

The Nexus



Connecting & Expanding the Global Green Chemistry and Engineering Community

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My Great Green Summer with ACS GCI

Dear Green Chemistry Enthusiast:

The 13th Annual GC&E Conference is behind us and appears to have been a wonderful success. While we are still awaiting feedback from our conference survey, the initial feedback has been extremely positive. Our student workshop on Monday was well attended and we had a terrific cast of speakers. The weather was superb all week which made getting to and from the Presidential Green Chemistry Challenge Awards on Monday evening a breeze. Our keynote speaker on Wednesday morning was Dr. Len Sauers of P&G and he did a super job of outlining the P&G story of sustainability while reinforcing the application and power of LCA tools. It also reinforced the kind of impact that very large, global corporations can have when they make the commitment to sustainability. Our Wednesday keynote was Jean-Michel Cousteau. He gave a wonderful presentation and set a context for our work in terms of the impact chemicals and materials have on our food chain and the ecosystem. We finished up with a powerful Train-the-Trainer workshop on Friday. And I would be remiss if I did not recognize ACS GCI Dream Green Team that made this all happen. They did a super job of tending to details to pull off this event. Finally, it is clear the foundation that enabled such a great event was the direct result of the excellent work of the Organizing Committee led by Dr. Liz Gron.

What's really rewarding is that the conference attendance hit 405, up 10%, vs. 366 for 2008. That sends a very powerful message in terms of the value we deliver and comes at a time when other conferences are seeing a decline (in some cases up to 30+%) in attendance. The list of speakers was impressive and the networking that took place was clearly evident. Thanks to a great working relationship with our ACS Communications colleagues in the Office of Public Affairs, we had outstanding media coverage with a significant number of media follow-up stories.

And big news for the 14th Annual GC&E Conference in 2010 – Dr. John Warner has agreed to be the Conference Chair. Start making plans to join us June of 2010 in Washington for this exciting event.

While all this was going on we completed what I believe was a very successful Program Review Advisory Group (PRAG) analysis under the watchful eye of our Chairman Dr. Busch, submitted and reviewed a 3 year Program Funding Request (PFR) and completed a draft of our new ACS GCI Business Plan. I want to thank Madeleine Jacobs, ACS Executive Director and CEO and Denise Creech, Director of Membership and Scientific Advancement, for their support and critical advice as we executed the triple play of PRAG, PFR and business plan development.



Congratulations!

President Obama nominates Paul Anastas, to EPA post



Dr. Paul Anastas was selected by President Barack Obama for a key post in the U. S.

Environmental Protection Agency, Assistant Administrator at the Office of Research and Development. Dr. Anastas attended the 13th Annual Green Chemistry & Engineering Conference to the delight of the Student Workshop participants and quickly had to leave for his confirmation hearings. Among his many honors, Dr. Anastas was a previous Director of the ACS Green Chemistry Institute® in Washington, DC.

Pfizer receives the 2009 Business Commitment to the Environment Environmental Leadership Awards in London

As a leading research-based pharmaceutical manufacturing company, Pfizer won this year's Management Premier Award for its Green Chemistry Programme, headed up from the company's research and development (R&D) facility in Sandwich, Kent.

The Green Chemistry Programme is helping to reduce and eliminate

Finally, did anyone see the inside cover of *Chemical and Engineering News* for June 29, 2009? There was a teaser ad for the launch of our new green chemistry awareness campaign: chEMPOWER "This summer your knowledge of green chemistry will be put to the test." We launched the beta test at the Fall ACS meeting in Washington, D.C. with much interest.

I wish all of you a wonderful green chemistry filled fall.

Green regards,

Dr. Robert Peoples
Director, ACS Green Chemistry Institute®
b_peoples@acs.org

The British Embassy Welcomes "Big Challenges, Big Green Chemistry Solutions"



Kishore Bagga, Bob Peoples, and Les Mc Quire

A large and enthusiastic crowd heard about Green Solutions to some of our planets biggest challenges at a meeting of the Royal Society of Chemistry at the British Embassy in Washington D.C. on Saturday, June 6th. Dr. Robert Peoples, Director of the American Chemistry Society's Green Chemistry Institute® (ACS GCI), discussed "Big Challenges, Big Green Chemistry Solutions".

