

Rensselaer Physics Department Activities

APRIL 2009 – JUNE 2009

(Rensselaer Students are underlined)

HONORS AND AWARDS

Wang

- Gwo-Ching Wang, Professor of Physics has been appointed the Travelstead Institute Chair.

XC Zhang

- Recipient of the William H. Wiley 1866 Distinguished Faculty Award.
- US Patent#7531802, Method of analyzing a remotely-located object utilizing an optical technique to detect terahertz radiation, Xi-Cheng Zhang, Jianming Dai, and Xie Xu. Awarded. May 12, 2009.

INVITED TALKS

Eah

- "2D Self-Assembly of Charged Nanoparticles in Non-Polar Solvents", Sang-Kee Eah, The 13th International Conference and Surface and Colloid Science (ICSCS) and 83rd ACS Colloid and Surface Science Symposium, New York City, June 15-19.

Lu

- Toh-Ming Lu, "Nanostructures for energy conversion applications", Symposium on Advanced Materials for Greenhouse Gas Reduction", CAMP, Albany, April 3, 2009.

Newberg

- "The LAMOST Galactic Structure Survey," LAMOST International review, for the Galactic Structure Survey Working Group, May 29, 2009
- "What Textbooks Don't Tell You About the Milky Way," Physics Dept. Colloquium, Hartwick College, May 11, 2009
- "Visualizing the Milky Way: SDSS to LAMOST," invited speaker, Astronomical Society of New York, April 18, 2009
- "Visualizing the Milky Way with SDSS, SEGUE and LAMOST," Astronomy Colloquium, Rochester Institute of Technology, February 9, 2009
- "Discovery of the Expanding Universe," Heidi Newberg, Albany Humanist Society, Albany, NY, February 8, 2009
- "Discovering the Milky Way: Uncovering the Mysteries of the Universe in our own Backyard," Physics Colloquium, Rensselaer Polytechnic Institute, February 4, 2009

Schubert

- **(Invited)** E. Fred Schubert and Jong Kyu Kim "Low-refractive index materials – A new class of optical thin-film materials for photonics applications" *Conference on Lasers and Electro-optics (CLEO / IQEC)* Baltimore, Maryland, May 31 – June 5 (June 2009)

- **(Invited)** E. Fred Schubert and Jong Kyu Kim “Energy implications of solid-state lighting technology” OSA 2009 Topical Meeting, Optics and Photonics for Advanced Energy Technology, Massachusetts Institute of Technology (MIT), Cambridge MA, June 24 and 25 (June 2009)

Yamaguchi

- “GHz-THz Acoustic Spectroscopy and Mechanical/Thermal Properties of Nanoscale Materials”, Masashi Yamaguchi, April 30, SUNY Binghamton, Binghamton, NY.

XC Zhang

- “Recent progress of THz ABCD,” X.-C. Zhang, Capital Normal University of Beijing, China, April 7, 2009.
- “Broadband (0.3~11THz) reflection spectroscopy using terahertz air photonics,” Xiaoyu Guo, I-Chen Ho and X.-C. Zhang, MRS Spring Meeting, San Francisco, April 14, 2009.
- “THz air photonics,” J.M. Dai, X. Xie, Y.Q. Chen, N. Karpowicz, X.F. Lu, X.Y. Guo, J. Liu, I.-C. Ho, and X.-C. Zhang, 1st THz Filamentation Workshop, Laval University, Quebec, Canada, May 23, 2009.
- “Recent progress on closing the THz gap with THz air photonics,” X.-C. Zhang, SPIE Photonic North, Quebec City, Quebec, Canada, May 24, 2009.
- “THz air photonics,” X.-C. Zhang, 9th International Centre for Quantum Structure Annual Workshop, Beijing, China, June 9, 2009.
- “Recent progress on closing the THz gap with THz air photonics,” X.-C. Zhang, 9th International Centre for Quantum Structure Annual Workshop, Taiyuan, China, June 11, 2009.
- “Recent progress of THz sensing and imaging application,” X.-C. Zhang, International Symposium on Photoelectronic Detection and Imaging 2009, Beijing, China, June 19, 2009.
- “Recent progress of THz sensing and application,” X.-C. Zhang, Symposium O, Compound Semiconductor Photonics: Materials, Devices, and Integration, International Conference on Materials for Advanced Technologies, Singapore, June 29, 2009.
- “Recent progress on closing the THz gap with pulsed THz waves,” X.-C. Zhang, Institute of Material Research and Engineering (IMRE), Singapore, June 30, 2009.

