingzhi; Wu, Yaping; Hao, Yufeng; Gen, Jianxin; Charlton, Matthew; Chen, Shanshan; Ren, Yujie; Ji, Hengxing; Li, Huifeng; Boukhvalov, Danil W.; Piner, Richard D.; Bielawski, Christopher W.; Ruoff, Rodney S. **Selective surface functionalization at regions of high local curvature in graphene.** *Chemical Communications* (2013), 7, 677-679.

330. Li, Xiao; Zhang, Rujing; Yu, Wenjian; Wang, Kunlin; Wei, Jinquan; Wu, Dehai; Cao, Anyuan ; Li, Zhihong; Cheng, Yao; Zheng, Quanshui; Ruoff, Rodney S.; Zhu, Hongwei **Stretchable and highly sensitive graphene-on-polymer strain sensors**. *Scientific Report* (2012), 2, 870.
329. Lee, Jongho; Tao, Li; Parrish, Kristen N.; Hao, Yufeng; Ruoff, Rodney S.; Adinwande, Deji **Multi-finger flexible graphene field effect transistors with high bendability**. *Applied Physics Letters* (2012), 101, 252109.
328. Swartz, A.G.; Odenthal, P.M.; Hao, Y.H.; Ruoff, R.S.; Kawakami, R.K. **Integration of the Ferromagnetic Insulator EuO onto Graphene**. *ACS Nano* (2012), 6, 10063-10069
327. Tao, L.; Lee, J.; Holt, M.; Chou, H.; McDonnell, S.J.; Ferrer, D.A.; Babenco, M.G.; Wallace, R.M.; Banerjee, S.K.; Ruoff, R.S.; Akinwande, D. **Uniform Wafer-Scale Chemical Vapor Deposition of Graphene on Evaporated Cu (111) Film with Quality Comparable to Exfoliated Monolayer**. *Journal of Physical Chemistry C*. (2012), 116, 24068-24074
326. Ruoff, Rodney S. **Personal perspectives on graphene: New graphene-related materials on the horizon**. *MRS Bulletin* (December 2012 special issue: Graphene: Fundamentals and Functionalities), Editor: Gopal Rao; Guest Editors for this special issue: Weijie Lu, Patrick Soukiassian and John Boeckle, 37, 1314-1318
325. Kholmanov, Iskandar N.; Magnuson, Carl W.; Aliev, Ali E.; Li, Huifeng; Zhang, Bin; Suk, Ji Won; Zhang, Li Li; Peng, Eric; Mousavi, S. Hossein; Khanikaev, Alexander B.; Piner, Richard; Shvets, Gennady; Ruoff, Rodney S. **Improved Electrical Conductivity of Graphene Films Integrated with Metal Nanowires**. *Nano Letters* (2012), 12, 5679–5683.
324. Wu, Yaping; Jiang, Wei; Ren, Yujie; Cai, Weiwei; Lee, Wi Hyung; Li, Huifeng; Piner, Richard D.; Pope, Cody W.; Hao, Yufeng; Ji, Hengxing; Kang, Junyong; Ruoff, Rodney S. **Tuning the doping type and level of graphene with different gold configurations**. *Small* (2012), 8(20), 3129-3136.
323. Chen, Shanshan; Li, Qiongyu; Zhang, Qimin; Qu, Yan; Ji, Hengxing; Ruoff, Rodney S.; Cai, Weiwei **Thermal conductivity measurements of suspended graphene with and without wrinkles by micro-Raman mapping**. *Nanotechnology* (2012), 23, 365701.
322. Potts, Jeffrey R.; Shankar, Om; Du, Ling; Ruoff, Rodney S. **Processing–Morphology–Property Relationships and Composite Theory Analysis of Reduced Graphene Oxide/Natural Rubber Nanocomposites**. *Macromolecules* (2012), 45, 6045-6055.
321. Zhang, Li Li; Zhao, Xin; Ji, Hengxing; Stoller, Meryl D.; Lai, Linfei; Murali, Shanthi; McDonnell, Stephen; Cleveger, Brandon; Wallace, Robert M.; Ruoff, Rodney S. **Nitrogen doping of graphene and its effect on quantum capacitance, and a new insight on the enhanced capacitance of N-doped carbon**. *Energy & Environmental Science* (2012), 5, 9618-9625.
320. Suk, Ji Won; Kirk, Karen; Hao, Yufeng; Hall, Neal A.; Ruoff, Rodney S. **Thermoacoustic Sound Generation from Monolayer Graphene for Transparent and Flexible Sound Sources**. *Advanced Materials* (2012), 24, 6342-6347.
319. Heltzel, Alex; Mishra, Columbia; Ruoff, Rodney S.; Fleming, Andrew **Analysis of an Ultrathin Graphite-Based Compact Heat Exchanger**. *Heat Transfer Engineering* (2012), 33(11), 947-956
318. Tao, Li; Lee, Jongho; Chou, Harry; Holt, Milo; Ruoff, Rodney S.; Akinwande, Deji **Synthesis of High Quality Monolayer Graphene at Reduced Temperature on Hydrogen-Enriched Evaporated Copper (111) Films**. *ACS Nano* (2012), 6(3), 2319-2325

317. Hong, Young Joon; Lee, Wi Hyoung; Wu, Yaping; Ruoff, Rodney S.; Fukui, Takashi **van der Waals Epitaxy of InAs Nanowires Vertically Aligned on Single-Layer Graphene.** *Nano Letters* (2012), 12, 1431-1436
316. Rodríguez-González, Claramaría; Martínez-Hernández, Ana L.; Castaño, Víctor M.; Kharissova, Oxana V.; Ruoff, Rodney S.; Velasco-Santos, Carlos **Polysaccharide Nanocomposites Reinforced with Graphene Oxide and Keratin-Grafted Graphene Oxide.** *Industrial & Engineering Chemistry Research* (2012), 51, 3619-3629
315. Chan, Jack; Venugopal, Archana; Pirkle, Adam; McDonnell, Stephen; Hinojos, David; Magnuson, Carl W.; Ruoff, Rodney S.; Colombo, Luigi; Wallace, Robert M.; Vogel, Eric M. **Reducing Extrinsic Performance-Limiting Factors in Graphene Grown by Chemical Vapor Deposition.** *ACS Nano* (2012), 6(4), 3224-3229
314. Ren, Yujie; Zhu, Chaofu; Cai, Weiwei; Li, Huifeng; Ji, Hengxing; Kholmanov, Iskandar; Wu, Yaping; Piner, Richard D.; Ruoff, Rodney S. **Detection of sulfur dioxide gas with graphene field effect transistor.** *Applied Physics Letters* (2012), 100, 163114
313. Kang, Dongwoo; Kwon, Jee Youn; Cho, Hyun; Sim, Jae-Hyoung; Hwang, Hyun Sick; Kim, Chul Su; Kim, Yong Jung; Ruoff, Rodney S.; Shin, Hyeon Suk **Oxidation Resistance of Iron and Copper Foils Coated with Reduced Graphene Oxide Multilayers.** *ACS Nano* (2012), 6, 7763-7769.
312. Shin, Dong-Wook; Lee, Hyun Myoung; Yu, Seong Man; Lim, Kwang-Soo; Jung, Jae Hoon; Kim, Min-Kyu; Kim, Sang-Woo; Han, Jae-Hee; Ruoff, Rodney S. Ruoff; Yoo, Ji-Beom **A Facile Route To Recover Intrinsic Graphene Over Large Scale.** *ACS Nano* (2012), 6, 7781-7788.
311. Lai, Linfei; Yang, Huanping; Wang, Liang; Teh, Boon Kin; Zhong, Jianqiang; Chou, Harry; Chen, Luwei; Chen, Wei; Shen, Zexiang; Ruoff, Rodney S.; Lin, Jianyi **Preparation of Supercapacitor Electrodes through Selection of Graphene Surface Functionalities.** *ACS Nano* (2012), 6(7), 5941-5951.
310. Wu, Yaping; Chou, Harry; Ji, Hengxing; Wu, Qingzhi; Chen, Shanshan; Jiang, Wei; Hao, Yufeng; Kang, Junyong; Ren, Yujie; Piner, Richard D.; Ruoff, Rodney S. **Growth Mechanism and Controlled Synthesis of AB-Stacked Bilayer Graphene on CuNi Alloy Foils.** *ACS Nano* (2012), 6, 7731-7738.
309. Ismach, Ariel; Chou, Harry; Ferrer, Domingo A.; Wu, Yaping; McDonnell, Stephen; Floresca, Herman C.; Covacevich, Alan; Pope, Cody; Piner, Richard; Kim, Moon J.; Wallace, Robert M.; Colombo, Luigi; Ruoff, Rodney S. **Toward the Controlled Synthesis of Hexagonal Boron Nitride Films.** *ACS Nano* (2012), 6, 6378-6385.
308. Beal, Colin M.; Hebner, Robert E.; Webber, Michael E.; Ruoff, Rodney S.; Seibert, A. Frank; King, Carey W. **Comprehensive Evaluation of Algal Biofuel Production: Experimental and Target Results.** *Energies* (2012), 5, 1943-1981.
307. Kholmanov, Iskandar N.; Stoller, Meryl D.; Edgeworth, Jonathan; Lee, Wi Hyoung; Li, Huifeng; Lee, Jongho; Barnhart, Craig; Potts, Jeffrey R.; Piner, Richard; Akinwande, Deji; Barrick, Jeffrey E.; Ruoff, Rodney S. **Nanostructured Hybrid Transparent Conductive Films with Antibacterial Properties.** *ACS Nano* (2012), 6, 5157-5163.
306. Zhao, Xin; Zhang, Lili; Murali, Shanthi; Stoller, Meryl D.; Zhang, Qinghua; Zhu, Yanwu; Ruoff, Rodney S. **Incorporation of Manganese Dioxide within Ultraporous Activated Graphene for High-Performance Electrochemical Capacitors.** *ACS Nano* (2012), 6, 5404-5412.

305. Lai, Linfei; Potts, Jeffrey R.; Zhan, Da; Wang, Liang; Poh, Chee Kok; Tang, Chunhua; Gong, Hao; Shen, Zexiang; Shen, Lin; Jianyi; Ruoff, Rodney S. **Exploration of the active center structure of nitrogen-doped graphene-based catalysts for oxygen reduction reaction.** *Energy & Environmental Science* (2012), 5, 7936-7942.
304. Bi, Hengchang; Yin, Kuibo; Xie, Xiao; Zhou, Yilong; Zhou, Yilong; Wan, Neng; Xu, Feng; Banhart, Florian; Sun, Litao; Ruoff, Rodney S. **Low temperature casting of graphene with high compressive strength.** *Advanced Materials* (2012), 24, 5124-5129.
303. Park, Sungjin; Suk, Ji Won; An, Jinho; Oh, Junghoon; Lee, Seungjun; Lee, Wonoh; Potts, Jeffrey R.; Byun, Joon-Hyung; Ruoff, Rodney S. **The effect of concentration of graphene nanoplatelets on mechanical and electrical properties of reduced graphene oxide papers.** *Carbon* (2012), 50, 4573-4578.
302. Pettes, Michael Thompson; Ji, Hengxing; Ruoff, Rodney S.; Shi, Li **Thermal Transport in Three-Dimensional Foam Architectures of Few-Layer Graphene and Ultrathin Graphite.** *Nano Letters* (2012), 12, 2959-2964.
301. Fallahzad, Babak; Hao, Yufeng; Lee, Kayoung; Kim, Seyoung; Ruoff, R. S.; Tutuc, E. **Quantum Hall effect in Bernal stacked and twisted bilayer graphene grown on Cu by chemical vapor deposition.** *Physical Review B* (2012), 85, 201408.
300. Bi, Hengchang; Xie, Xiao; Yin, Kuibo; Zhou, Yilong; Wan, Shu; He, Longbing; Xu, Feng; Banhart, Florian; Sun, Litao; Ruoff, Rodney S. **Spongy Graphene as a Highly Efficient and Recyclable Sorbent for Oils and Organic Solvents.** *Advanced Functional Materials* (2012), 22, 4421-4425.
299. Ramón, Michael E.; Parrish, Kristen N.; Chowdhury, Sk. Fahad; Magnuson, Carl W.; Movva, Hema C. P.; Ruoff, Rodney S.; Banerjee, Sanjay K.; Akinwande, Deji **3GHz Graphene Frequency Doubler on Quartz Operating Beyond the Transit Frequency.** *IEEE Transactions on Nanotechnology* (2012), 11, 877-883.
298. Beal, Colin M.; Hebner, Robert E.; Webber, Michael E.; Ruoff, Rodney S.; Seibert, A. Frank **The Energy Return on Investment for Algal Biocrude: Results for a Research Production Facility.** *Bioenergy Research* (2012), 5, 341-362.
297. Costa, Sara D.; Righi, Ariete; Fantini, Cristiano; Hao, Yufeng; Magnuson, Carl; Colombo, Luigi; Ruoff, Rodney S.; Pimenta, Marcos A. **Resonant Raman spectroscopy of graphene grown on copper substrates.** *Solid State Communications* (2012), 152, 1317-1320.
296. Ji, Hengxing; Zhang, Lili; Pettes, Michael T.; Li, Huifeng; Chen, Shanshan; Shi, Li; Piner, Richard; Ruoff, Rodney S. **Ultrathin Graphite Foam: A Three-Dimensional Conductive Network for Battery Electrodes.** *Nano Letters* (2012), 12, 2446-2451.
295. Zhang, Li Li; Zhao, Xin; Stoller, Meryl D.; Zhu, Yanwu; Ji, Hengxing; Murali, Shanthi; Wu, Yaping; Perales, Stephen; Clevenger, Brandon; Ruoff, Rodney S. **Highly Conductive and Porous Activated Reduced Graphene Oxide Films for High-Power Supercapacitors.** *Nano Letters* (2012), 12, 1806-1812.
294. Zan, Recep; Muryn, Chris; Bangert, Ursel; Mattocks, Philip; Wincott, Paul; Vaughan, David; Li, Xuesong; Colombo, Luigi; Ruoff, Rodney S.; Hamilton, Bruce; Novoselov, Konstantin S. **Scanning tunnelling microscopy of suspended graphene.** *Nanoscale* (2012), 4, 3065-3068.