The audience heard about a sustainability tsunami – the "going green" wave – that is sweeping the globe. The view from space teaches people that the earth is a small sphere, home to more than 6 billion people. Science teaches that our fragile planet has limited resources and we have exceeded those limits in recent decades. Dr. Peoples discussed the increasing demands for those limited resources and how green chemistry holds the key to a sustainable path forward.

the use of hazardous materials in the development and manufacture of pharmaceutical products. Pfizer has established a management system for the integration of the principles of green chemistry into key stages of the R&D timeline and the result has been a significant reduction in the use of specific laboratory solvents and downstream improvements to pharmaceutical products in development and production.

ACS GCI Pharmaceutical Roundtable members co-authored "Green Chemistry Articles of Interest to the Pharmaceutical Industry."

The ACS GCI Pharmaceutical Roundtable members co-authored "[Green Chemistry Articles of Interest to the Pharmaceutical Industry](#)," Ian Andrews, Jian Cui, Jimmy DaSilva, Leo Dudin, Peter Dunn, John Hayler, Bill Hinkley, David Hughes, Bernard Kaptein, Stanley Kolis, Kurt Lorenz, Suju Mathew, Thomas Rammeloo, Lijun Wang, Andrew Wells, Timothy White, Chaoyu Xie, Fuyao Zhang. This appears in **Organic Process Research & Development** 2009 13 (3) 397-408.

Rowan University, Department of Chemical Engineering, Glassboro receives the EPA Environmental Quality Award for Education

EPA selects Environmental Quality Award winners from non-profit environmental and community groups, individual citizens, educators, business organizations and members of the news media, as well as from federal, state, local or tribal governments and agencies. The honor is given to those individuals or organizations that have made significant contributions to improving the environment and public health in EPA Region 2, which covers New Jersey, New

2009 Presidential Green Chemistry Challenge Awards



The evening of June 22, 2009 was a momentous occasion for Green Chemistry and Green Engineering. The Carnegie Institution for Science Auditorium was the location of this year's Presidential Green Chemistry Challenge Awards (PGCCA) ceremony. The annual PGCCA recognizes outstanding chemical technologies that incorporate the principles of green chemistry into chemical design, manufacture, and use. The program invites nominations that describe the technical benefits of a green chemistry technology as well as its human health and environmental benefits. The nominated green chemistry technology must have reached a significant milestone within the past five years in the United States (i.e., it must be researched, demonstrated, implemented, applied, patented, etc.) An independent panel, selected by the American Chemical Society (by ACS GCI), evaluates nominations for the awards.

Wendy Cleland-Hamnett, Acting Director, Office of Pollution Prevention and Toxics for the US. EPA was the Master of Ceremony. Following a welcome by Dr. Richard Meserve, President of the Carnegie Institution for Science, Dr. Thomas H. Lane, President of the American Chemical Society gave the science address. Meahgan Burdick, White House Liaison for the Small Business Administration offered the Small Business Address, Amelia Salzman, Associate Director for Policy Outreach for the Council on Environmental Quality offered remarks from the White House Council on Environmental Quality and James J. Jones, Acting Assistant Administrator, Office of Prevention, Pesticides and Toxic Substances of the US EPA offered the congratulatory address. The assembled award recipients and 13th Annual Green Chemistry and Engineering (GC&E) conference attendees were also treated to special remarks and presentation of the Kenneth G. Hancock Memorial Student Awards.