MEETING ATTENDANCE

Kar

- American Physical Society March meeting, Pittsburgh, PA, 15th March, 2009 – 18th March 2009
- Materials Research Society Spring meeting, San Francisco, CA, 12th April, 2009 – 16th April 2009
- On-Chip Connectivity for End-of-Roadmap CMOS, SUNY Albany, Albany, NY, 23rd June, 2009

Newberg

- LAMOST Galactic Structure Survey Working Group meeting, May 28, 2009, Beijing, China
- Astronomical Society of New York meeting, April 17-18, 2009
- LAMOST Galactic Structure Survey Working Group meeting, March 9, 2009, Beijing, China
- 213th American Astronomical Society Meeting, Long Beach, CA, January 4-8, 2009

OTHER PROFESSIONAL TRAVEL

Newberg

- National Academy of Sciences in Beijing, March 6-14, 2009, to negotiate preliminary MOU for US-Chinese partnership in Galactic astronomy
- NSF Panel review, panel chair, April 29- May 1, 2009

- National Academy of Sciences in Beijing, May 23- June 2, 2009, International review of the LAMOST project science plan

Wang

- Visited NSF program monitor Joan Fyre, Washington DC, April 16, 2009.
- NSF panelist, Washington DC. May 13, 2009.

Yamaguchi

- Travel to Sandia NL to discussion on research collaboration with RPI, Sandia NL, Stanford U., Idaho NL, April 17-18, Albuquerque, NM.

PRESENTATIONS (presenter in bold)

Kar

- Density Functional Theory Design of All-metallic Single-wall Carbon Nanotubes, Li Chen, **Swastik Kar**, Saroj Nayak and Pulicke Ajayan, APS March meeting 2009
- High-yield production of graphene sheets by chemical exfoliation of graphite, X. An, **S. Kar**, M. Washington and S.K. Nayak, T.J. Simmons, APS March meeting 2009
- Electrical Characterization of Carbon Nanotube Bundles Synthesized from Chemical Vapor Deposition of Ferrocene, **C.S. Wolfe**, R. Shah, X. Zhang, S. Talapatra, X. An and S. Kar, APS March meeting, 2009
- Ab-initio design of all-metallic single-wall carbon nanotubes, **Swastik Kar**, Li Chen, Saroj Nayak, Pulickel M. Ajayan, MRS Spring meeting, 2009

Newberg

- “Constraining the Orbit of a Cold Stellar Stream in the Galactic Spheroid,” Willett, B.A., Newberg, H.J., Zhang, H.T., & Yanny, B., Rensselaer Polytechnic Institute School of Science Poster Session. May 1, 2009.
- “An Orbit Fit to the Grillmair Dionatos Cold Stellar Stream,” Willett, Benjamin A., Meeting of the Astronomical Society of New York, Rochester Institute of Technology, April 18, 2009
- “Constraining the Orbit of a Cold Stellar Stream in the Galactic Spheroid,” Willett, B.A., Newberg, H.J., Zhang, H.T., & Yanny, B., *Bulletin of the American Astronomical Society*, Meeting 213, #425.09, 2009
- “Development of a Milky Way Substructure Catalog and Potential Dwarf Galaxy Detection,” Dellomo, J., Newberg, H.J., *Bulletin of the American Astronomical Society*, Meeting 213, #425.11, 2009
- “Development of a Milky Way Substructure Catalog and Potential Dwarf Galaxy Detection,” Cole, N., Newberg, H.J., Magdon-Ismail, M., Desell, T., Szymanski, B., & Varela, C., *Bulletin of the American Astronomical Society*, Meeting 213, #425.10, 2009
- “Astronomy for Earth Science Teachers, Part II”, Heidi Newberg & Ben Willett, Capital Region BOCES Teacher Training, Albany, New York, March 5, 2009
- “The LAMOST Spectroscopic Survey of Milky Way Stars (LEGUE),” Newberg, H.J., Chinese LAMOST Project, Participants in LAMOST, US, *Bulletin of the American Astronomical Society*, Meeting 213, #425.11, 2009

Wang

- Reflection high energy electron diffraction (RHEED) study of nanostructures: From diffraction patterns to surface pole figures, Fu Tang, Toh-Ming Lu and **Gwo-Ching Wang**, MRS spring 2009, Symp. GG Electron crystallography for materials research, April 13-14, 2009, San Francisco, CA.
- Real Time Determination of Lattice Deformation Due to Shock Wave Compression, **Patrick Snow**, Gwo-Ching Wang, RPI, and Raymond Gamache, NSWC Indian Head,

University/Laboratory Initiative, NUWC annual review, Newport, RI, June 2-4, 2009.

