

## UALR Department of Chemistry

### Faculty Publications and Presentations

January 1, 2007 – December 31-2007

#### Journal Articles

**Belford, R.E.**, Kelter, P.B. & Kirby, J.F., "Conf Chem: International Conference of First-Year College Chemistry", J. Chem. Ed., Vol. 84, No.9, 1413-1414 (2007).

**Belford, Robert E.**, "Utilizing Web-Based resources for Greener and safer Chemistry, NEACT Journal, 25, 22-24 (2007).

E.J. Dunlea, S.C. Herndon, D. D. Nelson, R.M. Volkamer, F. San Martini, M.S. Zahniser, J.H. Shorter, J.C. Wormhoudt, B.K. Lamb, E.J. Allwine, **Gaffney, J.S.** N.A. Marley, M. Grutter, C. Marquez, S. Blanco, B. Cardenas, C.R. Ramos Villegas, C.E. Kolb, L.T. Molina and M.J. Molina, "Evaluation of nitrogen dioxide chemiluminescent monitors in a polluted urban environment." Atmos. Chem. Phys. 7, 569-604 (2007).

N.A. Marley, **Gaffney, J. S.** R. Ramos-Villegas and B. Cárdenas González, "Comparison of Measurements of Peroxyacyl Nitrates and Primary Carbonaceous Aerosol Concentrations in Mexico City Determined in 1997 and 2003." Atmos. Chem. Phys., 7, 2277-2285 (2007).

D. A. Thornhill, S. C. Herndon, T. B. Onasch, E. C. Wood, M. Zavala, L. T. Molina, **Gaffney, J. S.** N. A. Marley, and L. C. Marr, "Particulate polycyclic aromatic hydrocarbon spatial variability and aging in Mexico City." 7, 15693-15721 (2007).

Taylor, K.K.; Cole, C.S.; Berry, B.C.; **Viswanathan, T.**, "Use of Tanninsulfonic Acid in the Synthesis of Water-Dispersible Polyaniline; Journal of Applied Polymer Science, Vol. 103, 2113-2119 (2007)

Eric Tee, Ritu Shekawat, Brian Berry and **Viswanathan, T.** Novel catalysts for the synthesis of poly(2,6-dimethyl-1,4-phenyleneoxide) (PPO) in purely aqueous environment; ACS Polymer Preprints, Vol 48 (1), 460-461 (2007)

**Viwanathan, T.**, Tanninsulfonic acid-doped polyaniline for protection of cold rolled steel Materials Performance, NACE Journal of Corrosion Prevention, Vol. 46 (2), 38-42 (2007)

X. Tu, P. E. Pehrsson, **Zhao, W.** "Redox Reaction of DNA-Encased HiPco Carbon Nanotubes with Hydrogen Peroxide: A Near Infrared Optical Sensitivity and Kinetics Study." J. Phys. Chem. C., 111, 17227-17231 (2007)

X. Tu, C. M. Skinner, X.-D. Chen, **Zhao, W.** “Single-Walled Carbon Nanotube As Scaffolds Promote Stem Cell Differentiation Into Bone Forming Cells”, in Applications of Nanotubes and Nanowires, ed. L. Chen, M. Hersam (Mater. Res. Soc. Symp. Proc., V1018E, Warrendale, PA,(2007), 1018-EE04-09.

Y. Xu, P. E. Pehrsson, L. Chen, R. Zhang, **Zhao, W.** “Double Stranded DNA-Single Walled Carbon Nanotube Hybrids for Optical Hydrogen Peroxide and Glucose Sensing.”J. Phys. Chem. C., 111, 8638- 8643 (2007).

### **Patent Applications**

**Darsey, J.A.**, “Insulated Beverage Container Housing.” PCT/US07/80487, Pending (2007).

Jin, Hong; **Ghosh, Anindya**; Tunge; Jon; Subramaniam; Bala. Tuning Product Selectivity in Catalytic Hydroformylation Reactions with Carbon Dioxide Expanded Liquids. U.S. Pat. Appl. Publ 2007 US 2007219399.

Reddy, B.R.; **Ghosh, Anindya**; Fitzgerald, Russel. Methods of Making Polysachharide Based Polymeric Cement Additives Comprising Carboxylate and Sulfonate Groups; Cementing Compositions Comprising, and Method of Cementing Oil Wells Using Same. HES-2007-IP-023052 (Patent filed 2007).