Presidential Green Chemistry Challenge Awards recipients receive national public recognition for their outstanding accomplishments in the research, development, and/or implementation of green chemical technologies and this was the special night for the following award winners:

- Professor Krzysztof Matyjaszewski, Carnegie Mellon University won the Academic award for "Atom Transfer Radical Polymerization: Low-impact Polymerization Using a Copper Catalyst and Environmentally Friendly Reducing Agents"
- Virent Energy Systems, Inc., won the Small Business award for "BioForming[®] Process: Catalytic Conversion

York, Puerto Rico, the U.S. Virgin Islands and seven federally-recognized Indian Nations. The Agency receives nominations for the awards from both inside and outside EPA. For information about the Environmental Quality Awards in EPA Region 2, go to <http://www.epa.gov/region02/ega/>.

Rowan University assists the pharmaceutical industry in EPA Region 2 in source reduction, pollution prevention, and green engineering design through the use of an innovative engineering clinic outreach program led by Drs. C. Stewart Slater and Mariano Savelski. To date, Rowan University has conducted two major technical assistance efforts, and had significant accomplishments related to the dissemination of the principles of green engineering to the larger pharmaceutical industry, students in training, and international community through sponsoring and participating in seminars, conferences, and workshops.

of Plant Sugars into Liquid Hydrocarbon Fuels”

- Eastman Chemical Company won the Greener Synthetic Pathways award for “A Solvent-Free Biocatalytic Process for Cosmetic and Personal Care Ingredients”
- CEM Corporation won the Greener Reaction Conditions Award for “Innovative Analyzer Tags Proteins for Fast, Accurate Results without Hazardous Chemicals or High Temperatures”
- The Procter & Gamble Company and Cook Composites and Polymers Company won the Designing Greener Chemicals Award for “Chempol[®] MPS Resins and Sefose[®] Sucrose Esters Enable High-Performance Low-VOC Alkyd Paints and Coatings”

The 2009 Hancock Award winners were congratulated and received their awards from Madeleine Jacobs, Executive Director and CEO, American Chemical Society.

Johnathan Gorke from the University of Minnesota received the Hancock award sponsored by the American Chemical Society, Division of Environmental Chemistry for his work, “Enzymatic Synthesis in Deep Eutectic Solvents”.

Joseph B. Binder from the University of Wisconsin-Madison received the Hancock award sponsored by the National Institute of Standards & Technology for his work, “Simple Chemical Transformation of Lignocellulosic Biomass and Olefin Metathesis in Aqueous Solvents”.

The elegant reception immediately following the ceremony afforded an opportunity for the award recipients to bask in their accomplishments in winning this coveted award. If you are interested in nominating for the 2010 PGCC awards or reviewing the listing of past award winners, you can locate more information on the ACS GCI website: www.acs.org/greenchemistry. You can also download a PDF file containing details for all winners since inception on the EPA Green Chemistry site at: <http://www.epa.gov/greenchemistry/pubs/pgcc/past.html>

The Green Scene in College Park, Maryland



13th Annual Green Chemistry & Engineering Conference

Student Workshop

ACS GCI received formal notification on June 22, 2009 from the National Science Foundation for the grant award of \$30,100, for “Promoting Student Education at the 13th Annual



Quick Links

[ACS Green Chemistry Institute®](#)

[Presentations and technical program from the 13th Annual Green Chemistry & Engineering Conference \(June 23-25, 2009\)](#)

[ACS GCI Pharmaceutical Roundtable](#)

[U.S. EPA Green Chemistry](#)

[Warner Babcock Institute for Green Chemistry](#)

[Center for Green Chemistry & Green Engineering at Yale](#)

[Green Chemistry at the University of Oregon](#)

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Green Chemistry & Engineering Conference in College Park, MD – June 23-25, 2009." The grant Principal Investigators, Drs. Jennifer Young (ACS GCI) and Amy Cannon (Beyond Benign) were also the Student Workshop Coordinators and were very pleased with the turnout of 39 people. Of course the impressive line up of speakers was quite an incentive for these students: John Warner (Warner Babcock Institute for Green Chemistry), Paul Anastas (Yale University), Linda Vanasupa (California Polytechnic State University), Michael Korzenski (ATMI), Morgan Sibbald (Sherwin-Williams), Anne Wallin (The Dow Chemical Company), Peter Dunn (Pfizer), and Emily Reichert (Warner Babcock Institute for Green Chemistry).