293. Lee, Jongho; Tao, Li; Hao, Yufeng; Ruoff, Rodney S.; Akinwande, Deji **Embedded-gate graphene transistors for high-mobility detachable flexible nanoelectronics**. *Applied Physics Letters* (2012), *100*, 152104.
292. Brown, Joseph J.; Dikin, Dmitriy A.; Ruoff, Rodney S.; Bright, Victor M. **Interchangeable Stage and Probe Mechanisms for Microscale Universal Mechanical Tester**. *Journal of Microelectromechanical Systems* (2012), *21*, 458.
291. Lee, Wi Hyoung; Suk, Ji Won; Chou, Harry; Lee, Jongho; Hao, Yufeng; Wu, Yaping; Piner, Richard; Akinwande, Deji; Kim, Kwang S.; Ruoff, Rodney S. **Selective-Area Fluorination of Graphene with Fluoropolymer and Laser Irradiation**. *Nano Letters* (2012), *12*, 2374-2378.
290. Murali, Shanthi; Potts, Jeffrey R.; Stoller, Scott; Park, Joono; Stoller, Meryl D.; Zhang, Li Li; Zhu, Yanwu; Ruoff, Rodney S. **Preparation of activated graphene and effect of activation parameters on electrochemical capacitance**. *Carbon* (2012), *50*, 3482-3485.
289. Zhang, Bin; Lee, WiHyoung; Piner, Richard; Kholmanov, Iskandar; Wu, Yaping; Li, Huifeng; Ji, Hengxing; Ruoff, Rodney S. **Low-Temperature Chemical Vapor Deposition Growth of Graphene from Toluene on Electropolished Copper Foils**. *ACS Nano* (2012), *6*, 2471-2476.
288. Ren, Yujie; Zhu, Chaofu; Cai, Weiwei; Li, Huifeng; Hao, Yufeng; Wu, Yaping; Chen, Shanshan; Wu, Qingzhi; Piner, Richard; Ruoff, Rodney S. **An improved method for transferring graphene grown by chemical vapor deposition**. *Nano* (2012), *7*, 11500.
287. Ruoff, Rodney S. **Perspective: A means to an end**. *Nature* (2012), *483*, S42.
286. Stoller, Meryl D.; Murali, Shanthi; Quarles, Neil; Zhu, Yanwu; Potts, Jeffrey R.; Zhu, Xianjun; Ha, Hyung-Wook; Ruoff, Rodney S. **Activated graphene as a cathode material for Li-ion hybrid supercapacitors**. *Physical Chemistry Chemical Physics* (2012), *14*, 3388-3391.
285. Suk, Ji Won; Murali, Shanthi; An, Jinho; Ruoff, Rodney S. **Mechanical measurements of ultra-thin amorphous carbon membranes using scanning atomic force microscopy**. *Carbon* (2012), *50*, 2220-2225.
284. Chen, Shanshan; Wu, Qingzhi; Mishra, Columbia; Kang, Junyong; Zhang, Hengji; Cho, Kyeongjae; Cai, Weiwei; Baladin, Alexander A.; Ruoff, Rodney S. **Thermal conductivity of isotopically modified graphene**. *Nature Materials* (2012), *11*, 203-207.
283. Lee, Wi Hyoung; Suk, Ji Won; Lee, Jongho; Hao, Yufeng; Park, Jaesung; Yang, Jae Won; Ha, Hyung-Wook; Murali, Shanthi; Chou, Harry; Akinwande, Deji; Kim, Kwang S.; Ruoff, Rodney S. **Simultaneous transfer and doping of CVD-grown graphene by fluoropolymer for transparent conductive films on plastic**. *ACS Nano* (2012), *6* (2), 1284-1290.
282. Park, Sungjin; Hu, Yichen; Hwang, Jin Ok; Lee, Eui-Sup; Casabianca, Leah B.; Cai, Weiwei; Potts, Jeffrey R.; Ha, Hyung-Wook; Chen, Shanshan; Oh, Junghoon; Kim, Sang Ouk; Kim, Yong-Hyun; Ishii, Yoshitaka; Ruoff, Rodney S. **Chemical structures of hydrazine-treated graphene oxide and generation of aromatic nitrogen doping**. *Nature Communication* (2012), *3*, 638.
281. Jung, Inhwa; Rhyee, Jong-Soo; Son, Jong Yeog, Ruoff, Rodney S. and Rhee, Kyong-Yop, **Colors of graphene and graphene-oxide multilayers on various substrates**. *Nanotechnology* (2012), *23*, 025708.

280. Robinson, Z. R.; Tyagi, P.; Murray, T. M.; Ventrice, C. A.; Chen, S. S.; Munson, A.; Magnuson, C. W.; Ruoff, R. S. **Substrate grain size and orientation of Cu and Cu–Ni foils used for the growth of graphene films.** *J. Vacuum Science and Technology A* (2012), 30, 011401.
279. Mattson, Eric C.; Pu, Haihui; Cui, Shumao; Schofield, Marvin A.; Rhim, Sonny; Lu, Ganhua; Nasse, Michael J.; Ruoff, Rodney S.; Weinert, Michael; Gajdardziska-Josifovska, Marijafovska; Chen, Junhong; Hirschmugl, Carol J. **Evidence of Nanocrystalline Semiconducting Graphene Monoxide during Thermal Reduction of Graphene Oxide in Vacuum.** *ACS Nano* (2011), 5(12), 9710-9717
278. Lee, Seungjun; Oh, Junghoon; Ruoff, Rodney S.; Park, Sungjin **Residual acetone produces explosives during the production of graphite oxide.** *Carbon* (2011), 50(3), 1442-1444
277. Righi, A.; Costa, S. D.; Chacham, H.; Fantini, C.; Venezuela, P.; Magnuson, C.; Colombo, L.; Bacsa, W. S.; Ruoff, R. S.; Pimenta, M. A. **Graphene Moiré patterns observed by umklapp double-resonance Raman scattering.** *Physical Review B*. (2011), 84, 241409(R).
276. Liu, W.; Aguilar, R. V.; Hao, Y.; Ruoff, R. S.; Armitage, N. P. **Broadband microwave and time-domain terahertz spectroscopy of chemical vapor deposition grown graphene.** *Journal of Applied Physics* (2011), 110, 083510.
275. Venugopal, Archana; Chan, Jack; Li, Xuesong; Magnuson, Carl W.; Kirk, Wiley P.; Colombo, Luigi; Ruoff, Rodney S.; Vogel, Eric M. **Effective mobility of single-layer graphene transistors as a function of channel dimensions.** *Journal of Applied Physics* (2011), 109, 104511.
274. Pantelic, Radosav S.; Suk, Ji Won; Hao, Yufeng; Ruoff, Rodney S.; Stahlberg, Henning. **Oxidative Doping Renders Graphene Hydrophilic, Facilitating Its Use as a Support in Biological TEM.** *Nano Letters* (2011), 11, 4319-4323.
273. Zhu, Xianjun; Zhu, Yanwu; Murali, Shanthi; Stoller, Meryl D.; Ruoff, Rodney S. **Reduced graphene oxide/tin oxide composite as an enhanced anode material for lithium ion batteries prepared by homogenous coprecipitation.** *Journal of Power Sources* (2011), 196, 6473-6477.
272. Park, Sungjin; An, Jinho; Potts, Jeffrey R.; Velamakanni, Aruna; Murali, Shanthi; Ruoff, Rodney S. **Hydrazine-reduction of graphite- and graphene oxide.** *Carbon* (2011), 49, 3019-3023.
271. Alam, Todd M.; Dreyer, Daniel R.; Bielwaski, Christopher W.; Ruoff, Rodney S. **Measuring Molecular Dynamics and Activation Energies for Quarternary Acyclic Ammonium and Cyclic Pyrrolidinium Ionic Liquids Using 14-N NMR Spectroscopy.** *The Journal of Physical Chemistry A* (2011), 115, 4307-4316.
270. Ruoff, Rodney S. **Chemically Modified Graphenes.** *Journal of Materials Chemistry* (2011), 21, 3272-3272.
269. Murali, Shanthi; Dreyer, Daniel R.; Valle-Vigon, Patricia; Stoller, Meryl D.; Zhu, Yanwu; Moralies, Cornelio; Fuertes, Antonio B.; Bielawski, Christopher W.; Ruoff, Rodney S. **Mesoporous carbon capsules as electrode materials in electrochemical double layer capacitors.** *Physical Chemistry Chemical Physics* (2011), 13, 2652-2655.
268. Sharma, Tushar; Hu, Ye; Stoller, Meryl; Feldman, Marc; Ruoff, Rodney S.; Ferrari, Mauro; Zhang, Xiaojing. **Mesoporous silica as a membrane for ultra-thin implantable direct glucose fuel cells.** *Lab on a Chip* (2011), 11, 2460-2465.

267. Stoller, Meryl D.; Magnuson, Carl W.; Zhu, Yanwu; Murali, Shanthi; Suk, Ji Won; Piner, Richard; Ruoff, Rodney S. **Interfacial capacitance of single layer graphene.** *Energy and Environmental Science* (2011), 4, 4685-4689.
266. Bae, Seo-Yoon; In-Yup; Yang, Jieun; Park, Noejung; Shin, Hyeon Suk; Park, Sungjin; Ruoff, Rodney S.; Dai, Liming; Baek, Jong-Beom. **Large-Area Graphene Films by Simple Solution Casting of Edge-Selectively Functionalized Graphite.** *ACS Nano* (2011), 5, 4974-4980.
265. Bagri, Akbar; Kim, Sang-Pil; Ruoff, Rodney S.; Shenoy, Vivek B. **Thermal transport across Twin Grain Boundaries in Polycrystalline Graphene from Nonequilibrium Molecular Dynamics Simulations.** *Nano Letters* (2011), 11, 3917-3921.
264. Pirkle, A.; Chan, J.; Venugopal, A.; Hinojos, D.; Magnuson, C. W.; McDonnell, S.; Colombo, L.; Vogel, E. M.; Ruoff, R.S.; Wallace, R. M. **The effect of chemical residues on the physical and electrical properties of chemical vapor deposited graphene transferred to SiO₂.** *Applied Physics Letters* (2011), 99, 112108.
263. Chen, Shanshan; Cai, Weiwei; Piner, Richard D.; Suk, Ji Won; Wu, Yaping; Ren, Yujie; Kang, Junyong; Ruoff, Rodney S. **Synthesis and Characterization of Large-Area Graphene and Graphite Films on Commercial CuNi Alloy Foils.** *Nano Letters* (2011), 1, 3519-3525.
262. Yanamoto, Go; Shirasu, Keiichi; Hashida, Yoshiyuki; Takagi, Toshiyuki; Suk, Ji Won; An, Jinho; Piner, Richard D.; Ruoff, Rodney S. **Nanotube fracture during the failure of carbon nanotube/alumina composites.** *Carbon* (2011), 49, 3709-3716.
261. Suk, Ji Won; Kitt, Alexander; Magnuson, Carl W.; Hao, Yufeng; Ahmed, Samir; An, Jinho; Swan, Anna K.; Goldberg, Bennett B.; Ruoff, Rodney S. **Transfer of CVD-Grown Monolayer Graphene onto Arbitrary Substrates.** *ACS Nano* (2011), 2011, 5, 6916-6924.
260. Ji, Hengxing; Hao, Yufeng; Ren, Yujie; Charlton, Matthew; Lee, Wi Hyoung; Qu, Qingzhi; Li, Huifeng; Zhu, Yanwu; Wu, Yaping; Piner, Richard; Ruoff, Rodney S. **Graphene Growth Using a Solid Carbon Feedstock and Hydrogen.** *ACS Nano* (2011), 5, 7656-7661.
259. Potts, Jeffrey R.; Murali, Shanthi; Zhu, Yanwu; Zhao, Xin; Ruoff, Rodney S. **Microwave-Exfoliated Graphite Oxide/Polycarbonate Composites.** *Macromolecules* (2011), 44, 6588-6495.
258. Stoller, Meryl D.; Stoller, Scott A.; Quarles, Neil; Suk, Ji Won; Murali, Shanthi; Zhu, Yanwu; Zhu, Xianjun; Ruoff, Rodney S. **Using Coin Cells for Ultracapacitor Electrode Material Testing.** *Journal of Applied Electrochemistry* (2011), 41, 681-686.
257. Zhu, Yanwu; Murali, Shanthi; Stoller, Meryl D.; Ganesh, K. J.; Cai, Weiwei; Ferreira, Paulo J.; Pirkle, Adam; Wallace, Robert M.; Cychoz, Katie A.; Thommes, Matthias; Su, Dong; Stach, Eric A.; Ruoff, Rodney S. **Carbon-Based Supercapacitors Produced by Activation of Graphene.** *Science* (2011), 332, 1537-1541.
256. Ha, Hyung-Wook; Kim, In Young; Hwang, Seong-Ju; Ruoff, Rodney S. **One-Pot Synthesis of Platinum Nanoparticles Embedded on Reduced Graphene Oxide for Oxygen Reduction in Methanol Fuel Cells.** *Electrochemical and Solid-State Letters* (2011), 14, B70-B73.
255. Park, Sungjin; An, Jinho; Potts, Jeffrey R.; Velamakanni, Aruna; Murali, Shanthi; Ruoff, Rodney S. **Hydrazine-reduction of graphite- and graphene oxide.** *Carbon* (2011), 49, 3019-3023.
254. Zhu, Xianjun; Zhu, Yanwu; Murali, Shanthi; Stoller, Meryl D.; Ruoff, Rodney S. **Nanostructured**

- Reduced Graphene Oxide/Fe₂O₃ Composite As a High-Performance Anode Material for Lithium Ion Batteries** *ACS Nano* (2011), 5 (4), 3333-3338.
253. Potts, Jeffrey R.; Lee, Sun Hwa; Alam, Todd M.; An, Jinho; Stoller, Meryl D.; Piner, Richard D.; Ruoff, Rodney S. **Thermomechanical properties of chemically modified graphene/poly(methyl methacrylate) composites made by *in situ* polymerization.** *Carbon* (2011), 49, 2615-2623.
252. Yu, Kehan; Bo, Zheng; Lu, Ganhua; Mao, Shun; Cui, Shumao; Zhu, Yanwu; Chen, Xinqi; Ruoff, Rodney S.; Chen, Junhong **Growth of carbon nanowalls at atmospheric pressure for one-step gas sensor fabrication.** *Nanoscale Research Letters* (2011), 6, 202.
251. An, Jinho; Woelkl, Edgar; Suk, Ji Won; Li, Xuesong; Magnuson, Carl W.; Fu, Lianfeng; Tiemeijer, Peter; Bischoff, Maarten; Freitag, Bert; Popova, Elmira; Ruoff, Rodney S. **Domain (Grain) Boundaries and Evidence of “Twinlike” Structures in Chemically Vapor Deposited Grown Graphene.** *ACS Nano* (2011), 5 (4), 2433–2439.
250. Brown, J. J.; Baca, A. I.; Bertness, K. A.; Dikin, D. A.; Ruoff, R. S.; Bright, V. M. **Tensile measurement of single crystal gallium nitride nanowires on MEMS test stages.** *Sensors and Actuators A: Physical* (2011), 166, 177-186.
249. Kholmanov, Iskandar N; Edgeworth, Jonathan; Cavaliere, Emanuele; Gavioli, Luca; Magnuson, Carl W.; Ruoff, Rodney S. **Healing of structural defects in the topmost layer of graphite by chemical vapor deposition.** *Advanced Materials* (2011), 23, 1675-1678.
248. Li, X. S.; Magnuson, C. W.; Venugopal, A; Tromp, R. M.; Hannon, J. B.; Vogel, E. M.; Colombo, L.; Ruoff, R. S. **Large Area Graphene Single Crystals Grown by Low Pressure Chemical Vapor Deposition of Methane on Copper.** *Journal of the American Chemical Society* (2011), 133, 2816–2819.
247. Kang, Sung Min; Park, Sungjin; Kim, Daewon; Park, Sung Young; Ruoff, Rodney S.; Lee, Haeshin **Simultaneous Reduction and Surface Functionalization of Graphene Oxide by Mussel-Inspired Chemistry.** *Advanced Functional Materials* (2011) 21, 108-112.
246. Lu, Ganhua; Park, Sungjin; Yu, Kehan; Ruoff, Rodney S.; Ocola, Leonidas E.; Rosenmann, Daniel; Chen, Junhong **Toward Practical Gas Sensing with Highly Reduced Graphene Oxide: A New Signal Processing Method To Circumvent Run-to-Run and Device-to-Device Variations.** *ACS Nano* (2011), 5, 1154–1164.
245. Chen, Shanshan; Brown, Lola; Levendorf, Mark; Cai, Weiwei; Ju, Sang-Yong; Edgeworth, Jonathan; Li, Xuesong; Magnuson, Carl W.; Velamakann, Aruna; Piner, Richard D.; Kang, Junyong; Park, Jiwoong; Ruoff, Rodney S. **Oxidation Resistance of Graphene-Coated Cu and Cu/Ni Alloy .** *ACS Nano* (2011), 5, 1321–1327.
244. Pantelic, Radosav S.; Suk, Ji Won; Magnuson, Carl W.; Meyer, Jannik C.; Wachsmuth, Philipp; Kaiser, Ute; Ruoff, Rodney S.; Stahlberg, Henning. **Graphene: Substrate preparation and introduction.** *Journal of Structural Biology* (2011), 174, 234-238.
243. Chen, Shanshan; Moore, Arden L.; Cai, Weiwei; Suk, Ji Won; An, Jinho; Mishra, Columbia; Amos, Charles; Magnuson, Carl; Kang, Junyong; Shi, Li; Ruoff, Rodney S. **Raman Measurements of Thermal Transport in Suspended Monolayer Graphene of Variable Sizes in Vacuum and Gaseous Environments.** *ACS Nano* (2011), 5, 321–328.
242. Kim, Tae Young; Lee, Hyun Wook; Stoller, Meryl ; Dreyer, Daniel R.; Bielawski, Christopher; Ruoff, Rodney S.; Suh, Kwang S. **High-Performance Supercapacitors Based on Poly(ionic**