Hall, Bob; **Ghosh, Anindya**; Norman, Lewis. Methods of Making Surfactants for Removal of Water Block or Gas Condensates in Tight Gas Wells to Enhance Hydrocarbon Production. HES-2007-IP-002175 (Patent filed 2007)

**Viswanathan, T.**, Corrosion Prevention of Cold rolled steel using water-dispersible lignosulfonic acid-doped polyaniline; US Patent 7,179,404 (2007)

### **Papers presented at National and International Meetings (Abstracts)**

**Belford, R.E.**, "Wikis, Hyperglossaries and Web Literacy", 234th meeting of the American Chemical Society, Boston, MA., Aug. 21, 2007

**Belford, R.E.**, Sirikarn Wisetsuwannaphum (translator), 5 Presentations during the ICT (Information and Communication Technologies) Workshop, Mahidol Wittanaysorn School, Salaya, Thailand, July 9-13.

1. Introduction to Internet Fundamentals
2. Overview of Embedded Digital Learning Objects
3. Survey of Web Based Applications in Chemical Hygiene
4. Problems Inherent with the Internet as a Repository of Information
5. Survey of Web Based Applications in Green Chemistry

**Belford, R.E.** "Wiki Hyperglossary Generating Program", Gordon Research Conference on Chemical Education Research and Practice Poster Presentation, Bates College, June 24-29, 2007.

**Belford, R.E.** "Hierarchical Wiki Links Index", 223rd Meeting of the American Chemical Society, Chicago, IL. March 25, 2007

**Belford, R.E.** "A.P. High School & Freshmen College Green Chemistry Laboratory Activity Development", 2nd Green Chemistry Education Network Capacity Building Workshop, Gallaudet University, Washington D.C., June 22-24, 2007

Griffin, B. and **Darsey, J.A.** "Prediction of clinical Tuberculosis using artificial neural networks". 2nd Annual Biology, Nanotechnology, Toxicology, (BioNanoTox) and Applications Research Meeting, Little Rock, April 2007.

Griffin, B. and **Darsey, J.A.**, "Neural network and ab initio Studies of metal hydride nano- particles for hydrogen storage". Poster presentation – award winning for graduate student presentation Computational Chemistry Division, 233<sup>rd</sup> National ACS Meeting, Chicago, IL, March 2007.

Griffin, B., and **Darsey, J.A.** "Prediction of Metal Hydride Properties Using Artificial Neural Networks" Gordon Research Conference July, 2007.

Griffin, B., and **Darsey, J.A.**, "Modeling Transition Metal Nanoclusters for Hydrogen Storage Capacity Using Artificial Neural Networks", Artificial Neural Networks in Engineering (ANNIE) conference, St. Louis, MO, November, 2007.

Thotakura, S. and **Darsey, J.A.**, "Predictive Model of the inhibition of CYP 3A4 by selected natural compounds". Poster presentation, Computational Chemistry Division, 233rd National ACS Meeting, Chicago, IL, March 2007.

Thotakura, S., and **Darsey, J.A.**, "CoMFA to predict the inhibition of Cytochrome P 450 3A4 by natural compounds with a Benzodioxo methylene moiety" 2nd Annual Biology, Nanotechnology, Toxicology, (BioNanoTox) and Applications Research Meeting, Little Rock, April 2007.

**Gaffney, Jeffrey S.** N. A. Marley, N. C. Sturchio, and N. Martinez, "Aerosol Residence Times in Mexico City" Oral presentation at the The Ninth Conference on Atmospheric Chemistry, January 14–18, 2007, San Antonio, TX at the 87th National Meeting of the American Meteorological Society.

Nancy A. Marley and **Gaffney, Jeffrey S.** "Rain Event Impacts on Aerosol Optical Properties: Mexico City 2003 and 2006" Oral presentation at the The Ninth Conference on Atmospheric Chemistry, January 14–18, 2007, San Antonio, TX at the 87th National Meeting of the American Meteorological Society.

Amanda C. MacMillan, Karen L. Steelman, **Gaffney, Jeffrey S.** and Nancy A. Marley, “Sourcing 14C Content in Mexico City Black Carbon Aerosol” Poster presented at the 233rd National Meeting of the American Chemical Society, March 25-29, 2007, Chicago, IL.

N. Marley and **Gaffney, J.** “Carbonaceous Aerosol Absorption Changes Due to Photochemistry in Mexico City.” Oral presentation at the European Geophysical Union General Assembly 2007, April 15-20, 2007, Vienna, Austria.