Paul Anastas and John Warner speaking in the Student Workshop

Each NSF Scholar submitted a written report following the Student Workshop and some of those comments follow:

"More speakers from industry in the Workshop this year really gave me deep insight of green chemistry in industry."



"More importantly, attending this event enabled me to develop collegial relationships through the GC&E community for future collaborations."



"In attending the conference, in particular the Student Workshop, the amount I learned about the current ideas, motives, and directions of green chemistry and engineering greatly exceeded my expectations."



"Len Sauers presentation about Procter & Gamble's global attempts to manufacture products that are green for all was very insightful and informative in particular the amount of energy consumed in cleaning clothes was astonishing."



"Overall, the knowledge I gained by attending this conference has definitely helped me think about how I can reduce my footprint on the environment and how my research may help reduce humanity's footprint on the environment."



"A key benefit was the overall encouragement and enthusiasm in the conference. I was able to make it to the Presidential Green Chemistry Awards ceremony, and what I witnessed amazed me. It seemed like Sports center's top ten plays of the day but for chemistry. Each idea was fresh, incredible, and



On average, Americans drink one beverage from an aluminum can every single day, according to [Waste Management's website](#). Fortunately, these cans are 100% recyclable. Unfortunately, only about 50% of them are recycled. Not only are these trashed cans taking up space in our landfills, we could drastically reduce the amount of energy needed to produce new cans simply by recycling empty ones. In fact, recycling one aluminum can will save enough energy to run a television for three hours or to burn a 100-watt light bulb for four hours! Consider the environment before tossing an aluminum beverage can into the trash...make sure it lands in recycling bin.

some were seemingly simple. Each idea, however, impacted many lives with novel thinking. It truly amazed and excited me to see some of the progress made, and the creativity in the minds of the people surrounding me.”



“My realization that green chemistry includes such an intense array of callings and ideas, yet unified in purpose, was a wonderful learning experience.”



“The most lasting memories I will have of the conference will be the people I was able to meet. The highlight of my time in College Park was chatting with Dr. John Warner about my research. Discussing my work with arguably the most influential green chemist was a fantastic opportunity. Because of our common cause, I enjoyed stimulating conversations with many of the attendees of this conference.”



“The presenters conveyed enthusiasm, determination, and encouragement to the students as they described how their modifications in the design and production of their products have lead to great success in promoting sustainability and economical benefits.”



“I was able to present my research in a 20-minute presentation, at the conference. Having presented my research at regional ACS meetings before, I was especially excited to present at this conference because my audience would be much better versed in the green chemistry aspects of my research. As such, I received meaningful feedback and questions that addressed specific areas of my research and not solely the methodology behind it.”



“The 13th Annual Green Chemistry & Engineering Conference was the most important conference that I have ever attended. At the graduate student workshop, I met 5 new contacts. Every day of the conference I met more and more contacts which I hope will be lifelong. Everyone in the green chemistry community was so open, and friendly and welcoming. They were eager to have students of many different fields contributing to the future of green chemistry and green chemistry education.”



“Jean-Michel Cousteau presented what we do to the environment now will affect us later in life. He showed video clips on what he has seen around the world and how it is affecting the sea mammals. If the public would begin to recycle more instead of wasting materials there would be a significant decrease in the amount of garbage around the world affecting all living things that are exposed to it.”



“Prior to attending the conference I felt fairly well-informed as a doctoral student finishing the first year of graduate school but only now do I realize how valuable attending the conference really was. I feel as though I have been exposed to areas in the field I had not even begun to consider and gained many new insights into innovations for the future of green chemistry.”



“Because I received the NSF travel scholarship I was able to attend the student workshop where I networked with many people and felt as though the talks of the day were talking directly to me. It also enabled me to attend the entire

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Nashville's "Gulch" Ranks Among Top Green Neighborhoods in U. S.