- liquid)-Modified Graphene Electrodes.** *ACS Nano* (2011), 5, 436–442.
241. Potts, Jeffrey R.; Dreyer, Daniel R.; Bielawski, Christopher W.; Ruoff, Rodney S. **Graphene-Based Polymer Nanocomposites.** *Polymer* (2011), 52, 5-25. (Feature Article)
240. Dreyer, Daniel; Murali, Shanthi; Zhu, Yanwu; Ruoff, Rodney S.; Bielawski, Christopher W. **Reduction of graphite oxide using alcohols.** *Journal of Materials Chemistry*, (2011), 21, 3443-3447.
239. Beal, C. M.; Smith C. H.; Webber M. E.; Ruoff R. S.; Hebner, R. E. **A Framework to Report the Production of Biodiesel from Algae.** *BioEnergy Research*, (2011), 4, 36-60.
238. Moon, In Kyu; Lee, Junghyun; Ruoff, Rodney S.; Lee, Hyoyoung **Reduced graphene oxide by chemical graphitization.** *Nature Communications* (2011), 1, 73.
237. Chen, Shanshan; Cai, Weiwei; Chen, David; Ren, Yujie ; Li, Xuesong; Zhu, Yanwu; Kang, Junyong; Ruoff, Rodney S. **Adsorption/Desorption and Electrically Controlled Flipping of Ammonia Molecules on Graphene.** *New Journal of Physics* (2010)12, 125011.
236. Lee, Sun Hwa; Kim, Hyun Wook; Hwang, Jin Ok; Lee, Won Jun; Kwon, Jun; Bielawski, Christopher W.; Ruoff, Rodney S.; Kim, Sang Ouk **Three-Dimensional Self-Assembly of Graphene Oxide Platelets into Mechanically Flexible Macroporous Carbon Films.** *Angewandte Chemie International Edition*, (2010), 49, 10084-10088.
235. Dreyer, Daniel R.; Ruoff, Rodney S.; Bielawski, Christopher W. **From Conception to Realization: An Historical Account of Graphene and Some Perspectives for Its Future.** *Angewandte Chemie International Edition*, (2010), 49, 9336-9344.
234. Grantab, Rassin; Shenoy, Vivek B.; Ruoff, Rodney S. **Anomalous Strength Characteristics of Tilt Grain Boundaries in Graphene.** *Science*, (2010), 330, 946-948.
233. Li, Xuesong; Magnuson, Carl W.; Venugopal, Archana; An, Jinho; Suk, Ji Won; Han, Boyang; Borysiak, Mark; Cai, Weiwei; Velamakanni, Aruna; Zhu, Yanwu; Fu, Lianfeng; Vogel, Eric M.; Voelkl, Edgar; Colombo, Luigi; Ruoff, Rodney S. **Graphene Films with Large Domain Size by a Two-Step Chemical Vapor Deposition Process.** *Nano Letters* (2010), 10, 4328-4334.
232. Suk, Ji Won; Piner, Richard D.; An, Jinho; Ruoff, Rodney S. **Mechanical Properties of Monolayer Graphene Oxide.** *ACS Nano* (2010), 4, 6557-6564.
231. Jeong, Hu Young; Kim, Jong Yun; Kim, Jeong Won; Hwang, Jin Ok; Kim, Ji-Eun; Lee, Jeong Yong; Yoon, Tae Hyun; Cho, Byung Jin; Kim, Sang Ouk; Ruoff, S. Rodney; Choi, Sung-Yool **Graphene Oxide Thin Films for Flexible Nonvolatile Memory Applications.** *Nano Letters* (2010), 10, 4381-4386.
230. Stankovich, Sasha; Dikin, Dmitriy A.; Compton, Owen C.; Dommert, Geoffrey H. B.; Ruoff, Rodney S.; Nguyen, Son Binh T. **Systematic Post-assembly Modification of Graphene Oxide Paper with Primary Alkylamines.** *Chemistry of Materials* (2010), 22(14), 4153-4157.
229. Yamamoto, Go; Suk, Ji Won; An, Jinho; Piner, Richard D.; Hashida, Toshiyuki; Takagi, Toshiyuki; Ruoff, Rodney S. **The influence of nanoscale defects on the fracture of multi-walled carbon nanotubes under tensile loading.** *Diamond and Related Materials* (2010), 19(7-9), 748-751.
228. Beal, C. M.; Webber, M. E.; Ruoff, R. S.; Hebner, R. E. **Lipid analysis of Neochloris oleoabundans by liquid state NMR.** *Biotechnology and Bioengineering* (2010), 106(4), 573-583.

227. Zhu, Yanwu; Murali, Shanthi; Cai, Weiwei; Li, Xuesong; Suk, Ji Won; Potts, Jeffrey R.; Ruoff, Rodney S. **Graphene and Graphene Oxide: Synthesis, Properties, and Applications.** *Advanced Materials* (2010), 22, 3906-3924.
226. Stoller, Meryl D.; Ruoff, Rodney S. **Best Practice Methods for Determining an Electrode Material's Performance for Ultracapacitors.** *Energy and the Environment* (2010), 3, 1294-1301.
225. Lee, Duck Hyun; Kim, Ji Eun; Han, Tae Hee; Hwang, Jae Won; Jeon, Seokwoo; Choi, Sung-Yool; Hong, Soon Hyung; Lee, Won Jong; Ruoff, Rodney S.; Kim, Sang Ouk. **Versatile Carbon Hybrid Films Composed of Vertical Carbon Nanotubes Grown on Mechanically Compliant Graphene Films.** *Advanced Materials* (2010), 22(11), 1247-1252.
224. Ruoff, Rodney S. **Journal club.** *Nature* (2010), 463(7283), 853.
223. Cai, Weiwei; Moore, Arden L.; Zhu, Yanwu; Li, Xuesong; Chen, Shanshan; Shi, Li; Ruoff, Rodney S. **Thermal Transport in Suspended and Supported Monolayer Graphene Grown by Chemical Vapor Deposition.** *Nano Letters* (2010), 10, 1645-1651.
222. Casabianca, Leah B.; Shaibat, Medhat A.; Cai, Weiwei W.; Park, Sungjin; Piner, Richard; Ruoff, Rodney S.; Ishii, Yoshitaka. **NMR-Based Structural Modeling of Graphite Oxide Using Multidimensional ¹³C Solid-State NMR and ab Initio Chemical Shift Calculations.** *Journal of the American Chemical Society* (2010), 132, 5672-5676.
221. Seol, Jae Hun; Jo, Insun; Moore, Arden L.; Lindsay, Lucas; Aitken, Zachary H.; Pettes, Michael T.; Li, Xuesong; Yao, Zhen; Huang, Rui; Broido, David; Mingo, Natalio; Ruoff, Rodney S.; Shi, Li. **Two-Dimensional Phonon Transport in Supported Graphene.** *Science* (2010), 328 (5975), 213-216.
220. Medhekar, Nikhil V.; Ramasubramaniam, Ashwin; Ruoff, Rodney S.; Shenoy, Vivek B. **Hydrogen Bond Networks in Graphene Oxide Composite Paper: Structure and Mechanical Properties.** *ACS Nano* (2010), 4(4), 2300-2306.
219. An, Sung Jin; Zhu, Yanwu; Lee, Sun Hwa; Stoller, Meryl D.; Emilsson, Tryggvi; Park, Sungjin; Velamakanni, Aruna; An, Jinho and Ruoff, Rodney S. **Thin film fabrication and simultaneous anodic reduction of deposited graphene oxide platelets by electrophoretic deposition.** *The Journal of Physical Chemistry Letters* 1, 1259-1263 (2010).
218. Park, Sungjin; Mohanty, Nihar; Suk, Ji Won; Nagaraja, Ashvin; An, Jinho; Piner, Richard D.; Cai, Weiwei; Dreyer, Daniel R.; Berry, Vikas and Ruoff, Rodney S. **Biocompatible, Robust Free-Standing Paper Composed of a TWEEN/Graphene Composite.** *Advanced Materials* (2010), 22, 1736-1740.
217. Park, Sungjin; An, Jinho; Suk, Ji Won and Ruoff, Rodney S. **Graphene-Based Actuators.** *Small*, 6, 210-212 (2010).
216. Dua, Vineet; Surwade, Sumedh P.; Ammu, Srikanth; Agnihotra, Srikanth Rao; Jain, Sujit; Roberts, Kyle E.; Park, Sungjin; Ruoff, Rodney S. and Manohar. Sanjeev K. **Flexible, All-Organic Vapor Sensor Using Inkjet Printed Reduced Graphene Oxide.** *Agnew. Chem. Int. Ed.* (2010), 49, 2154-2157.
215. Zhu, Yanwu; Murali, Shanthi; Stoller, Meryl D.; Velamakanni, Aruna; Piner, Richard D.; Ruoff, Rodney S. **Microwave assisted exfoliation and reduction of graphite oxide for ultracapacitors,** *Carbon* (2010) 48, 7, 2118-2122.
214. Zhu, Yanwu; Stoller, Meryl D.; Cai, Weiwei; Velamakanni, Aruna; Piner, Richard D.; Chen, David;

- Ruoff, Rodney S. **Exfoliation of Graphite Oxide in Propylene Carbonate and Thermal Reduction of the Resulting Graphene Oxide Platelets.** ACS Nano, 4(2), 1227-1233. (2010)
213. Lee, Sun Hwa; Dreyer, Daniel R.; An, Jinho; Velamakanni, Aruna; Piner, Richard D.; Park, Sungjin; Zhu, Yanwu; Kim, Sang Ouk; Bielawski, Christopher W.; Ruoff, Rodney S. **Polymer Brushes via Controlled, Surface-Initiated Atom Transfer Radical Polymerization (ATRP) from Graphene Oxide.** Macromolecular Rapid Communications 31 (3), 281-288 (2010).
212. Velamakanni, Aruna; Magnuson, Carl W.; Ganesh, K. J.; Zhu, Yanwu; An, Jinho; Ferreira, Paulo J.; Ruoff, Rodney S. **Site-Specific Deposition of Au Nanoparticles in CNT Films by Chemical Bonding.** ACS Nano 4 (1), 540-546 (2010).
211. Dreyer, Daniel R.; Park, Sungjin; Bielawski, Christopher W.; Ruoff, Rodney S. **The chemistry of graphene oxide.** Chem. Soc. Rev. (2010), 39, 228-240.
210. Srinivas, G.; Zhu, Yanwu; Piner, Richard; Skipper, Neal; Ellerby, Mark; Ruoff, Rodney S. **Synthesis of graphene-like nanosheets and their hydrogen adsorption capacity.** Carbon (2010), 48, 630-635.
209. Jung, Inhwa; Chung, Jaehyun; Piner, Richard; Suk, Ji Won; Ruoff, Rodney S. **Fabrication and measurement of suspended silicon carbide nanowire devices and deflection.** NANO (2009), 4, 1-7.
208. Huang, Yanyan; Beal, Colin M.; Cai, Weiwei; Ruoff, Rodney S.; Terentjev, Eugene **Micro-Raman spectroscopy of algae: Composition analysis and fluorescence background behavior.** Biotechnology and Bioengineering (2009), 105(5), 889-898.
207. Li, Xuesong; Cai, Weiwei; Jung, Inhwa; An, Jinho; Yang, Dongxing; Velamakanni, Aruna; Piner, Richard; Colombo, Luigi; Ruoff, Rodney S. **Synthesis, Characterization, and Properties of Large-Area Graphene Films.** ECS Transactions (2009), 19, 41-52.
206. Velamakanni, Aruna; Ganesh, K. J.; Zhu, Yanwu; Ferreira, P. J.; Ruoff, Rodney S. **Catalyst Free Synthesis and Characterization of Metastable Boron Carbide Nanowires.** Advanced Functional Materials (2009), 19, 3926-3933.
205. Cai, Weiwei; Piner, Richard D.; Zhu, Yanwu; Li, Xuesong; Tan, Zhenbing; Floresca, Herman Carlo; Yang, Changli; Lu, Li; Kim, M. J. Ruoff, Rodney S. **Synthesis of Isotopically-Labeled Graphite Films by Cold-Wall Chemical Vapor Deposition and Electronic Properties of Graphene Obtained from Such Films.** Nano Research (2009), 2(11), 851-856.
204. Li, X. S.; Zhu, Y. W.; Cai, W. W.; Borysiak, M.; Han, B. Y.; Chen, D.; Piner, R. D.; Colombo, L.; Ruoff, R. S. **Transfer of large-area graphene films for high-performance transparent conductive electrodes,** Nano Letters, (2009) 9, 4359-4363.
203. Brown, Joseph J.; Suk, Ji Won; Singh, Gurpreet; Baca, Alicia I.; Dikin, Dmitriy A.; Ruoff, Rodney S.; Bright, Victor M. **Microsystem for nanofiber electromechanical measurements.** Sensors and Actuators A (2009), 155, 1-7.
202. Jung, Inhwa; Field, Daniel A.; Clark, Nicholas J.; Zhu, Yanwu; Yang, Dongxing; Piner, Richard D.; Stankovich, Sasha; Dikin, Dmitriy A.; Geisler, Heike; Ventrice Jr, Carl A. and Ruoff, Rodney S. **Reduction Kinetics of Graphene Oxide Determined by Electrical Transport Measurements and Temperature Programmed Desorption.** J. Phys. Chem. C 113, 18480-6 (2009).
201. Cai, Weiwei; Zhu, Yanwu; Li, Xuesong; Piner, Richard D. and Ruoff, Rodney S. **Large area few-layer graphene/graphite films as transparent thin conducting electrodes.** Applied Physics Letters (2009), 95, 123115/1-6.