XC Zhang

- “Physics of THz Gas Photonics,” **Nick Karpowicz** and X.-C. Zhang, 1st THz Filamentation Workshop, Laval University, Quebec, Canada, May 23, 2009.
- “THz REEF from Gas Plasma,” **Jingle Liu** and X.-C. Zhang, 1st THz Filamentation Workshop, Laval University, Quebec, Canada, May 23, 2009.
- “The development of THz ABCD spectrometer for broadband spectroscopy,” **Karen Ho**, Xiaoyu Guo and X.-C. Zhang, 1st THz Filamentation Workshop, Laval University, Quebec, Canada, May 23, 2009.

PAPERS PUBLISHED

Kar

- Title: A Generic Synthetic Approach to Interconnected Nanowire/nanotube and Nanotube/ nanowire/ nanotube Heterojunctions with Branched Topology
Authors: Guowen Meng, Fangming Han, Xianglong Zhao, Bensong Chen, Dachi Yang, Jianxiong Liu, Mingguang Kong, Xiaoguang Zhu, Qiaoling Xu, Yung Joon Jung, Yajun Yang, Zhaoqin Chu, Min Ye, Swastik Kar, Robert Vajtai, and Pulickel M. Ajayan
Journal: *Angewandte Chemie*, in press (2009)
- Title: Luttinger Liquid to Al'tshuler-Aronov Transition in Disordered, Many-Channel Carbon Nanotubes
Authors: S. Kar, C. Soldano, L. Chen, S. Talapatra, R. Vajtai, S.K. Nayak and P.M. Ajayan
Journal: *ACS Nano*,
Volume, pages, date: 3 207 (2009)
- Title: Ionically Self Assembled Polyelectrolyte Based Carbon Nanotube Fibers
Authors: Sandeep Razdan, Prabir Patra, Lijie Ci, Swastik Kar, Robert Vajtai, Akos Kukovecz, I. Kiricsi, Zoltan Konya, Pulickel Ajayan.
Journal: *Chemistry of Materials*,
Volume, pages, date: in press 2009
- Title: Enhancement of Electrical performance of Ultra-long multi-wall carbon nanotube arrays by Au/Pd coating and High-Bias Treatment
Authors: S. Talapatra, S. Kar, R. Shah, C. Schenk, X.F. Zhang
Journal: *Science of Advanced Materials*, Invited Article
Volume, pages, date: in press 2009
- Title: Ferrocene Derived Carbon Nanotubes and Their Application as Electrochemical Double Layer Capacitor Electrodes
Authors: R. Shah, X.F. Zhang, X. An, S. Kar and S. Talapatra
Journal: *Journal of Nanoscience and Nanotechnology*, Special issue on carbon nanotubes
Volume, pages, date: in press, 2009
- Title: Fabrication and Electrical Characterization of Densified Carbon Nanotube Micro-Pillars for IC Interconnection
Authors: Zhengchun Liu, Lijie Ci, Swastik Kar, Pulickel M. Ajayan, and Jian-Qiang Lu
Journal: *IEEE Transactions on Nanotechnology*,
Volume, pages, date: 8 196 (2009)

Lu

- “Enhanced pyroelectric crystal D—D nuclear fusion using tungsten nanorods”, Donald J. Gillich [a](#), Ranganath Tekib, Travis Z. Fullema, Andrew Kovanena, Ezekiel Blain, Douglas B. Chrisey, Toh-Ming Lu, Yaron Danon, *Nano Today* 4, 227 (2009)
- “Reflection High Energy Electron Diffraction (RHEED) Study of Nanostructures: From Diffraction

Patterns to *Surface Pole Figures*”, Fu Tang, Toh-Ming Lu, and Gwo-Ching Wang, MRS Symp. Proc., submitted.

- “UV Nanoimprint Lithography of sub-100 nm Nanostructures Using a Novel UV Curable Epoxy Siloxane Polymer”, Dexian Ye, Pei-I Wang, Zhuqiu Ye, Ya Ou, Rajat Ghoshal, Ramkrishna Ghoshal, and Toh-Ming Lu, JVST, submitted.