Nancy A. Marley and **Gaffney, Jeffrey S.** “Wavelength Dependence of Aerosol Absorption in Mexico City” Oral presentation at the Second MILAGRO Science Team Meeting, May 15-18, 2007, Mexico City, Mexico

**Gaffney, Jeffrey S.** Nancy A. Marley, Amanda C. MacMillan, Karen L. Steelman, and Niel C. Sturchio, “Natural Radioactivity Measurements in Fine Aerosols” Poster presentation at the Second MILAGRO Science Team Meeting, May 15-18, 2007, Mexico City, Mexico.

Guadalupe Paredes-Miranda, W. Patrick Arnott, **Gaffney, Jeffrey S.** and Nancy A. Marley, “A Tale of Two Cities: Photoacoustic and Aethalometer Measurements Comparisons of Light Absorption in Mexico City and Las Vegas, NV, USA” Poster presentation at the Second MILAGRO Science Team Meeting, May 15-18, 2007, Mexico City, Mexico.

W. Patrick Arnott, Guadalupe Paredes-Miranda, **Gaffney, Jeffrey S.** and Nancy A. Marley, “Aerosol Light Absorption and Scattering at Four Sites in and Near Mexico City: Comparison with Las Vegas, Nevada, USA” Poster presentation at the Second MILAGRO Science Team Meeting, May 15-18, 2007, Mexico City, Mexico.

Paredes-Miranda, G., Arnott, W. P., Marley, N.A., **Gaffney, J. S.**, “A Tale of two Cities: Photoacoustic and Aethalometer Measurements Comparisons of Light Absorption in Mexico City and Las Vegas, NV, USA” EOS Trans. AGU, 88, (23), Jt. Assem. Suppl. Abstract A41E-08 (2007)

Marley, N.A. and **Gaffney, J.S.** “The Impact of Rain Events on Aerosol Optical Properties: Mexico City 2003 and 2006” EOS Trans. AGU, 88, (23), Jt. Assem. Suppl. Abstract A41E-03 (2007)

Arnott, W. P., Miranda, G. P., **Gaffney, J. S.**, Marley, N.A. “Aerosol Light Absorption and Scattering at Four Sites in and Near Mexico City: Comparison with Las Vegas, Nevada, USA” EOS Trans. AGU, 88, (23), Jt. Assem. Suppl. Abstract A41E-07 (2007).

**Gaffney, J.S.**, Marley, N.A., Tackett, M.J., Sturchio, N.C., Heraty, L.J., Martinez, N., Hardy, K., Guilderson, T.: Evidence for biomass burning from 14C and 13C/12C Measurements at T0 and T1 during MILAGRO. Eos Trans. AGU, 88(52), Fall Meet. Suppl., Abstract A43C-1420 (2007).

Marley, N.A., Machany-Rivera, A., Kelley, K. L., Mangu, A., **Gaffney J.S.**, 2007: Aerosol Angstrom Absorption Coefficient Comparisons during MILAGRO. Eos Trans. AGU, 88(52), Fall Meet. Suppl., Abstract A43C-1421 (2007).

Mangu, A., Kelley, K.L., Marchany-Rivera, A., Kilaparty, S., Gunawan, G., **Gaffney, J.S.**, and Marley, N.A. Enhanced UV Absorption in Carbonaceous Aerosols during MILAGRO and Identification of Potential Organic Contributors. Eos Trans. AGU, 88(52), Fall Meet. Suppl., Abstract A43C-1419 (2007).

**Gaffney, J.S.**, Marley, N.A., Arnott, W.P., Paredes-Miranda, L., Barnard, J.C., Aerosol Absorption Measurements in MILAGRO. Eos Trans. AGU, 88(52), Fall Meet. Suppl., Abstract A32A-01 Invited, (2007).

Paredes-Miranda, G., Arnott, W.P., **Gaffney, J.S.**, Marley, N.A., Campbell, D., Fujita, E. Aerosol Light Absorption in Mexico City: Comparison with Las Vegas, NV and Los Angeles, CA. Eos Trans. AGU, 88(52), Fall Meet. Suppl., Abstract A43C-1422, (2007).

Aiken, A.C., Salcedo, D., Huffman, J.A., Ulbrich, I., DeCarlo, P.F., Cubison, M., Docherty, K., Sueper, D., Worsnop, D.R., Trimborn, A., Northway, M., Prevot, A., Szidat, S., Wehrli, M.N., Wiedermeyer, C., Wang, J., Zheng, J., Fornter, E., Zhang, R., **Gaffney, J.S.**, Marley, N.A., Sosas Iglesias, G.E., Jimenez, J.L., Aerosol Analysis with the High Resolution Time-of-Flight Aerosol Mass Spectrometer at the Urban Supersite (T0) in Mexico City during MILAGRO. Eos Trans. AGU, 88(52), Fall Meet. Suppl., Abstract A23C-1467 (2007).