The Gulch is the first neighborhood in the South to receive "LEED for Neighborhood Development" certification from the United States Green Building Council.

conference where I was free to go to talks on a wide array of topics and have many one-on-one conversations at poster sessions, meal times, social events, and just walking around the conference center."

Feedback from a first time attendee

By Dr. V. Ajay Mallia, Post-doctoral Fellow at Department of Chemistry, Georgetown University

We are not born green, but definitely we can make it happen. The symposium was a festival for the people who want to migrate to the land of green and sustainable. Some of the speakers clearly pointed out that it is high time to do so. It is scary to know when Mr. Cousteau explained about the increased level of toxic chemicals such as polychlorinated biphenyls and poly brominated diethyl ethers in the human blood. This reminds me the first part of Mr. Cousteau's talk where he showed a bird at the isolated island in the Pacific ocean trying to eat some of man made polymeric materials thinking that it is food. We should not waste any time to join the green movement and immediately reduce our carbon footprints.

As my main research interests are related with green chemistry and green technology, participating in the conference gave me an opportunity to meet and discuss my work with the eminent professors working in the frontiers of sustainable and renewable materials science. It also gave me an opportunity to think about the new areas of green technology and industry. I am thankful to the organizers of the symposium who made this symposium a big success through their efficient organization and hard work.

Networking and Spontaneous Catalysis at the GC&E Conference

by Linda Pirrone

[GreenCentre Canada](#) is North America's first all-inclusive commercialization centre for Green Chemistry research innovations. Representing GreenCentre Canada at this year's GC&E Conference, and attending the Student Workshop, was Lucy Su, Ph.D. She spoke of GreenCenter Canada's good fortune to have strong representation from the chemical industry, as reflected in the appointment of their Board of Directors and said the directors provided a perspective from across the chemical technology spectrum. Dr. Su went on to explain that GreenCentre Canada is a national Centre of Excellence for developing, de-risking and commercializing early-stage Green Chemistry discoveries generated by academic researchers and industry. The centre was founded by PARTEQ Innovations in February, 2009 with the assistance of the federal Networks of Centres of Excellence program, and is supported by industry, academia and fourth pillar organizations.

GreenCentre Canada is dedicated to developing

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It takes 19 million trees, 1.6 billion pounds of paper, 3.2 billion kilowatt hours of electricity, and 7.2 million barrels of oil to produce the 500 million “yellow pages” directories delivered across the nation each year. (Source: www.YellowPagesGoesGreen.org)

If you are using online directories and no longer wish to receive printed telephone directories, contact the company that publishes your yellow pages and ask them to stop delivery to your household and/or business.

environmentally friendly alternatives to traditional chemical and manufacturing practices. It is governed and operated with the assistance of industry members from across the chemical value chain. The centre is located at the Innovation Park at Queen's University in Kingston, Ontario, Canada.

Also attending the meeting was 50 year ACS Member Robert L. Augustine, Ph.D., who is the Executive Director for the Center for Applied Catalysis at Seaton Hall's new, thirty-five million dollar Science and Technology Center. Most of the processes studied by the research staff of the Center have involved catalytic reactions used in the synthesis of organic compounds. The Center has reported the first good example of the use of a supported catalyst for the acetoxylation of toluene. The heterogeneous nature of the catalyst makes this catalyst superior to the commonly used soluble species in the ease of handling, facile separation from the reaction mixture and potential for reuse. Seton Hall University realizes the positive impact of harnessing the talent and resources of both academia and industry through mutually beneficial partnerships. To learn more about the work of the CAC, you may reach Dr. Augustine through email: augustro@shu.edu.

The annual conference organizing committee works throughout the year to build a conference schedule with ample opportunities for networking. Dr. Augustine and Dr. Su met and learned about each other's organizations and a possible future collaboration may be an unexpected outcome of their conference attendance. This is what the ACS GCI staff calls, “Spontaneous catalysis!”