Newberg

- “Statistical Properties of Blue Horizontal Branch Stars in the Spheroid: Detection of a Moving Group ~50 kpc from the Sun,” Harrigan, M., Newberg, H.J., Newberg, L.A., Yanny, B., Beers, T.C., Lee, Y.S., & Re Fiorentin, P., *Monthly Notices of the Royal Astronomical Society*, submitted, 2009
- “Discovery of a New, Polar-Orbiting Debris Stream in the Milky Way Stellar Halo,” Newberg, H.J., Yanny, B., & Willett, B.A., *The Astrophysical Journal Letters*, in press, 2009
- “Tracing Sagittarius Structure with SDSS and SEGUE Imaging and Spectroscopy,” Yanny, B., Newberg, H.J., and 13 co-authors, *The Astrophysical Journal*, in press, 2009
- “The Seventh Data Release of the Sloan Digital Sky Survey,” Abazajian, K.N. and 203 co-authors, *The Astrophysical Journal Supplement*, **182**, 543, 2009
- “An Orbit Fit for the Grillmair Dionatos Cold Stellar Stream,” Willett, B. A., Newberg, H.J., Zhang, H.T., Yanny, B., & Beers, T.C., *The Astrophysical Journal*, **697**, 207, 2009
- “SEGUE: A Spectroscopic Survey of 240,000 Stars with $g = 14-20$,” Yanny, B., Rockosi, C., Newberg, H.J., and 105 co-authors, *The Astronomical Journal*, **137**, 4377, 2009
- “Deciphering Galaxy Formation with Resolved Stellar Populations,” Wyse, R.F.G., Beers, T., Bullock, J., Cunha, K., Dey, A., Fulbright, J., Johnston, K., Newberg, H., Olsen, K., Rockosi, C., & Smith, V., *Astro2010: The Astronomy and Astrophysics Decadal Survey*, Science White Papers, no. 328, 2009

Wang

- “Size control of Cu nanorods through oxygen-mediated growth and low-temperature sintering”, Pei-I Wang, T.C. Parker, T. Karabacak, G.-C. Wang and T.-M. Lu, *Nanotechnology* 20 (8), 085605 (2009).
- “*In-situ* RHEED study of epitaxial growth of Cu on NaCl (100) under oblique angle vapor deposition”, C. Gaire, F. Tang, and G.-C. Wang, *Thin Solid Films* 517, 4509 (2009).

Yamaguchi

- “TERAHERTZ WAVE GENERATION IN NITROGEN GAS USING SHAPED OPTICAL PULSES”, Masashi Yamaguchi and Jayashis Das, *Journal of Optical Society of America B*, accepted for publication 2009.
- “ACOUSTIC VIBRATIONS IN SILICON SUBMICRON SPIRAL ARRAYS”, Masashi Yamaguchi, Jianxun Liu, Dexian Ye, and Toh-Ming Lu, *Journal of Applied Physics*, accepted for publication 2009.

XC Zhang

- Nicholas Karpowicz, Xiaofei Lu and X.-C. Zhang, “Terahertz Gas Photonics,” topical review paper, *Journal of Modern Optics*, **56**, 1137–1150 (2009).
- Qian Song, P.Y. Han, Nicholas Karpowicz and X.-C. Zhang, “Temperature dependent terahertz spectroscopy of allopurinol”, *Journal of Infrared, Millimeter, and Terahertz Waves*, **30**, 461 (2009).
- D.B. Veksler, A.V. Muravjov, V.Yu. Kachorovskii, T.A. Elkhatib, K.N. Salama, X.-C. Zhang, M.S. Shur, “Imaging of field-effect transistors by focused terahertz radiation,” *Solid-State Electronics* **53**, 571–573 (2009).
- Nicholas Karpowicz, Xiaofei Lu and X.-C. Zhang, “The role of tunnel ionization in terahertz gas photonics,” invited paper, *Laser Physics*. (2009).