**Ghosh, Anindya**, "Oxygen activation using Fe-TAML " MICA, Harding University, Searcy, AR, October 13, 2007.

**Zhao, Wei**, Xiaomin Tu, Yang Xu, Satish B Chikkannanavar, Stephen K. Doorn, "Enriching individual (n, m) carbon nanotubes for solution chemistry." (Invited) presented at 34th Conference of FACSS, Memphis, Tennessee, Oct. 14-18, 2007.

**Zhao, Wei** "Near Infrared Four Wave Mixing Spectroscopy for DNA-Encased Water-Soluble Carbon Nanotubes." 211th meeting of Electrochemical Society, Chicago, May 6-11, 2007.

Xiaomin Tu, Xiao-Dong Chen, **Zhao, Wei** "Single-walled carbon nanotube scaffolds promote stem cell differentiation into bone forming cells." Spring Meeting of Materials Research Society (MRS), San Francisco, CA, April 9-13, 2007.

Xiaomin Tu, **Zhao, W.**, "Effects of Ag<sup>+</sup> on the redox chemistry of ssDNA-encased HiPco carbon nanotubes with hydrogen peroxide." Spring Meeting of Materials Research Society (MRS), San Francisco, CA, April 9-13, 2007.

Samuel B. Penwell, Kevin M. Metz, John C. Wright, Robert J. Hamers, **Zhao, W.** "Assembly and Optical Properties of Single-Walled Carbon Nanotubes Functionalized with Streptavidin-Coated Gold Nanoparticles." Spring Meeting of Materials Research Society (MRS), San Francisco, CA, April 9-13, 2007.

**Zhao, Wei**, "Selective Measurement of Single Chirality Carbon Nanotubes Using Near Infrared Four Wave Mixing Spectroscopy." 4th International Two-Dimensional Correlation Spectroscopy Symposium, Beijing, August 16-18, 2007.

Xiaomin Tu, **Zhao, Wei** "Redox chemistry of HPLC purified single-stranded DNA encased single-walled." presented at 34th Conference of FACSS, Memphis, Tennessee, Oct. 14-18, 2007.

X. Tu, **Zhao, W.** "Single-walled carbon nanotubes-based near infrared absorption for DNA sensing." presented at 234th ACS National Meeting, Boston, MA, August 19-23, 2007.

### **Presentations and Invited Lectures**

**Belford, R.E.**, Sirikarn Wisetsuwannaphum (translator), "Enhancing Chemistry Teaching Using Scientific Sensors and Laptop PCs", 2 Day Workshop, Mahidol Wittanaysorn School, Salaya, Thailand, Aug 4-5.

**Belford, R.E.**, "Integration of Digital Learning Objects and Green Chemistry into Freshmen Level Laboratory Curriculum", Invited Presentation, Silpakorn University, Nakorn Pathom, Thailand, July 29, 2007.

**Darsey, J.A.** "Application of Monte Carlo/Data-Mining procedures to prediction of the 3-D structure of proteins". Invited Talk to the Computational Group at National Center for Toxicological Research, FDA, Jefferson, AR, March, 2007.

**Darsey, J.A.** "Hybrid Monte-Carlo/Data-Mining Modeling of Structure-Property Relations of Polymeric Materials.", Presented to Molecular Modeling Research Group, National Center for Toxicological Research, FDA, Jefferson, AR, November, 2007

**Gaffney, J.S.** "Chemical Genealogies: What they are and UALR's Links to Chemistry's History." Invited lecture, Arkansas Tech University, October 5, 2007, Russellville, AR.

**Gaffney, J.S.** "Global Climate Change Issues." Life Quest, Little Rock, AR, March 7, 2007.

**Gaffney, J.S.** "Global Change Research and the Global Change Education Program (GCEP)." Central Arkansas Science Fair, University of Arkansas at Little Rock, Little Rock, March 3, 2007.

**Gaffney, J.S.** "CHEMISTRY", Parkview High School, Little Rock, AR, March 7, 2007.

**Gaffney, J.S.** “Atmospheric Chemistry: Climate Change and Air Quality Issues.”  
Invited talk, 2YC3 Conference – Bergen Community College, Bergen, NJ, September  
28, 2007.

**Gaffney, J.S.** “Chemical Genealogies, UALR ACS Student Affiliate Meeting, UALR,  
Little Rock, AR, October 4, 2007.

**Viswanathan, T.**, “Novel solar cells using conducting polymers and renewable resource  
components” NASA-Glenn, Cleveland, OH, May 23, 2007.