200. Ruoff, R. S., Khoo, K. H.; Chelikowsky, James R. **Electron transport across carbon nanotube junctions decorated with Au nanoparticles: Density functional calculations.** Physical Review B (2009), 79(20), 205422/1-205422/6.
199. Zhu, Yanwu; Cai, Weiwei; Piner, Richard D.; Velamakanni, Aruna and Ruoff, Rodney S. **Transparent self-assembled films of reduced graphene oxide platelets.** Applied Physics Letters (2009), 95, 103104.
198. Li, Xuesong; Cai, Weiwei; Colombo, Luigi; Ruoff, Rodney S. **Evolution of Graphene Growth on Ni and Cu by Carbon Isotope Labeling.** Nano Letters (2009) 9, 4268.
197. Lee, Chen-Guan; Park, Sungjin; Ruoff, Rodney S.; Dodabalapur, Ananth. **Integration of reduced graphene oxide into organic field-effect transistors as conducting electrodes and as a metal modification layer.** Applied Physics Letters (2009), 95, 023304.
196. Kim, Min Chan; Hwang, Gyeong S.; Ruoff, Rodney S. **Epoxide reduction with hydrazine on graphene: A first principles study.** Journal of Chemical Physics (2009), 131 (6), 1-5.
195. Sungjin Park; Dmitriy A. Dikin; SonBinh T. Nguyen; Rodney S. Ruoff. **Graphene Oxide Sheets Chemically Cross-Linked by Polyallylamine.** The Journal of Physical Chemistry C (2009), 113, 15801-15804.
194. Zhao, Y; Inayat, S; Dikin, D A; Singer, J H; Ruoff, R S; Troy, J B. **Patch clamp technique: review of the current state of the art and potential contributions from nanoengineering.** Part N: Journal of Nanoengineering and Nanosystems (2009), 222, 1-11. Editor's Pick.
193. Li, X. S.; Cai, W. W.; An, J. H.; Kim, S.; Nah, J.; Yang, D. X.; Piner, R. D.; Velamakanni, A.; Jung, I.; Tutuc, E.; Banerjee, S. K.; Colombo, L.; Ruoff, R. S. **Large-area synthesis of high-quality and uniform graphene films on copper foils.** Science (2009), 324, 1312-1314.
192. Johnson, J.A.; Benmore, C.J.; Stankovich, S.; Ruoff, R.S. **A neutron diffraction study of nano-crystalline graphite oxide.** Carbon (2009), 47, 2239-2243.
191. Park, Sungjin; Ruoff, Rodney S. **Chemical methods for the production of graphenes.** Nature Nanotechnology (2009), 4, 217-224.
190. Kang, Hosung; Kulkarni, Atul; Stankovich, Sasha; Ruoff, Rodney S.; Baik, Seunghyun. **Restoring electrical conductivity of dielectrophoretically assembled graphite oxide sheets by thermal and chemical reduction techniques.** Carbon (2009), 47, 1520-1525.
189. Lu, Ganhua; Mao, Shun; Park, Sungjin; Ruoff, Rodney S.; Chen, Junhong. **Facile, Noncovalent Decoration of Graphene Oxide Sheets with Nanocrystals.** Nano Research 2 (2009), 192-200.
188. Park, Sungjin; An, Jinho; Jung, Inhwa; Piner, Richard D.; An, Sung Jin; Li, Xuesong; Velamakanni, Aruna; Ruoff, Rodney S. **Colloidal Suspensions of Highly Reduced Graphene Oxide in a Wide Variety of Organic Solvents.** Nano Letters (2009), 9 (4), 1593-1597.
187. Watcharotone, S.; Ruoff, R.S.; Read, F.H. **Possibilities for graphene for field emission: modeling studies using the BEM.** Physics Procedia (2008), 1, 71-75.
186. Fan, Fu-Ren F.; Park, Sungjin; Zhu, Yanwu; Ruoff, Rodney S.; Bard, Allen J. **Electrogenerated Chemiluminescence of Partially Oxidized Highly Oriented Pyrolytic Graphite Surfaces and of Graphene Oxide Nanoparticles.** Journal of the American Chemical Society (2009), 131 (3), 937-939.

185. Jung, Inhwa; Dikin, Dmitriy; Park, Sungjin; Cai, Weiwei; Mielke, Steven L.; Ruoff, Rodney S. **Effect of Water Vapor on Electrical Properties of Individual Reduced Graphene Oxide Sheets**. *Journal of Physical Chemistry C* (2008), 112 (51), 20264-20268.
184. Park, Sungjin; An, Jinho; Piner, Richard D.; Jung, Inhwa; Yang, Dongxing; Velamakanni, Aruna; Nguyen, SonBinh T.; Ruoff, Rodney S. **Aqueous Suspension and Characterization of Chemically Modified Graphene Sheets**. *Chemistry of Materials* (2008), 20(21), 6592-6594.
183. Jash, Panchatapa; Nicholls, Alan W.; Ruoff, Rodney S.; Trenary, Michael. **Synthesis and Characterization of Single-Crystal Strontium Hexaboride Nanowires**. *Nano Letters* (2008), 8(11), 3794-3798.
182. Jung, Inhwa; Dikin, Dmitriy A.; Piner, Richard D.; Ruoff, Rodney S. **Tunable Electrical Conductivity of Individual Graphene Oxide Sheets Reduced at "Low" Temperatures**. *Nano Letters* (2008), 8(12), 4283-4287.
181. Yang, Dongxing; Velamakanni, Aruna; Bozoklub, Gulay; Park, Sungjin; Stoller, Meryl; Piner, Richard D.; Stankovich, Sasha; Jung, Inhwa, Field, Daniel A.; Ventrice Jr, Carl A.; Ruoff, Rodney S. **Chemical analysis of graphene oxide films after heat and chemical treatments by X-ray photoelectron and Micro-Raman spectroscopy**. *Carbon* (2009), 47, 145-152.
180. Cai, Weiwei; Piner, Richard D.; Stadermann, Frank J.; Park, Sungjin; Shaibat, Medhat A.; Ishii, Yoshitaka; Yang, Dongxing; Velamakanni, Aruna; An, Sung Jin; Stoller, Meryl; An, Jinho; Chen, Dongmin; Ruoff, Rodney S. **Synthesis and Solid-State NMR Structural Characterization of ¹³C-Labeled Graphite Oxide**. *Science* (2008), 321 (5897), 1815-1817.
179. Stoller, Meryl D.; Park, Sungjin; Zhu, Yanwu; An, Jinho; Ruoff, Rodney S. **Graphene-Based Ultracapacitors**. *Nano Letters* (2008), 8 (10), 3498-3502.
178. Cantrell, Donald R; Inayat, Samsoun; Taflove, Allen; Ruoff, Rodney S; Troy John B. **Incorporation of the electrode-electrolyte interface into finite-element models of metal microelectrodes**. *Journal of Neural Engineering* (2008), 5(1), 54-67.
177. Ramanathan, T.; Abdala, A. A.; Stankovich, S.; Dikin, D. A.; Herrera-Alonso, M.; Piner, R. D.; Adamson, D. H.; Schniepp, H. C.; Chen, X.; Ruoff, R. S.; Nguyen, S. T.; Aksay, I. A.; Prud'Homme, R. K.; Brinson, L. C. **Functionalized graphene sheets for polymer nanocomposites**. *Nature Nanotechnology* (2008), 3(6), 327-331.
176. Jung, Inhwa; Vaupel, Matthias; Pelton, Matthew; Piner, Richard; Dikin, Dmitriy A.; Stankovich, Sasha; An, Jinho; Ruoff, Rodney S.. **Characterization of Thermally Reduced Graphene Oxide by Imaging Ellipsometry**. *Journal of Physical Chemistry C* (2008), 112(23), 8499-8506.
175. Ramanathan, T.; Fisher, Frank T.; Ruoff, Rodney S.; Brinson, Catherine. **Apparent Enhanced Solubility of Single-Wall Carbon Nanotubes in a Deuterated Acid Mixture**. *Research Letters in Nanotechnology*, Volume 2008, Article ID 296928.
174. Park, Sungjin; Lee, Kyoung-Seok; Bozoklu, Gulay; Cai, Weiwei; Nguyen, SonBinh T.; Ruoff, Rodney S. **Graphene Oxide Papers Modified by Divalent Ions—Enhancing Mechanical Properties via Chemical Cross-Linking**. *ACS Nano* (2008), 2(3), 572-578.
173. Wakabayashi, Katsuyuki; Pierre, Cynthia; Dikin, Dmitriy A.; Ruoff, Rodney S.; Ramanathan, Thillaiyan; Brinson, L. Catherine; Torkelson, John M. **Polymer-Graphite Nanocomposites: Effective Dispersion and Major Property Enhancement via Solid-State Shear Pulverization**. *Macromolecules* (2008), 41, 1905-1908.

172. Hong, Seunghyun; Jung, Sehun; Kang, Sunjung; Kim, Youngjin; Chen, Xinqi; Stankovich, Sasha; Ruoff, S Rodney; Baik, Seunghyun. **Dielectrophoretic deposition of graphite oxide soot particles**. Journal of Nanoscience and Nanotechnology (2008), 8(1), 424-427.
171. Jeong, Hae-Kyung; Lee, Yun Pyo; Lahaye, Rob J. W. E.; Park, Min-Ho; An, Kay Hyeok; Kim, Ick Jun; Yang, Cheol-Woong; Park, Chong Yun; Ruoff, Rodney S.; Lee, Young Hee. **Evidence of Graphitic AB Stacking Order of Graphite Oxides**. Journal of the American Chemical Society (2008),130(4),1362-1366.
170. Lu, Ganhua; Zhu, Liying; Wang, Pengxiang; Chen, Junhong; Dikin, Dmitriy A.; Ruoff, Rodney S.; Yu, Ying; Ren, Z. F. **Electrostatic-Force-Directed Assembly of Ag Nanocrystals onto Vertically Aligned Carbon Nanotubes**, Journal of Physical Chemistry (2007), 111(48), 17919-17922.
169. Ruoff, Rod. **Calling all chemists**. Nature Nanotechnology (2008), 3(1), 10-11.
168. Jung, Inhwa; Pelton, Matthew; Piner, Richard; Dikin, Dmitriy A.; Stankovich, Sasha; Watcharotone, Supinda; Hausner, Martina; Ruoff, Rodney S. **Simple Approach for High-Contrast Optical Imaging and Characterization of Graphene-Based Sheets**. Nano Letters (2007), 7(12), 3569-3575.
167. Mielke, Steven L.; Zhang, Sulin; Khare, Roopam; Ruoff, Rodney S.; Belytschko, Ted; Schatz, George C. **The effects of extensive pitting on the mechanical properties of carbon nanotubes**. Chemical Physics Letters, 446, (2007), 128-132.
166. Dikin, Dmitriy A.; Stankovich, Sasha; Zimney, Eric J.; Piner, Richard D.; Dommett, Geoffrey H. B.; Evmenenko, Guennadi; Nguyen, SonBinh T.; Ruoff, Rodney S. **Preparation and characterization of graphene oxide paper**. Nature, 448, (2007), 457-460.
165. Zhu, Liyingn; Lu, Ganhua; Mao, Shun; Chen Junhong; Dikin, Dmitriy A.; Chen, Xinqi; Ruoff, Rodney S. **Ripening of Silver Nano particles on Carbon Nanotubes**.Nano, 2(3), (2007), 149-156.
164. Watcharotone, Supinda; Dikin, Dmitry A.; Stankovich, Sasha; Piner, Richard; Jung, Inhwa; Dommett, Geoffrey H. B.; Evmenenko, Guennadi; Wu, Shang-En; Chen, Shu-Fang; Liu, Chuan-Pu; Nguyen, SonBinh T.; Ruoff, Rodney S. **Graphene-Silica Composite Thin Films as Transparent Conductors**. Nano Letters, 7(7), (2007), 1888-1892.
Discussed in Nature Research Highlights: Nature 448, 108-109 (12 July 2007)
163. Thangwang, Abel L.; Ruoff, Rodney S.; Swartz, Melody A.; Glucksberg, Matthew R. **An ultra-thin PDMS membrane as a bio-micro/nano interface: fabrication and characterization**. Biomed Microdevices. 9, (2007) 587-589.
162. Chen, Xinqi; Ruoff, Rodney S. **Simple and catalyst-free synthesis of silicon oxide nanowires and nanocoils**. Nano 2(2), (2007), 91-95. *Cover Article*.
161. Zimney, Erik J.; Dommett, Geoffrey H. B.; Ruoff Rodney S. and Dikin, Dmitriy A. **Correction factors for 4-probe electrical measurements with finite size electrodes and material anisotropy: a finite element study**. Meas. Sci. Technol. 18, (2007) 2067-2073.
160. Stankovich, Sasha; Dikin, Dmitriy A.; Piner, Richard D.; Kohlhaas, Kevin A.; Kleinhammes, Alfred; Jia, Yuanyuan; Wu, Yue; Nguyen, SonBinh T.; Ruoff, Rodney S. **Synthesis of graphene-based nanosheets via chemical reduction of exfoliated graphite oxide**. Carbon 45(7), (2007), 1558-1565.