IYC2011 Commemorative Stamp Campaign

In honor of the [2011 International Year of Chemistry](#), ACS is working to urge the U.S. Postal Service to adopt chemistry as a theme for a commemorative stamp in 2011, in view of the contributions of chemistry to the well-being of humankind in the U.S. and worldwide. The year will be a prime opportunity for putting a spotlight on green chemistry around the world.

The Postal Service gets 50,000 subject requests per year and awards only 25 commemorative stamps per year, so your efforts to contribute to this cause are very important and very

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If you are looking for a unique gift for a recent graduate, newly wed, or any special occasion, consider giving the gift of no junk mail. No more coupons, sweepstakes offers or credit card promotions. Gift certificates for the service can be purchased and sent online at www.41pounds.org

What difference could that possibly make?

- The world's temperate forests absorb 2 billion tons of carbon annually to help keep the planet cool and healthy.
- More than 100 million trees are destroyed each year to produce junk mail.
- Creating and shipping junk mail produces more greenhouse gas emissions than 2.8 million cars.
- Junk mail wastes 28 billion gallons of water each year.

much appreciated!

Here's how you can get involved:

- ❖ Visit www.acs.org/iyc2011 to download the petition
- ❖ Distribute the petition for signature among your colleagues, students, and friends (all chemists and friends of chemistry are encouraged to sign!)
- ❖ Mail or fax completed petitions to the ACS Office of International Activities no later than November 1 (see petition for fax number and address)

To learn more about IYC 2011 and to contribute ideas to the ACS celebration of this historic event, visit www.acs.org/iyc2011.



Could Opportunity be Knocking?

Volunteer Student Internships in Green Chemistry Available for January 2010

The United States Environmental Protection Agency in Washington, DC has openings for up to four college student interns to join its Green Chemistry Program during the month of January. The positions are volunteer internships, not paid, but offer a unique opportunity for training in green chemistry. During December, EPA will receive nominations for the 2010 Presidential Green Chemistry Challenge Awards; during January, EPA staff and interns will read all of the nominations, write brief reviews of each nomination, discuss the nominated technologies in multidisciplinary group meetings, and prepare the nominations for the anonymous judging panel convened by the American Chemical Society Green Chemistry Institute. Because the work is highly technical, interns need to have a strong science background including at least one year of organic chemistry. These internships are geared to students whose institutions have J-terms or interim sessions during January, so that interns would be available to be in Washington, DC for most or all of the period between January 4 and 29. EPA is unable to provide housing; in the past, interns have been able to find housing with relatives, friends, or alumni (recent or not-so-recent) from their institutions. Student interns do not need to be United States citizens. Interested students should send email to greenchemistry@epa.gov to request the more detailed description of the internship and the application requirements.

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In the home, when lights are on at least four hours a day one compact fluorescent light bulb (over its lifetime) will save \$40.00 in electric bills and \$5-\$10 in replacement costs. It will also save a ton of carbon dioxide and 20 pounds of sulfur dioxide from a coal-burning electric plant, or 1 ¼ barrels of oil from an oil-burning plant (enough to run an average car 1000 miles), or half a curie of high-level radioactive waste from a nuclear plant.

Source: www.sustainer.org



Welcome!

The ACS GCI Formulators Roundtable welcomes two new members:

- ❖ Church & Dwight
- ❖ Clorox



Green Chemistry Students' News and Views

Editor's note: Veronica Ortiz met ACS GCI Director, Bob Peoples at the spring ACS National Meeting in Salt Lake City during the Sci-Mix poster session where Dr. Peoples invited Veronica to submit information about the activities initiated by the Roger Williams University Student Affiliates chapter. Veronica seized the opportunity and the article with photos follows:

Over the course of the past year the Roger Williams University chapter of ACS Student Affiliates decided to promote greener chemistry choices and raise awareness about the current environmental crisis. The student affiliates worked hard to advocate environmental awareness to the student body through meetings, demonstrative experiments, and interpretation of the current politics.