- P.Y. Han, Wei Liu, Ya-Hong Xie, and X.-C. Zhang, "Graphene and terahertz science," WuLi. June issue (2009).
- Xiaofei Lu, Nicholas Karpowicz, and X.-C. Zhang, "Broadband THz detection with selected gases," JOSA B **26**, A66 (2009).
- Jian Chen, Pengyu Han, and X.-C. Zhang, "Terahertz-field-induced second-harmonic generation in beta barium borate crystal and its application in terahertz detection," Appl. Phys. Letts. (2009). In press.
- Jianming Dai, Nicholas Karpowicz, and X.-C. Zhang, "Coherent control of polarization of terahertz waves generated from two-color laser-induced gas plasma," Phys. Rev. Letts. (2009). In press.
- Benjamin Clough, David Hurley, Pengyu Han, Jun Liao, Rena Huang, X. -C. Zhang, "Detection of terahertz pulses using a modified sagnac interferometer," Sensors, 2009. In press.
- Jingle Liu and X.-C. Zhang, "Optical properties of alpha barium borate in terahertz range," J. of Appl. Phys. (2009). In press.
- Jingle Liu and X.-C. Zhang, "Terahertz radiation-enhanced-emission-of-fluorescence from gas plasma," Phys. Rev. Letts. (2009). Submitted.

PROPOSALS (SUBMITTED or GRANTED)

Kar

Submitted:

1. Title: Collaborative Research: Ultra-high Performance Carbon Nanotube "Parallel Nanotube Architectures" (PNAs) for On-chip Gigascale Local and Global Interconnects

S. Kar (Lead-PI), Saroj Nayak (Co-PI), Morris Washington (Co-PI), S.Talapatra (PI), Y.J. Jung (PI)

Date: 2009-2012

Amount: \$389,000

Agency: NSF ECCS 2009

2. Title: High Performance Multifunctional Point-of-Care Testing Devices

S. Kar (PI), Co-PIs: Kim Lewis, M. Washington, R. Kane

Date: 2009-2011

Amount: \$1,000,000

Agency: National Institute of Health

3. Title: White paper: Fundamental Study of Energy Flow in Explosive Materials

PI: Saroj K Nayak, CoPI- Masashi Yamaguchi, Xi-Cheng Zhang, Swastik Kar

Date: N/A

Amount: N/A

Agency: Office of Naval Research

4. Title: White paper: The interaction of molecular analytes with graphene: an experimental and theoretical investigation of conductometric graphene-based chemical sensing

PI: Saroj K Nayak, CoPI- Swastik Kar and P.M. Ajayan

Date: N/A

Amount: \$750,000.00

Agency: DTRA

Lu

“Resource for innovative biological electron microscopy”, T.-M. Lu, \$390K, Feb. 1, 2010-Jan 31, 2013, NIH (subcontract from Wadsworth Center), submitted.

Newberg

“REU Supplement – Revealing the Structure of the Galactic Halo through Statistical Analysis – Middle School Teacher Training,” Heidi Newberg (PI, 100%), National Science Foundation, 4/30/2009, 12 months \$22,600, granted

“Participants in LAMOST, US (PLUS): A Partnership with the Chinese LAMOST Project in Galactic Astronomy,” Heidi Newberg (PI, 100%), National Science Foundation, \$1,775,173, starting 9/1/2009, three years, submitted

“Life Cycles of Data and Knowledge in Galactic Astronomy,” Heidi Newberg (PI, 33%), Deborah McGuinness (co-I), Peter Fox (co-I), Keck Foundation, \$1,800,000, preproposal, submitted

“NY Space Grant Fellowship Program,” Heidi Newberg (PI, 100%), New York Space Grant Consortium, Cornell University, April 1, 2009 to March 31, 2009, \$10,000, 100%, submitted

“Measuring the Shape of the Milky Way’s Stellar Halo using 150 Tflops of Computing Power from 23,000 Public Volunteers,” Heidi Newberg (PI, 100%), New York Space Grant Consortium, Cornell University, August 1, 2009 to March 31, 2009, \$10,000, 100%, submitted

“National Space Grant Supplement 2009,” Heidi Newberg (PI, 100%), New York Space Grant Consortium, Cornell University, August 1, 2009 to March 31, 2009, \$5,000, 100%, submitted

Wang

PIRE: Joint US/European Research and Education in Terahertz Electronics and Systems, PI: Shur, Co-PIS: Wang, Zhang, and Xu (Brown), submitted to NSF on March 11, 2009. Declined on June 15, 2009.