159. Inhwa Jung, Matthew Pelton, Richard Piner, Dmitriy A. Dikin, Sasha Stankovich, Supinda Watcharotone, Martina Hausner, Rodney S. Ruoff. **Simple approach for high-contrast optical imaging and characterization of graphene-based sheets.** Los Alamos National Laboratory, Preprint Archive, Condensed Matter 1-37, (2007), arXiv:0706.0029v1 [cond-mat.mes-hall]
158. Ding, Weiqiang; Guo, Zaoyang; Ruoff, Rodney S. **Effect of cantilever nonlinearity in nanoscale tensile testing.** Journal of Applied Physics 101(3), (2007), 034316/1-034316/10.
157. Kruk, Michal; Kohlhaas, Kevin M.; Dufour, Bruno; Celer, Ewa B.; Jaroniec, Mietek; Matyjaszewski, Krzysztof; Ruoff, Rodney S.; Kowalewski, Tomasz. **Partially graphitic, high-surface-area mesoporous carbons from polyacrylonitrile templated by ordered and disordered mesoporous silicas.** Microporous and Mesoporous Materials 102(1-3), (2007), 178-187.
156. Lu, Shaoning; Guo, Zaoyang; Ding, Weiqiang; Dikin, Dmitriy A; Lee, Junghoon; Ruoff, Rodney. **In situ mechanical testing of templated carbon nanotubes,** Review of Scientific Instruments (2007), Volume Date 2006 77(12), 125101/1-125101/6.
155. Hansma, P K; Turner, P J; Ruoff, R S. **Optimized adhesives for strong lightweight, damage-resistant, nanocomposite materials: new insights from natural materials.** Nanotechnology 18, (2007) 044026.
154. Thangawng, Abel L.; Swartz, Melody A.; Glucksberg, Matthew R.; Ruoff, Rodney S. **Bond-Detach Lithography: A Method for Micro/Nanolithography by Precision PDMS Patterning,** Small 3(1), (2007) 132-138.
153. Chen, Xinqi; Xu, Zhi-Hui; Li, Xiaodong; Shaibat, Medhat A; Ishii, Yoshitaka; Ruoff, Rodney S. **Structural and mechanical characterization of platelet graphite nanofibers.** Carbon 45, (2007) 416-423.
152. Rong, Weizhi; Ding, Weiqiang; Maedler, Lutz; Ruoff, Rodney S.; Friedlander, Sheldon K. **Mechanical Properties of Nanoparticle Chain Aggregates by Combined AFM and SEM: Isolated Aggregates and Networks.** Nano Letters 6(12), (2006) 2646-2655.
151. Calabri, L.; Pugno, N.; Ding W. and Ruoff, R. S. **Resonance of curved nanowires,** J. Phys.: Condens. Matter 18 (2006) S2175-S2183.
150. Stankovich, Sasha; Piner, Richard D.; Nguyen, SonBinh T. and Ruoff, Rodney S. **Synthesis and exfoliation of isocyanate-treated graphene oxide nanoplatelets,** Carbon 44 (15), (2006) 3342-3347.
149. Ruoff, Rodney S. **Special issue on nanocomposites,** Composites Science and Technology 66 (2006) 1099-1101.
148. Xu, Terry T.; Nicholls, Alan W. and Ruoff, Rodney S. **Boron nanowires and novel "tube-catalytic particle-wire" hybrid boron nanostructures,** Nano 1 (2006) 55-63.
147. Ding, W.; Calabri, L.; Kohlhaas, K.M.; Chen, X.; Dikin, D.A.; Ruoff, R.S. **Modulus, Fracture Strength, and Brittle vs. Plastic Response of the Outer Shell of Arc-grown Multi-walled Carbon Nanotubes,** Experimental Mechanics, 47(1) (2007) 25-36.
146. Stankovich, Sasha; Dikin, Dmitriy A.; Dommett, Geoffrey H. B.; Kohlhaas, Kevin M.; Zimney, Eric J.; Stach, Eric A.; Piner, Richard D.; Nguyen SonBinh T. and Ruoff, Rodney S. **Graphene-based composite materials,** Nature 442, (2006) 282-285.
145. Yaling Liu, Jae-Hyun Chung, Wing Kam Liu, and Rodney S. Ruoff, **Dielectrophoretic Assembly of Nanowire,** J. Phys. Chem. B 110 (2006) 14098-14106.

144. Chung, Jae-Hyun; Chen, Xinqi; Zimney, Eric J.; Ruoff, Rodney S. **Fabrication of Nanopores in a 100-nm Thick Si₃N₄ Membrane**, Journal of Nanoscience and Nanotechnology 6 (2006) 2175-2181.
143. Lu, Shaoning; Guo, Zaoyang; Ding, Weiqiang; Ruoff, Rodney S. **Analysis of a microelectromechanical system testing stage for tensile loading of nanostructures**, Review of Scientific Instruments 77 (2006) 056103.
142. Ding, Weiqiang; Calabri, Lorenzo; Chen, Xinqi; Kohlhaas, Kevin M.; Ruoff, Rodney S. **Mechanics of crystalline boron nanowires**, Composites Science and Technology 66 (2006) 1112-1124.
141. Ruoff, Rodney S. **Time, temperature, and load: The flaws of carbon nanotubes**, Proceedings of the National Academy of Science 103(18) (2006) 6779-6780.
140. Chen, Xinqi; Cantrell, Donald R.; Kohlhaas, Kevin; Stankovich, Sasha; Ibers, James A.; Jaroniec, Mietek; Gao, Hongsheng; Li, Xiaodong; Ruoff, Rodney S. **Carbide-derived nanoporous carbon and novel core-shell nanowires**, Chemistry of Materials 18(3) (2006) 753-758.
139. Stankovich, Sasha; Piner, Richard D.; Chen, Xinqi; Wu, Nianqiang; Nguyen, SonBinh T. and Ruoff, Rodney S. **Stable aqueous dispersions of graphitic nanoplatelets via the reduction of exfoliated graphite oxide in the presence of poly(sodium 4-styrenesulfonate)**, Journal of Materials Chemistry 16 (2006) 155-158.
138. Li, Chunyu; Ruoff, Rodney S.; Chou, Tsu-Wei **Modeling of carbon nanotube clamping in tensile tests**, Composites Science and Technology 65(15-16) (2005) 2407-2415.
137. Pugno, Nicola M.; Ruoff, Rodney S. **Nanoscale Weibull Statistics**. Journal of Applied Physics 99(2) (2006) 024301/1-4.
136. Qiao, Yi; Chen, Jie; Guo, Xiaoli; Cantrell, Donald; Ruoff, Rodney and Troy, John **Fabrication of nanoelectrodes for neurophysiology: cathodic electrophoretic paint insulation and focused ion beam milling**, Nanotechnology 16 (2005) 1598-1602.
135. Ramanathan, T.; Fisher, F. T.; Ruoff, R. S.; Brinson, L. C. **Amino-Functionalized Carbon Nanotubes for Binding to Polymers and Biological Systems**. Chem. Mater. 17 (2005) 1290-1295.
134. Zhang, Sulin; Mielke, Steven L.; Khare, Roopam; Troya, Diego; Ruoff, Rodney S.; Schatz, George C.; Belytschko, Ted **Mechanics of defects in carbon nanotubes: Atomistic and multiscale simulations**. Physical Review B 71 (2005) 115403.
133. Lu, Shaoning; Chung, Jaehyun; Ruoff, Rodney S. **Controlled deposition of nanotubes on opposing electrodes**. Nanotechnology 16 (2005) 1765-1770.
132. Zussman, E.; Chen, X.; Ding, W.; Calabri, L.; Dikin, D.A.; Quintana, J.P.; Ruoff, R.S. **Mechanical and structural characterization of electrospun PAN-derived carbon nanofibers**. Carbon 43 (2005) 2175-2185.
131. Ding, W.; Dikin, D. A.; Chen, X.; Piner, R. D.; Ruoff, R. S.; Zussman, E.; Wang, X.; Li, X. **Mechanics of hydrogenated amorphous carbon deposits from electron-beam-induced deposition of a paraffin precursor**, Journal of Applied Physics 98, 014905 (2005).
130. Hsu, H-Y; Sharma, N.; Ruoff, R. S.; Patankar, N. A. **Electro-orientation in Particle Light Valves**, Nanotechnology 16 (2005) 312-319.

129. Huang, Z.; Dikin, D. A.; Ding, W.; Qiao, Y.; Chen, X.; Fridman, Y.; Ruoff, R. S. **Three-dimensional representation of curved nanowires**, *Journal of Microscopy* 216 (2004), 206.
128. McBride, William S.; Ruoff, Rodney S. **Device for rapid sample insertion and extraction in thermal chemical vapor deposition tube furnace**, *Review of Scientific Instrument* 75 (2004), 3351.
127. Xu, Terry T.; Zheng, Jian-Guo; Nicholls, Alan W.; Stankovich, Sasha; Piner, Richard D.; Ruoff, Rodney S. **Single-Crystal Calcium Hexaboride Nanowires: Synthesis and Characterization**, *Nano Letters*, 4(10) (2004), 2051-2055.
126. Pugno, Nicola M.; Ruoff, Rodney S. **Quantized fracture mechanics**, *Philosophical Magazine* 84 (2004), 2829-2845.
125. Mielke, Steven L.; Troya, Diego; Zhang, Sulin; Li, Je-Luen; Xiao, Shaoping; Car, Roberto; Ruoff, Rodney S.; Schatz, George C.; Belytschko, Ted **The role of vacancy defects and holes in the fracture of carbon nanotubes**, *Chemical Physics Letters* 390 (2004), 413-420.
124. Chung, Jaehyun; Lee, Kyong-Hoon; Lee, Junghoon; Ruoff, Rodney S. **Toward Large-Scale Integration of Carbon Nanotubes**, *Langmuir* 20 (2004), 3011-3017.
123. Lu, Shaoning; Dikin, Dmitriy A.; Zhang, Sulin; Fisher, Frank T.; Lee, Junghoon; Ruoff, Rodney S. **Realization of nanoscale resolution with a micromachined thermally actuated testing stage**, *Review of Scientific Instrument*, 75 (2004), 2154.
122. Xu, Terry T.; Zheng, Jian-Guo; Wu, Nianqiang; Nicholls, Alan W.; Roth, John R.; Dikin, Dmitriy A.; Ruoff, Rodney S. **Crystalline Boron Nanoribbons: Synthesis and Characterization**, *Nano Letters*, 4(5) (2004); 963-968.
121. Chen, Xinqi; Zhang, Sulin; Wagner, Gregory J.; Ding, Weiqiang; Ruoff, Rodney S. **Mechanical resonance of quartz microfibers and boundary condition effects**, *Journal of Applied Physics*, 95 (9) (2003), 4823-4828.
120. Zhang, Sulin; Liu, Wing Kim; Ruoff, Rodney S. **Atomistic Simulations of Double-Walled Carbon Nanotubes (DWCNTs) as Rotational Bearings**, *Nano Letters*, 4(2) (2004); 293-297.
119. Zhang, Z.; Dikin, D. A.; Ruoff, R. S.; Chandrasekhar, V., **Conduction in carbon nanotubes through metastable resonant states**, *Europhysics Letters*, 68(5) (2004), 713-719.
118. Velasco-Santos, Carlos; Martinez-Hernandez, Ana L.; Fisher, Frank T.; Ruoff, Rodney; Castano, Victor M. **Improvement of Thermal and Mechanical Properties of Carbon Nanotube Composites through Chemical Functionalization**, *Chem. Mater.*, 15 (23) (2003), 4470-4475.
117. Ruoff, Rodney S.; Qian, Dong; Liu, Wing Kam; **Mechanical properties of carbon nanotubes: theoretical predictions and experimental measurements**, *C. R. Physique* 4 (2003) 993-1008.
116. Ding, W.; Eitan, A.; Fisher, F. T.; Chen, X.; Dikin, D. A.; Andrews, R.; Brinson, L. C.; Schadler, L. S.; Ruoff, R. S. **Direct Observation of Polymer Sheathing in Carbon Nanotube-Polycarbonate Composites**, *Nano Letters*, 3 (11) (2003), 1593-1597.
115. Piner, Richard D.; Xu, Terry T.; Fisher, Frank T.; Qiao, Yi; Ruoff, Rodney S. **Atomic Force Microscopy Study of Clay Nanoplatelets and Their Impurities**, *Langmuir*, 19 (19) (2003), 7995 -8001.
114. Li, Yan; Ruoff, Rodney S.; Chang, Robert P. H., **Boric Acid Nanotubes, Nanotips, Nanorods**,

- Microtubes, and Microtips**, Chemistry of Materials, 15(17) (2003), 3276-3285.
113. Velasco-Santos, C.; Martinez-Hernandez, A. L.; Fisher, F.; Ruoff, R.; Castano, V. M., **Dynamical-mechanical and thermal analysis of carbon nanotube-methyl-ethyl methacrylate nanocomposites**, Journal of Physics D: Applied Physics, 36(12) (2003), 1423-1428.
 112. Chen, Xinqi; Zhang, Sulin; Dikin, Dmitriy; Ding, Weiqiang; Ruoff, Rodney S.; Pan, Lujun; Nakayama, Yoshikazu, **Mechanics of a Carbon Nanocoil**, Nano Letters, 3 (9) (2003), 1299-1304.
 111. Xu, Terry T.; Fisher, Frank T.; Brinson, L. Cate; Ruoff, Rodney S., **Bone-shaped Nanomaterials for Nanocomposite Applications**, Nano Letters, 3 (8) (2003), 1135-1139.
 110. Qian, Dong; Liu, Wing Kam; Subramoney, Shekhar; Ruoff, Rodney S., **Effect of interlayer potential on mechanical deformation of multiwalled carbon nanotubes**, Journal of Nanoscience and Nanotechnology, 3(1/2) (2003), 185-191.
 109. Qian, Dong; Liu, Wing Kam; Ruoff, Rodney S., **Load transfer mechanism in carbon nanotube ropes**, Composites Science and Technology, 63 (11) (2003), 1561-1569.
 108. Shenderova, Olga; Brenner, Donald; Ruoff, Rodney S., **Would Diamond Nanorods Be Stronger than Fullerene Nanotubes?** Nano Letters, 3 (6) (2003), 805-809.
 107. Xu, Terry T.; Piner, Richard D.; Ruoff, Rodney S., **An improved method to strip aluminum from porous anodic alumina films**, Langmuir 19(4) (2003), 1443-1445.
 106. Dikin, D. A.; Chen, X.; Ding, W.; Wagner, G.; Ruoff, R. S., **Resonance vibration of amorphous SiO₂ nanowires driven by mechanical or electrical field excitation**, Journal of Applied Physics 93 (2003), 226.
 105. Legchenkova, I. V.; Prokhvatilov, A. I.; Stetsenko, Yu. E.; Strzhemechny, M. A.; Yagotintsev, K. A.; Avdeenko, A. A.; Eremenko, V. V.; Zinoviev, P. V.; Zoryansky, V. N.; Silaeva, N. B.; Ruoff, R. S., **Structure and photoluminescence of helium-intercalated fullerite C₆₀**, Low Temperature Physics, 28, 942 (2002)..
 104. Qian, Dong; Wagner, Gregory J; Liu, Wing Kam; Yu, Min-Feng; Ruoff, Rodney S., **Mechanics of carbon nanotubes**, Appl. Mech. Rev. 55, 495 (2002)..
 103. Belytschko, T.; Xiao, S. P.; Ruoff, R. **Effects of defects on the strength of nanotubes: experimental-computational comparisons**. Los Alamos National Laboratory, Preprint Archive, Physics (2002), 1-6, arXiv:physics/0205090.
 102. Piner, Richard; Ruoff, Rodney S., **Cross talk between friction and height signals in atomic force microscopy**, Review of Scientific Instruments, (2002), 73 (9), 3392-3394.
 101. Yu, Min-Feng; Wagner, Gregory J.; Ruoff, Rodney S.; Dyer, Mark J., **Realization of parametric resonances in a nanowire mechanical system with nanomanipulation inside scanning electron microscope**, Phys. Rev. B 66, 073406 (2002).
 100. Belytschko, T.; Xiao, S. P.; Schatz, G. C.; Ruoff, R. S., **Atomistic simulations of nanotube fracture**, Phys. Rev. B 65, 235430 (2002).
 99. Piner, R.; Ruoff, R. S., **Length distribution of single-walled carbon nanotubes determined by ac atomic force microscopy**, http://arXiv.org/PS_cache/cond-mat/pdf/0206/0206117.pdf.

98. Gerard Lavin, J.; Subramoney, Shekhar; Ruoff, Rodney S.; Berber, Savas; Tomanek, David., **Scrolls and nested tubes in multiwall carbon nanotubes**, Carbon, (2002), 40(7),1123-1130.
97. Otten, Carolyn Jones; Lourie, Oleg R.; Yu, Min-Feng; Cowley, John M.; Dyer, Mark J.; Ruoff, Rodney S.; Buhro, William E., **Crystalline Boron Nanowires**, Journal of the American Chemical Society, (2002),124(17),4564-4565.
96. Stukalin, E. B.; Avramenko, N. V.; Korobov, M. V.; Ruoff, R., **Ternary system of C₆₀ and C₇₀ with 1,2-dimethylbenzene**, Fullerene Science and Technology, (2001), 9(1),113-130.
95. Yu, Min-Feng; Dyer, Mark J.; Chen, Jian; Dong Qian,; Liu, Wing Kam; Ruoff, Rodney S., **Locked twist in multiwalled carbon-nanotube ribbons**, Phys. Rev. B 64, 241403 (2001).
94. Qian, Dong; Liu, Wing Kam; Ruoff, Rodney S., **Mechanics of C₆₀ in Nanotubes**, J. Phys. Chem. B, 105, 10753-10758 (2001).
93. Yu, M. F.; Dyer, M. J.; Ruoff, R. S., **Structure and mechanical flexibility of carbon nanotube ribbons: An atomic-force microscopy study**, Journal of Applied Physics, 89, 4554-4557 (2001).
92. Yu, M. F.; Kowalewski, T.; Ruoff, R. S., **Structural analysis of collapsed, and twisted and collapsed, multiwalled carbon nanotubes by atomic force microscopy**, Physical Review Letters, 86, 87-90 (2001).
91. Ausman, K. D.; Piner, R.; Lourie, O.; Ruoff, R. S.; Korobov, M., **Organic solvent dispersions of single-walled carbon nanotubes: Toward solutions of pristine nanotubes**, Journal of Physical Chemistry B, 104, 8911-8915 (2000).
90. Yu, M. F.; Yakobson, B. I.; Ruoff, R. S., **Controlled sliding and pullout of nested shells in individual multiwalled carbon nanotubes**, Journal of Physical Chemistry B, 104, 8764-8767 (2000).
89. Faircloth, B.; Rohrs, H.; Tiberio, R.; Ruoff, R. S.; Krchnavek, R. R., **Bilayer, nanoimprint lithography**, Journal of Vacuum Science and Technology B, 18, 1866-1873 (2000).
88. Yu, M. F.; Kowalewski, T.; Ruoff, R. S., **Investigation of the radial deformability of individual carbon nanotubes under controlled indentation force**, Physical Review Letters, 85, 1456-1459 (2000).
87. Lourie, O. R.; Jones, C. R.; Bartlett, B. M.; Gibbons, P. C.; Ruoff, R. S.; Buhro, W. E., **CVD growth of boron nitride nanotubes**, Chemistry of Materials, 12, 1808-1810 (2000).
86. Yu, M. F.; Files, B. S.; Arepalli, S.; Ruoff, R. S., **Tensile loading of ropes of single wall carbon nanotubes and their mechanical properties**, Physical review Letters, 84, 5552-5555 (2000).
85. Yu, M.F.; Lourie, O; Dyer, M.J.; Moloni, K; Kelly, T.F.; Ruoff, R.S., **Strength and breaking mechanism of multiwalled carbon nanotubes under tensile load**, Science, 287, 637-640 (2000).
84. Yu, M. F.; Dyer, M. J.; Skidmore, G. D.; Rohrs, H. W.; Lu, X. K.; Ausman, K. D.; Von Her, J. R.; Ruoff, R. S., **Three-dimensional manipulation of carbon nanotubes under a scanning electron microscope**, Nanotechnology, 10 244-252 (1999).
83. Ausman, K. D.; Rohrs, H. W.; Yu, M. F.; Ruoff, R. S., **Nanostressing and mechanochemistry**, Nanotechnology, 10, 258-262 (1999).

82. Lu, X. K.; Yu, M. F.; Huang, H.; Ruoff, R. S., **Tailoring graphite with the goal of achieving single sheets**, *Nanotechnology*, 10, 269-272 (1999).
81. Lu, X. K.; Huang, H.; Nemchuk, N.; Ruoff, R. S., **Patterning of highly oriented pyrolytic graphite by oxygen plasma etching**, *Applied Physics Letters*, 75, 193-195 (1999).
80. Lu, X. K.; Ausman, K. D.; Piner, R. D.; Ruoff, R. S., **Scanning electron microscopy study of carbon nanotubes heated at high temperatures in air**, *Journal of Applied Physics*, 86, 186-189 (1999).
79. Srivastava, D.; Brenner, D. W.; Schall, J. D.; Ausman, K. D.; Yu, M. F.; Ruoff, R. S., **Predictions of enhanced chemical reactivity at regions of local conformational strain on carbon nanotubes: Kinky chemistry**, *Journal of Physical Chemistry B*, 103, 4330-4337 (1999).
78. Korobov, M. V.; Mirakyan, A. L.; Avramenko, N. V.; Olofsson, G.; Smith, A. L.; Ruoff, R. S., **Calorimetric studies of solvates of C-60 and C-70 with aromatic solvents**, *Journal of Physical Chemistry B*, 103, 1339-1346 (1999).
77. Yu, M. F.; Dyer, M. J.; Rohrs, H. W.; Lu, X. K.; Ausman, K. D.; Ehr, J. V.; Ruoff, R. S., **Manipulation of Carbon Nanotubes Using Scanning Probe Microscopes**, *Nanotechnology*, 10, 244-252 (1999).
76. Che, G.; Lakshmi, B. B.; Martin, C. R.; Fisher, E. R.; Ruoff, R. S., **Chemical vapor deposition based synthesis of carbon nanotubes and nanofibers using a template method**. *Chemistry of Materials*, 10, 260-267 (1998).
75. Korobov, M. V.; Mirakian, A. L.; Avramenko, N. V.; Valeev, E. F.; Neretin, I. S.; Slovokhotov, Y. L.; Smith, A. L.; Olofsson, G.; Ruoff, R. S., **C₆₀ bromobenzene solvate: Crystallographic and thermochemical studies and their relationship to C₆₀ solubility in bromobenzene**. *J. Phys. Chem. B*, 102, 3712-3717 (1998).
74. Moro, L.; Paul, A.; Lorents, D. C.; Malhotra, R.; Ruoff, R. S.; Jiang, L.; Stupian, G. W.; Wu, W. K.; Subramoney, S., **Growth of patterned SiC by ion modification and annealing of C₆₀ films on silicon**. *Applied Surface Science*, 119, 76-82 (1997).
73. Moro, L.; Paul, A.; Lorents, D. C.; Malhotra, R.; Ruoff, R. S.; Jiang, L., **Patterning silicon carbide on silicon by ion modification of C₆₀ films**. *Nucl. Instrum. Methods Phys. Res., Sect. B*, 121, 151-153 (1997).
72. Moro, L.; Paul, A.; Lorents, D. C.; Malhotra, R.; Ruoff, R. S.; Lazzeri, P.; Vanzetti, L.; Lui, A.; Subramoney, S., **Silicon carbide formation by annealing C₆₀ films on silicon**. *J. Appl. Phys.*, 81, 6141-6146 (1997).
71. Lubenets, S. V.; Natsik, V. D.; Fomenko, L. S.; Isakina, A. P.; Prokhvatilov, A. I.; Strzhemechny, M. A.; Aksenova, N. A.; Ruoff, R. S., **The structure, slip systems, and microhardness of C₆₀ crystals**. *Low Temperature Physics*, 23, 251-261 (1997).
70. Boulas, P. L.; Jones, M. T.; Ruoff, R. S.; Lorents, D. C.; Malhotra, R.; Tse, D. S.; Kadish, K. M., **Electrochemical and ESR Characterization of C₈₄ and Its Anions in Aprotic Solvents**. *J. Phys. Chem.*, 100, 7573-9 (1996).
69. R. S. Ruoff, **(NH₄)₃C₆₀: A New C₆₀ Superconductor?** *J. Phys. Chem.*, 100, 8973-6 (1996).
68. Korobov, M. V.; Mirak'yan, A. L.; Avramenko, N. V.; Ruoff, R., **Abnormal temperature dependence of solubility of C₆₀**. *Dokl. Akad. Nauk*, 349, 346-349 (1996).

67. Allard, L. F.; Voelkl, E.; Carim, A.; Datye, A. K.; Ruoff, R., **Morphology and crystallography of nanoparticulates revealed by electron holography**. *Nanostruct. Mater.*, 7, 137-46 (1996).
66. Rivera, W.; Perez, J. M.; Ruoff, R. S.; Lorents, D. C.; Malhotra, R.; Lim, S.; Rho, Y. G.; Jacobs, E. G.; Pinizzotto, R. F., **Scanning tunneling microscopy current-voltage characteristics of carbon nanotubes**. *J. Vac. Sci. Technol.*, B, 13, 327-30 (1995).
65. Tohji, K.; Paul, A.; Moro, L.; Malhotra, R.; Lorents, D. C.; Ruoff, R. S., **Selective and High-Yield Synthesis of Higher Fullerenes**. *J. Phys. Chem.*, 99, 17785-8 (1995).
64. Fomenko, L. S.; Natsik, V. D.; Lubenets, S. V.; Lirtsman, V. G.; Akenova, N. V.; Isakina, A. P.; Prokhvatilov, A. I.; Strezhemechny, M. A.; Ruoff, R. S., **Correlations of low-temperature microplasticity anomalies with structural transformations in C₆₀ crystals**. *Fiz. Nizk. Temp.*, 21(4), 465-8 (1995).
63. Malhotra, R.; Ruoff, R. S.; Lorents, D. C., **Fullerene materials**. *Adv. Mater. Processes*, 147, 29-32 (1995).
62. Moalem, M.; Balooch, M.; Hamza, A. V.; Ruoff, R. S., **Sublimation of Higher Fullerenes and Their Interaction with Silicon (100) Surface**. *J. Phys. Chem.*, 99, 16736-41 (1995).
61. Ruoff, R. S.; Kadish, K. M.; Boulas, P.; Chen, E. C. M., **Relationship between the Electron Affinities and Half-Wave Reduction Potentials of Fullerenes, Aromatic Hydrocarbons, and Metal Complexes**. *J. Phys. Chem.*, 99, 8843-50 (1995).
60. Ruoff R. S.; Lorents, D. C., **Mechanical and thermal properties of carbon nanotubes**. *Carbon*, 33, 925-30 (1995).
59. Sauve, G.; Kamat, P. V.; Ruoff, R. S., **Excited Triplet and Reduced Forms of C₈₄**. *J. Phys. Chem.*, 99, 2162-5 (1995).
58. Adams, G. B.; O'Keeffe, M.; Ruoff, R. S., **Van Der Waals Surface Areas and Volumes of Fullerenes**. *J. Phys. Chem.*, 98, 9465-9 (1994).
57. Yu, D. H.; Andersen, L. H.; Brink, C.; Hvelplund, P.; Lorents, D. C.; Ruoff, R., **Formation and destruction of fullerene anions**. *Mol. Cryst. Liq. Cryst. Sci. Technol.*, Sect. C, 4, 237-40 (1994).
56. Ruoff, R. S., **Carbon nanotubes. The continuing saga**. *Nature*, 372, 731-2 (1994).
55. Boulas, P.; Jones, M. T.; Kadish, K. M.; Ruoff, R. S.; Lorents, D. C.; Tse, D. S., **ESR Characterization of Singly-, Doubly-, and Triply-Reduced C₈₄ Isomers**. *J. Am. Chem. Soc.*, 116, 9393-4 (1994).
54. Subramoney, S.; Ruoff, R. S.; Lorents, D. C.; Chan, B.; Malhotra, R.; Dyer, M. J.; Parvin, K., **Magnetic separation of GdC₂ encapsulated in carbon nanoparticles**. *Carbon*, 32, 507-13 (1994).
53. Hvelplund, P.; Andersen, L. H.; Brink, C.; Yu, D. H.; Lorents, D. C.; Ruoff, R., **Charge transfer in collisions involving multiply charged C₆₀ molecules**. *Z. Phys. D: At., Mol. Clusters*, 30, 323-6 (1994).
52. Malhotra, R.; Satyam, A.; Kumar, S.; Narang, S. C.; Tse, D. S.; Ruoff, R. S.; Lorents, D. C., **Approaches to chemical functionalization of fullerenes**. *Trans. Mater. Res. Soc. Jpn.*, 14B, 1177-9 (1994).
51. Luo, W.; Wang, H.; Ruoff, R. S.; Cioslowski, J.; Phelps, S., **Susceptibility discontinuity in**

- single crystal C₆₀**. Phys. Rev. Lett., 73, 186-8 (1994).
50. Ruoff, R. S.; Lorents, D. C.; Chan, B.; Malhotra, R.; Subramoney, S., **Single crystal metals encapsulated in carbon nanoparticles**. Trans. Mater. Res. Soc. Jpn., 16B, 1589-91 (1994).
 49. Lorents, D. C.; Ruoff, R. S.; Malhotra, R.; Subramoney, S., **Giant nested fullerenes: morphology and metal encapsulation**. Mol. Cryst. Liq. Cryst. Sci. Technol., Sect. C, 4, 15-22 (1994).
 48. Ruoff, R. S.; Tse, D. S.; Malhotra, R.; Lorents, D. C.; Huestis, D. L., **Solubility properties of C₆₀**. Trans. Mater. Res. Soc. Jpn., 14B, 1193-6 (1994).
 47. Tersoff, J.; Ruoff, R. S., **Structural properties of a carbon-nanotube crystal**. Phys. Rev. Lett., 73, 676-9 (1994).
 46. Tomanek, D.; Wang, Y.; Ruoff, R. S., **Stability of fullerene-based systems**. J. Phys. Chem. Solids, 54, 1679-84 (1993).
 45. Wang, Y.; Tomanek, D.; Bertsch, G. F.; Ruoff, R. S., **Stability of C₆₀ fullerite intercalation compounds**. Phys. Rev. B: Condens. Matter, 47, 6711-20 (1993).
 44. Yamawaki, H.; Yoshida, M.; Kakudate, Y.; Usuba, S.; Yokoi, H.; Fujiwara, S.; Aoki, K.; Ruoff, R.; Malhotra, R.; Lorents, D., **Infrared study of vibrational property and polymerization of fullerene C₆₀ and C₇₀ under pressure**. J. Phys. Chem., 97, 11161-3 (1993).
 43. Tea, N. H.; Yu, R. C.; Salamon, M. B.; Lorents, D. C.; Malhotra, R.; Ruoff, R. S., **Thermal conductivity of fullerenes (C₆₀ and C₇₀) crystals**. Appl. Phys. A, A56, 219-25 (1993).
 42. Wang, Y.; Tomanek, D.; Ruoff, R. S., **Stability of M@C₆₀ endohedral complexes**. Chem. Phys. Lett., 208, 79-85 (1993).
 41. Ruoff, R. S.; Malhotra, R.; Huestis, D. L.; Tse, D. S.; Lorents, D. C., **Anomalous solubility behavior of fullerene C₆₀**. Nature, 362, 140-1 (1993).
 40. Ruoff, R. S.; Tse, D. S.; Malhotra, R.; Lorents, D. C., **Solubility of fullerene (C₆₀) in a variety of solvents**. J. Phys. Chem., 97, 3379-83 (1993).
 39. Ruoff, R. S., **Prediction of enthalpies of sublimation of fullerenes from first-order molecular connectivity theory**. Chem. Phys. Lett., 208, 256-8 (1993).
 38. Ruoff, R. S.; Tersoff, J.; Lorents, D. C.; Subramoney, S.; Chan, B., **Radial deformation of carbon nanotubes by van der Waals forces**. Nature, 364, 514-16 (1993).
 37. Ruoff, R. S.; Wang, Y.; Tomanek, D., **Lanthanide- and actinide-based fulleride compounds: potential AxC₆₀ superconductors?** Chem. Phys. Lett., 203, 438-43 (1993).
 36. Ruoff, R. S.; Hickman, A. P., **Van der Waals binding to fullerenes to a graphite plane**. J. Phys. Chem., 97, 2494-6 (1993).
 35. Ruoff, R. S.; Lorents, D. C.; Chan, B.; Malhotra, R.; Subramoney, S., **Single crystal metals encapsulated in carbon nanoparticles**. Science, 259, 346-8 (1993).
 34. Malhotra, R.; McMillen, D. F.; Tse, D. S.; Lorents, D. C.; Ruoff, R. S.; and Keegan, D. M., **Hydrogen-transfer reactions catalyzed by fullerenes**. Energy Fuels, 7, 685-6 (1993).
 33. Krakow, W.; Rivera, N. M.; Roy, R. A.; Ruoff, R. S.; Cuomo, J. J., **The growth of crystalline**