Terahertz Emerging Science and technology (TEST), PI: Shur, Co-PIs: Wang, XC Zhang, Jimmy Xu (Brown), Grigory Simin (USC), and 21 other faculty from RPI, Yale, Brown, Rice, Morehouse, Howard U., and Southern University at New Orleans, NSF STC, \$22,065,174, April 30, 2009.

Small angle grain boundary semiconductor solar cells, Toh-Ming Lu (PI), G.-C. Wang, I. Bhat, S.B. Zhang, DOE ARPA-E, May 26, 2009.

Novel ultrathin Mg nanoblades for hydrogen storage, Gwo-Ching Wang (PI), Toh-Ming Lu and Shengbai Zhang, DOE ARPA-E, May 26, 2009.

Yamaguchi

1. "SISGR: Phonon transport in materials for energy harvesting", PI Masashi Yamaguchi, co-PIs Subhash Shinde (SandiaNL), John P Sullivan(SandiaNL), Edward S.Piekos(SandiaNL), Thomas A. Friedmann(SandiaNL), Douglas L. Medlin(SandiaNL), David Hurley, (Idaho NL), Wei Cai (Stanford U), April.2009, DOE, \$4.5M for 3 year, submitted.
2. "Terahertz wave generation by using nanorod arrays for chemical sensing", PI Masashi Yamaguchi, co-PIs Gwo-Saroj, Nayak, and Ching Wang, May 2009, DTRA, white paper submitted.
3. "Narrowband Terahertz Wave Generation in Gases, Liquids, and Solids, and Application to Chemical Sensing", PI Masashi Yamaguchi, Jun. 2009, ONR, white paper submitted.(invited for full proposal submission)

Zhang

"Handheld THz Explosive Detector," Navy Indian Head, Phase II, \$1.456M, two years. Granted.

"Development of THz Wave Air-Plasma Photonics," NSF-MRI, \$560k, two years. Recommended for funding.

"Science of broadband THz wave photonics: generation and detection with gases." DTRA. \$450k, three years. Granted.

"Non Destructive Thermal Analysis and In Situ Investigation of Creep Mechanism of Graphite and Ceramic Composites using Phase-sensitive THz Imaging & Nonlinear Resonant Ultrasonic Spectroscopy," DOE-NEUP, \$447,500, three years. Granted.

"Laser for THz-ABCD Spectrometer", ONR-DURIP. \$300k, one year. Granted.

"Compact THz ABCD Spectrometer," Zomega NSF-SBIR Phase II grant, \$160k, two years. Granted.

"Nuclear Energy University Programs – Fellowship and Scholarship Support," \$145k, three years. Granted.

"Compact THz ABCD Spectrometer," Zomega SBIR Phase II supplemental grant through NSF Connection-One, \$100k, two years. Granted.

"Intense and Broadband THz Source Using Laser-Induced Gas Plasma," Zomega AFOSR-SBIR Phase I, \$40k, 9 months. Granted.

"Electromagnetic Radiation Sensing with Plasma Detector", ALERT, \$75k, one year. Granted.

"Report Assessment of THz Wave Technology," Northeastern University, additional \$25k, Feb. 10 to July 31, 2009. Granted.

Cash gift, Zomega Terahertz Corp. \$20k, Granted.

"THz wave photonics," NSF-REU supplement, \$6k. Granted.

SIGNIFICANT RESULTS OBTAINED OR NEW RESEARCH AFFILIATES

Kar

(a) Developing a new method of fabrication of few-layered graphene.

(b) Development of advanced nanoscale interconnects with highly aligned single-wall carbon nanotubes

VISITORS TO RENSSELAER

Kar

Name: Mr. Younglae Kim

Affiliation: Northeastern University

Date: several short (2-3 days) visits between January, 2009-June 2009

Reason: Shared Graduate student visiting to perform experiments on carbon nanotubes

Newberg

Xu Yan, postdoc at Chinese Academy of Sciences, Beijing, China, collaborate on Milky Way halo substructure and LAMOST planning, 1/26/2008-7/15/2009

Wang

Dr. Gerhard Salinger, former RPI physics faculty and now NSF program monitor in technology education visited RPI physics department on Friday June 19, 2009.

NON-PROFESSIONAL ACTIVITIES

Kar

Journal reviewer:

1. Chemistry of Materials
2. ACS Nano

IMPORTANT ACTIVITIES OF STUDENTS

OTHER

Wang

Physics Department hosted the 19th year of REU program sponsored by the NSF for 10 weeks on May 27, 2009.