- vapor deposited carbon-60 thin films.** Appl. Phys. A, A56, 185-92 (1993).
32. Moro, L.; Ruoff, R. S.; Becker, C. H.; Lorents, D. C.; Malhotra, R., **Studies of metallofullerene primary soots by laser and thermal desorption mass spectrometry.** J. Phys. Chem., 97, 6801-5 (1993).
 31. Creasy, W. R.; Zimmerman, J. A.; Ruoff, R. S., **Fullerene molecular weight distributions in graphite soot extractions measured by laser desorption Fourier transform mass spectrometry.** J. Phys. Chem., 97, 973-9 (1993).
 30. Krakow, W.; Rivera, N. M.; Roy, R. A.; Ruoff, R. S.; Cuomo, J. J., **Epitaxial growth of C₆₀ thin films on mica.** J. Mater. Res., 7, 784-7 (1992).
 29. Hvelplund, P.; Andersen, L. H.; Haugen, H. K.; Lindhard, J.; Lorents, D. C.; Malhotra, R.; Ruoff, R., **Dynamical fragmentation of C₆₀ fullerene ions.** Phys. Rev. Lett., 69, 1915-18 (1992).
 28. Smart, C.; Eldridge, B.; Reuter, W.; Zimmerman, J. A.; Creasy, W. R.; Rivera, N.; Ruoff, R. S., **Extraction of giant fullerene molecules, and their subsequent solvation in low boiling point solvents.** Chem. Phys. Lett., 188, 171-6 (1992).
 27. Ruoff, R. S.; Emilsson, T.; Jaman, A. I.; Germann, T. C.; Gutowsky, H. S., **Rotational spectra, dipole moment, and structure of the tetrafluorosilane-ammonia dimer.** J. Chem. Phys., 96, 3441-6 (1992).
 26. Chuang, C.; Klots, T. D.; Ruoff, R. S.; Emilsson, T.; Gutowsky, H. S., **Tunneling in a linear diborane(6)-hydrogen chloride (B₂H₆-HCl) dimer.** J. Chem. Phys., 95, 1552-62 (1991).
 25. Ruoff, R. S.; Ruoff, A. L., **The bulk modulus of buckminsterfullerene molecules and crystals: a molecular mechanics approach.** Appl. Phys. Lett., 59, 1553-5 (1991).
 24. Ruoff, R. S.; Thornton, T.; Smith, D., **Density of fullerene-containing soot as determined by helium pycnometry.** Chem. Phys. Lett., 186, 456-8 (1991).
 23. Ruoff, R. S.; Beach, D.; Cuomo, J.; McGuire, T.; Whetten, R. L.; Diederich, F., **Confirmation of a vanishingly small ring-current magnetic susceptibility of icosahedral buckminsterfullerene.** J. Phys. Chem., 95, 3457-9 (1991).
 22. Ruoff, R. S.; Ruoff, A. L., **Is C₆₀ stiffer than diamond.** Nature, 350, 663 (1991).
 21. Ruoff, R. S., **Mutual polarization of monomer charge distribution in hydrogen cyanide dimer, trimer, and infinite chain ((HCN)₂, (HCN)₃, and (HCN)_∞).** J. Chem. Phys., 94, 2717-22 (1991).
 20. Emilsson, T.; Klots, T. D.; Ruoff, R. S.; Gutowsky, H. S., **Rotational spectra and structures of the carbon monoxide- and ammonia-hydrogen cyanide-hydrogen fluoride trimers: coaxial mixing nozzle for reactive species.** J. Chem. Phys., 93, 6971-6 (1990).
 19. Ruoff, R. S.; Klots, T. D.; Emilsson, T.; Gutowsky, H. S., **Relaxation of conformers and isomers in seeded supersonic jets of inert gases.** J. Chem. Phys., 93, 3142-50 (1990).
 18. H. S. Gutowsky, P. J. Hajduk, C. Chuang, and R. S. Ruoff, **Rotational spectrum and structure of the hydrogen cyanide-(carbon dioxide trimer) (HCN-(CO₂)₃) tetramer.** J. Chem. Phys., 92, 862-9 (1990).
 17. Gutowsky, H. S.; Chen, J.; Hajduk, P. J.; Ruoff, R. S., **Rotational spectrum and structure of the hydrogen cyanide-carbon dioxide (CO₂)₂ trimer.** J. Phys. Chem., 94, 7774-80 (1990).

16. Ruoff, R. S.; Emilsson, T.; Chuang, C.; Klots, T. D.; Gutowsky, H. S., **Rotational spectra and structures of small clusters containing the hydrogen cyanide dimer: X-(HCN)₂ with X = carbon monoxide, molecular nitrogen, ammonia, and water.** J. Chem. Phys., 93, 6363-70 (1990).
15. Klots, T. D.; Ruoff, R. S.; Gutowsky, H. S., **Rotational spectrum and structure of the linear carbon dioxide-hydrogen cyanide dimer: dependence of isomer formation on carrier gas.** J. Chem. Phys., 90, 4216-21 (1989).
14. Ruoff, R. S.; Emilsson, T.; Chuang, C.; Klots, T. D.; Gutowsky, H. S., **Rotational spectra and structures of small clusters containing the hydrogen cyanide dimer: (HCN)₂-Y with Y = hydrogen fluoride, hydrogen chloride, trifluoromethane, and carbon dioxide.** J. Chem. Phys., 90, 4069-78 (1989).
13. Klots, T. D.; Emilsson, T.; Ruoff, R. S.; Gutowsky, H. S., **Microwave spectra of noble gas-pyridine dimers: argon-pyridine and krypton-pyridine.** J. Phys. Chem., 93, 1255-61 (1989).
12. Kim, H. L.; Minton, T. K.; Ruoff, R. S.; Kulp, T. J.; McDonald, J. D., **Rovibrational state mixing in the aldehyde C-H stretch fundamental region of acetaldehyde.** J. Chem. Phys., 89, 3955-61.
11. Ruoff, R. S.; Emilsson, T.; Klots, T. D.; Chuang, C.; Gutowsky, H. S., **Rotational spectrum and structure of the linear hydrogen cyanide trimer.** J. Chem. Phys., 89, 138-48 (1988).
10. Gutowsky, H. S.; Chuang, C.; Klots, T. D.; Emilsson, T.; Ruoff, R. S.; Krause, K. R., **Rotational spectra and structures of small clusters: the argon tetramer-hydrogen fluoride(deuterium fluoride)(Ar₄-HF/DF) pentamers.** J. Chem. Phys., 88, 2919-24 (1988).
9. Ruoff, R. S.; Emilsson, T. I.; Klots, T. D.; Chuang, C.; Gutowsky, H. S., **Rotational spectra and structures of small clusters containing the hydrogen cyanide dimer: hydrogen cyanide dimer-argon (HCN)₂-Ar, a T-shaped trimer.** J. Chem. Phys., 88, 1557-63 (1988).
8. Klots, T. D.; Ruoff, R. S.; Chuang, C.; Emilsson, T.; Gutowsky, H. S., **Rotational spectrum and structure of the argon trimer-hydrogen chloride symmetric top.** J. Chem. Phys., 87, 4383-7 (1987).
7. Klots, T. D.; Chuang, C.; Ruoff, R. S.; Emilsson, T.; Gutowsky, H. S., **Rotational spectra and structures of the argon dimer-hydrogen chloride (Ar₂-H³⁵Cl/³⁷Cl) trimers.** J. Chem. Phys., 86, 5315-22 (1987).
6. Ruoff, R. S.; Emilsson, T.; Chuang, C.; Klots, T. D.; Gutowsky, H. S., **Experimental separation of torsional and charge redistribution effects in rotational spectra of hydrogen cyanide dimers.** Chem. Phys. Lett., 138, 553-8 (1987).
5. Kulp, T.; Ruoff, R. S.; McDonald, J. D., **Limits on the lifetimes of intramolecular rovibrational relaxation.** J. Chem. Phys., 82, 2175-9 (1985).
4. Ruoff, R. S.; Kulp, T. J.; McDonald, J. D., **C-H stretch excitation causes conformational interconversion in ground state methyl vinyl ether but not in methyl nitrite.** J. Chem. Phys., 81, 4414-20 (1984).
3. Kulp, T.; Ruoff, R.; Stewart, G.; McDonald, J. D., **Intramolecular vibrational relaxation in 1,4-dioxane.** J. Chem. Phys., 80, 5359-64 (1984).
2. Stewart, G.; Ruoff, R.; Kulp, T.; McDonald, J. D., **Intramolecular vibrational relaxation in**

dimethyl ether. J. Chem. Phys., 80, 5353-8 (1984).

1. Stewart, G. M.; Ensminger, M. D.; Kulp, T. J.; Ruoff, R. S.; McDonald, J. D., **Intramolecular vibrational energy transfer in methyl formate.** J. Chem. Phys., 79, 3190-200 (1983).

Book Chapters

F.T. Fisher, D.A. Dikin, X. Chen, and R.S. Ruoff (2005). "Nanomanipulator Measurements of the Mechanics of Nanostructures and Nanocomposites", *Applied Physics of Nanotubes: Fundamentals of Theory, Optics and Transport Devices*, Slava V Rotkin and Shekhar Subramoney (Eds.), Springer Series in Nanoscience and Technology, Berlin. (Chapter 12, p. 307-337)

R.S. Ruoff and M.-F. Yu (2004). "Nanoscale Mechanical Characterization of Carbon Nanotubes", *Microscale Diagnostic Techniques*, Kenneth S. Breuer (Ed.), Springer Series in Electronics and Electrical Engineering, (Chapter 5, p. 197-226).

Books Edited

1. *Fullerenes : Recent Advances in the Chemistry and Physics of Fullerenes*, Kadish, K. M. and Ruoff, R. S. eds., (The Electrochemical Society, Pennington, NJ, 1994), **94-24**, pp. 1736.
2. *Fullerenes : Recent Advances in the Chemistry and Physics of Fullerenes*, Ruoff, R. S. and Kadish, K. M. eds., (The Electrochemical Society, Pennington, NJ, 1995), **95-10**, pp. 1648.
3. *Fullerenes : Recent Advances in the Chemistry and Physics of Fullerenes and Related Materials*, Kadish, K. M. and Ruoff, R. S. eds., (The Electrochemical Society, Pennington, NJ, 1996), **96-10**, pp. 1368.
4. *Fullerenes : Recent Advances in the Chemistry and Physics of Fullerenes*, Kadish, K. M. and Ruoff, R. S. eds., (The Electrochemical Society, Pennington, NJ, 1997), **97-14**, pp. 1248.
5. *Fullerenes : Recent Advances in the Chemistry and Physics of Fullerenes*, vol. 5, Kadish, K. M. and Ruoff, R. S. eds., (The Electrochemical Society, Pennington, NJ, 1997), PV 97-42, pp. 780
6. *Fullerenes : Recent Advances in the Chemistry and Physics of Fullerenes*, vol. 6, Kadish, K. M. and Ruoff, R. S. eds., (The Electrochemical Society, Pennington, NJ, 1997), PV 98-8, pp. 1362
7. *Fullerenes: Chemistry, Physics, and New Technology.* Eds. Kadish, K. M. and Ruoff, R. S. (Wiley Interscience, John Wiley and Sons, 2002). 968 pages.
8. *Nanotubes, Fullerenes, Nanostructured and Disordered Carbon.* (Proceedings of a Symposium held 17-20 April 2001 in San Francisco, California.) [In: *Mater. Res. Soc., Symp. Proc.*, 2001; 675]. Robertson, John; Friedmann, Thomas A.; Geohegan, David B.; Luzzi, David E.; Ruoff, Rodney S.. USA. (2001).

Conference Proceedings Papers

1. Ruoff, R. S.; Malhotra, R.; Moro, L.; Becker, C. H.; Lorents, D. C., in *Mater. Res. Soc. Symp. Proc.* (Materials Research Society, San Francisco, 1992), Vol. 270, p. 249-53.
2. Ruoff, R. S., in *Recent Trends High Pressure Res., Proc. AIRAPT Int. Conf. High Pressure Sci. Technol.*, edited by Singh, A. K. (Oxford & IBH, 1992), p. 827-7.
3. Rivera, W.; Perez, J. M.; Ruoff, R. S.; Lorents, D. C.; Malhotra, R.; Lim, S.; Rho, Y. G.; Jacobs, E. G.; Pinizzotto, R. F., in *At. Force Microsc./Scanning Tunneling Microsc.*, edited by Cohen, S. H.; Bray, M.

- T.; Lightbody, M. L. (Plenum, 1993), p. 137-41.
4. Yamawaki, H.; Togashi, H.; Kakudate, Y.; Usuba, S.; Yokoi, H.; Fujiwara, S.; Aoki, K.; Ruoff, R., in *Proc. - Electrochem. Soc.*, edited by Kadish, K. M. and Ruoff, R. S. (Electrochemical Society, 1994), Vol. 94-24, p. 594-602.
 5. Tse, D. S.; Ruoff, R. S.; Lorents, D. C. and Malhotra, R., in *Proc. - Electrochem. Soc.*, edited by K. M. Kadish and R. S. Ruoff (Electrochemical Society, 1994), Vol. 94-24, p. 191-9.
 6. Subramoney, S.; Kavelkar, P. V.; Ruoff, R. S.; Lorents, D. C.; Malhotra, R. and Kazmer, A. J., in *Proc. - Electrochem. Soc.*, edited by Kadish K. M. (Electrochemical Society, 1994), Vol. 94-24, p. 1498-1510.
 7. Boulas, P.; Jones, M. T.; Kadish, K. M.; Ruoff, R. S.; Lorents, D. C. and Tse, D. S., in *Proc. - Electrochem. Soc.*, edited by K. M. Kadish and R. S. Ruoff (Electrochemical Society, 1994), Vol. 94-24, p. 995-1006.
 8. Boulas, P.; Jones, M. T.; Kadish, K. M.; Ruoff, R. S.; Lorents, D. C.; Malhotra, R. and Tse, D. S., in *Proc. - Electrochem. Soc.*, edited by K. M. Kadish and R. S. Ruoff (Electrochemical Society, 1994), Vol. 94-24, p. 1007-19.
 9. Luo, W.; Wang, H.; Ruoff, R. S.; Cioslowski, J. and Phelps, S., in *Proc. - Electrochem. Soc.*, edited by Kadish, K. M. and Ruoff, R. S. (Electrochemical Society, 1994), Vol. 94-24, p. 587-93.
 10. Allard, L. F.; Volkl, E.; Subramoney, S. and Ruoff, R., in *Electron Microsc. 1994, Proc. Int. Congr. Electron Microsc., 13th*, edited by Jouffrey, B. and Colliex, C. (Editions de Physique, Les Ulis, Fr., 1994), Vol. 1, p. 305-6.
 11. Ruoff, R. S.; Boulas, P. L.; Kadish, K. M. and Wang, Y., in *Proc. - Electrochem. Soc.*, edited by Kadish, K. M. and Ruoff, R. S. (Electrochemical Society, 1995), Vol. 95-10, p. 287-305.
 12. Allard, L. F.; Voelkl, E.; Subramoney, S. and Ruoff, R. S., in *Electron Hologr., Proc. Int. Workshop*, edited by Tonomura, A. (Elsevier, 1995), p. 219-30.
 13. Subramoney, S.; Ruoff, R. S.; Laduca, R.; Awadalla, S. and Parvin, K., in *Proc. - Electrochem. Soc.*, edited by Kadish, K. M. and Ruoff, R. S. (Electrochemical Society, 1995), Vol. 95-10, p. 563-9.
 14. Ruoff, R. S., in *Proc. - Electrochem. Soc.*, edited by Kadish, K. M. and Ruoff, R. S. (Electrochemical Society, 1995), Vol. 95-10, p. 1049-58.
 15. Ruoff, R. S.; Lorents, D. C.; Laduca, R.; Awadalla, S.; Weathersby, S.; Parvin, K. and Subramoney, S., in *Proc. - Electrochem. Soc.*, 1995), Vol. 95-10, p. 557-62.
 16. Parvin, K.; Weathersby, S. P.; Awadallah, S.; LaDuca, R.; Ruoff, R. S.; Subramoney, S.; Kavelaar, P. Van; Nolan, P. E. and Jiao, J., in *Proc. - Electrochem. Soc.*, edited by Ruoff, R. S. and Kadish, K. M. (Electrochemical Society, Reno, 1995), Vol. 95-10, p. 570-83.
 17. Strzhemechny, M. A. and Ruoff, R. S., in *Proc. - Electrochem. Soc.*, edited by Kadish, K. M. and Ruoff, R. S. Ruoff (Electrochemical Society, 1995), Vol. 95-10, p. 973-83.
 18. Tohji, K.; Paul, A.; Moro, L.; Malhotra, R.; Lorents, D. C. and Ruoff, R. S., in *Proc. - Electrochem. Soc.*, edited by K. M. Kadish and R. S. Ruoff (Electrochemical Society, 1995), Vol. 95-10, p. 51-65.
 19. Ruoff, R. S.; Olofsson, G. and Wadsoe, I., in *Proc. - Electrochem. Soc.*, edited by Kadish, K. M. and Ruoff, R. S. (Electrochemical Society, 1995), Vol. 95-10, p. 1519-31.
 20. Subramoney, S.; Ruoff, R. S.; Laduca, R. and Parvin, K., in *Proc. - Electrochem. Soc.*, edited by Kadish, K. M. and Ruoff, R. S. (Electrochemical Society, 1996), Vol. 96-10, p. 728-739.
 21. Korobov, M. V.; Mirakyan, A. L.; Avramenko, N. V.; Odinec, I. L. and Ruoff, R. S., in *Proc. - Electrochem. Soc.* (Electrochemical Society, 1996), Vol. 96-10, p. 5-16.
 22. Lavut, E. G.; Chelovskaya, N. V.; Senyavin, V. M.; Korobov, M. V. and Ruoff, R. S., in *Proc. - Electrochem. Soc.*, edited by Kadish, K. M. and Ruoff, R. S. (Electrochemical Society, 1996), Vol. 96-10, p. 522-529.
 23. Moro, L.; Paul, A.; Lorents, D. C.; Malhotra, R.; Ruoff, R. S.; Jiang, L. Q.; P. Lazzeri,; Vanzetti, L. and Lui, A.; in *Fullerenes Fullerene Nanostruct., Proc. Int. Wintersch. Electron. Prop. Novel Mater., 10th*,

edited by H. Kuzmany (World Scientific, 1996), p. 605-612.

24. Bacsa, W. S.; LaDuca, R.; Hoerter, J.; Chibante, F.; Subramoney, S.; Lavin, J. G.; Parvin, K. and Ruoff, R. S., in *Proc. -Electrochem. Soc.*, edited by Kadish, K. M. and Ruoff, R. S. (Electrochemical Society, Reno, 1996), Vol. 96-10, p. 758-770.
25. Olofsson, g.; Wadsoe, I. and Ruoff, R. S., in *Proc. - Electrochem. Soc.*, edited by Kadish, K. M. and Ruoff, R. S. (Electrochemical Society, 1996), Vol. 96-10, p. 17-31.
26. Bacsa, W. S.; Walter, C. W.; Awadallah, S.; McGinnis, S.; Subramoney, S.; Ager, J. W.; Parvin, K. and Ruoff, R. S., in *Proc. -Electrochem. Soc.*, edited by Kadish, K. M. and Ruoff, R. S. (Electrochemical Society, 1996), Vol. 96-10, p. 749-757.
27. Irons, S. H.; Nemchuk, N. I.; Rohrs, H. W.; Kowalewski, T.; Faircloth, B. O.; Krchnavek, R. R. and Ruoff, R. S., in *Proc. -Electrochem. Soc.*, edited by Kadish, K. M. and Ruoff, R. S. (Electrochemical Society, Montreal, 1997), Vol. 97-14, p. 1248.
28. Korobov, M. V.; Avramenko, N. V.; Stukalin, E. B. and Ruoff, R. in *Proc. -Electrochem. Soc.*, edited by Kadish K. M. and Ruoff, R. S. (Electrochemical Society, 1998), Vol. 98-8, p. 565.
29. Robertson, John; Friedmann, Thomas A.; Geohegan, David B.; Luzzi, David E.; Ruoff, Rodney S., Nanotubes, Fullerenes, Nanostructured and Disordered Carbon. (*Proceedings of a Symposium held 17-20 April 2001 in San Francisco, California.*) [In: Mater. Res. Soc., Symp. Proc., 2001; 675]. (2001)
30. Yu, Min-Feng; Dyer, Mark J.; Ruoff, Rodney S. Carbon nanotubes: objects of well-defined geometry for new studies in nanotribology. Nanotribology: Critical Assessment and Research Needs, [Based on the Nanotribology Workshop], Gaithersburg, MD, United States, Mar. 13-15, 2000 (2003), Meeting Date 2000, 109-113.
31. Chung, J.; Lee, J.; Ruoff, R. S. and Liu, W. K., Integration of Single Multi-Walled Carbon Nanotube on Micro Systems, ASME conference, IMECE2002-33325, Nov. 17-22, 2002, New Orleans, Louisiana.
32. Troy, John B; Cantrell, Donald R; Taflove, Allen; Ruoff, Rodney S., Modeling the electrode-electrolyte interface for recording and stimulating electrodes. Conference proceedings Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Conference (2006), 1 879-81.

Patents granted

1. Eidelloth, W.; Busch, J. T.; Gambino, R. J.; Ruoff, R.; Tesche, C. D. *Superconducting thin film with fullerenes and method of making*, US 5332723 serial number 098094 July 26, 1994 (Date of patent)
2. Eidelloth, W.; Busch, J. T.; Gambino, R. J.; Ruoff, R.; Tesche, C. D. *Method of making high Tc superconducting thin films with fullerenes by evaporation*, US 5356872 serial number 215778 October 18, 1994 (Date of patent)
3. Ruoff, R. S.; Lorents, D. C.; Malhotra, R.; Dyer M. J. *et al.*, *Carbon nanoencapsulates*, US 5547748 serial number 182283 August 20, 1996 (Date of patent)
4. Ruoff, R. S., *Street and ice hockey stick*, US 5685792 serial number 561912 November 11, 1997 (Date of patent)
5. Ruoff, R. S., *Designer Particles of Micron and sub-Micron dimension*, US 6284345 September 4 2001 (Date of patent)
6. Stankovich, S.; Nguyen, S. T.; Ruoff, R. S., *Stabel dispersions of polymer-coated graphitic nanoplatelets*, US 7914844 serial number 11600679 March 29, 2011 (Date of patent)
7. Colombo, L.; Wallace, R. M.; Ruoff, R. S., *Synthesizing graphene from metal-carbon solutions using ion implanatation*, US 8461028 B2 serial number 13647077 June 11, 2013 (Date of patent)
8. Colombo, L.; Li, X.; Ruoff, R. S., *Graphene synthesis by chemical vapor deposition*, US 8470400 B2 June 25, 2013 (Date of patent)

(>5 additional patent filings are “in process” as of March, 2013)

Invited Presentations

A short list of many invited presentations is provided here:

- 1 Annual meetings of the ACS, MRS, APS, ECS, AiCHE, AVS, American Society of Composites (ASC), Society of Experimental Mechanics (SEM), ASME, Society of Experimental Science (SES), AVS, Advanced Coating Symposium of TAPPI
- 2 Invitations to the National Academy of Sciences (NAS); National Science Foundation; NASA Research Centers - Ames, Langley, Johnson, Marshall and Glenn; DOE Labs - Argonne, ORNL, LBL; workshops sponsored by ARO; Naval Research Laboratory; and the Air Force Research Laboratory
- 3 Invitations to a large number of universities, including (among others) in the United States: Auburn, Arizona, ASU, Cal Tech, UCSB, UCLA, UC-Berkeley, UC-Boulder, San Jose State, Stanford, Connecticut, Delaware, UIUC, Illinois-Chicago, Chicago, Northwestern, Purdue, Kansas State, Kentucky, Louisville, Harvard, Michigan, Washington U. - St. Louis, Cornell, Rochester, Brown, Rutgers, Princeton, North Carolina -Chapel Hill, North Carolina State, Ohio State, Dayton, Case Western, Oklahoma, Oklahoma State, Pennsylvania, Carnegie Mellon, South Carolina, Texas-Austin, Rice, Wisconsin-Madison, Texas A&M, Rice, MIT, Boston College, Univ. of Rochester, Texas State, University of Texas-Dallas, University of Houston, and others
- 4 Invited lectures abroad include: Switzerland: Univ. of Basel, Univ. of Fribourg, EPFL, ETH Zurich; Japan: U. Tokyo, Mie University, Nagoya University, Tokyo Metropolitan University, NIMC (a national lab located in Tsukuba, Japan); Mexico: UNAM (Mexico City), Univ. of Queretaro (Queretaro, Mexico); Colombia: Univ. de los Andes and National University (Bogota), Univ. del Valle (Cali), Univ. de Antioquia (Medellin); Canada: Univ. of Toronto, Univ. of Alberta; Hong Kong: City University of Hong Kong and HKUST; Italy: Univ. of Perugia; Russia: Moscow State University; South Korea: Seoul National University, KAIST, Yonsei University, Sungkyunkwan University; Greece: National University in Athens. Turkey: Bogacizi, Koc, ITU, Sabanci Universities, all in Istanbul, conferences held in Hong Kong, Basel, Paris, Tokyo, Berlin, Sussex, Perugia, Cancun, Buenos Aires, Toronto, Montreal, Quebec City, St. Petersburg, many others.
- 5 Invitations to industrial research labs: IBM Watson, IBM Almaden, Zyvex, DuPont, Dow Chemical (Midland, MI), Cabot Microelectronics, Inc., UOP LLC., Gas Technology Institute
- 6 Invitations to a number of trade or not-for-profit organizations such as the Chicago Micro Nano Community, the high-tech club of the Union Club of Chicago and others.

Current and Recent Teaching Activities

At Northwestern University:

Nanotechnology (ME 385)

Manipulation of matter at the nanometer length scale to produce useful devices and materials; nanoscale sensors; mechanical & electrical systems; molecular electronics for memory and computing; novel materials; scientific and engineering properties of nanoscale systems. Students contribute a term paper and end-of-the-quarter oral presentation on the term paper.

Selected Topics in Nanotechnology (ME 495)

Studies on several topics related to nanotechnology; similar in format to ME 385 but at level appropriate for graduate students. Students contribute a term paper and end-of-the-quarter

oral presentation on the term paper.

Nanotechnology: Manufacturing and Business Opportunities (ME 497)

This course assessed opportunities in manufacturing and in business related to the emerging field of nanotechnology. Invited speakers from the business community present their perspective on business opportunities & challenges presented by nanotechnology and also some of the manufacturing issues faced. Students from the Kellogg School of Business typically participated along with some employees of local Chicago-area companies.

Experimental Engineering (ME224)

This course covered instrumentation and the use of experiments to evaluate real-world systems. Basic, practical electronics, computer data acquisition, programming and signal conditioning are taught and then applied in experiments that investigate heat transfer, fluids mechanics, thermodynamics and structural dynamics.

Thermodynamics I (ME220)

The objective of the science of thermodynamics is to describe the state of matter and its interactions with surroundings in terms of macroscopic properties such as temperature, pressure, etc. The course introduced the fundamentals of the science of classical thermodynamics. Historical perspectives on the evolution of this field and its gradual development into a modern branch of science will be presented. The applications of the First and the Second Laws of thermodynamics to the analysis of performance and efficiency of pumps, compressors, turbines, nozzles, diffusers, and other engineering systems will be discussed.

At UT Austin:

Nanoscale Science and Technology (ME386Q)

Manipulation of matter at the nanometer length scale to produce useful devices and materials; nanoscale sensors; mechanical & electrical systems; molecular electronics for memory and computing; novel materials; scientific and engineering properties of nanoscale systems. Graduate students contribute a term paper and end-of-the-quarter oral presentation on the term paper.

Nanomaterials: Synthesis and Uses (ME386Q)

This graduate course covers the synthesis and uses of nanomaterials. Students contribute a term paper and end-of-the-quarter oral presentation on the term paper.

Global Environment and Engineering (ME 397). Issues related to both the global environment and engineering/science are presented and debated and discussed in this graduate class. Students contribute a term paper and end-of-the-quarter oral presentation on the term paper.