Every Monday the club meets to plan demonstrations to hold on campus and trips to visit local schools and companies. In the past year since the 235th ACS National Conference in New

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The American Chemical Society Staff Council held a webinar organized and presented by the ASAE Business Services group in June. Staff received information on the benefits associated with occupying a green workplace; steps to convert their existing or new office space to a “green” space; ways to reduce energy consumption; ways to change your printing habits; and much more. Following the webinar, a staff Greening ACS committee was formed to continue efforts to green the workplace.

Orleans our club participated in a “science night” with a local boy scouts chapter in the Bristol area. We explained the fundamentals of electricity including a little shock to the system with our own vandagraph machine. We also visited a local high school in Barrington, RI to teach freshmen about the fundamental properties of electricity and the duality of light, including solar panels, superconductors, a Faraday flashlight, lasers, and a few other neat gadgets.



Two Boy Scouts test their strength by trying to pull apart a vacuum sealed ball.

On campus we planned a fun activity to make ice cream using sugar, cream, and liquid nitrogen. Despite some students being hesitant, many enjoyed the activity and it raised awareness for our club on campus. Our favorite activity this past fall was creating a giant periodic table in celebration of chemistry. The finished product was so large that it had to be assembled outside of our cafeteria in a quadrangle and the picture had to be taken from the top of our cafeteria building!

The 2008 presidential campaign not only received a lot of attention around the world, but also at Roger Williams University. To join in on the political atmosphere the student affiliates teamed up with the RWU-βββ marine biology club to raise awareness about the candidates' platforms, specifically detailing their environmental policies. Both clubs compile an informational pamphlet that was handed out to students detailing the environmental issues both of the candidates were debating and what each platform meant for our country and the environment.

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On March 31st, the San Francisco Board of Supervisors passed a resolution urging both the California State Legislature and the U. S. Congress to establish a Do Not Mail Registry, which if created would allow citizens to “opt-out” of receiving unwanted junk mail. Both New York and Florida have bills under discussion in the legislature that would establish state-wide registries.

Source: www.41pounds.org



RWU student affiliates standing beside their masterpiece

Other than teaching the fundamentals of science to younger students, promoting environmental awareness, and spreading the word about our club we have worked on green projects in the lab. To promote greener fuels, we synthesized our own biodiesel from used canola oil from our cafeteria by using sodium hydroxide, water, and ethanol. The efficiency of the biodiesel was tested using a bomb calorimeter in our laboratories, but the excess biodiesel was donated to a local chemistry instrumentation company (Perkin Elmer). At Perkin Elmer they found that the biodiesel synthesized by RWU had lower sulfur content, but a higher salt content than the commercial brand studied. The authors noted further washing could improve the RWU batch and could be used in an engine. The chemists (Grosser, Davidowski, and Wee) involved will be publishing their research in the Perkin Elmer journal.



Student Affiliates, Kari Pohl, Steve Davidowski, and Dan Van Buren, visit a local biodiesel plant

The biggest challenge faced in every academic lab today is the over-use and wasting of solvents. As a final presentation the executive board members, Jack Fuller and Charles Hall, explained to fellow student affiliates about better ways to prepare stock solutions for experiments in lab. They demonstrated instruments that can be used to reduce solvent waste such as the RWU rotovaps.

Overall, the past year was productive for the RWU chapter of the ACS student affiliates. Next year promises more green chemistry experiments and chemistry awareness campus programs.

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To locate grocery stores and restaurants that carry local and organic products check the following website:
www.localharvest.org

Green: Youthful, Wealthy, or Healthy? A Graduate Student's Perspective

By Jonathan F. Hull, Graduate Student at Yale University

How often have you been asked, "So, what exactly is Green Chemistry"? As a graduate student in Bob Crabtree's lab at Yale University, I have never been able to give the same answer twice; for good reason.

Here's my perspective: Green Chemistry is pollinating science departments around the world. From Yale's new [Center for Green Chemistry and Engineering](#), to Addis Ababa University in Ethiopia (*Science*, **2007**, 29, 1849 – 1850), the green movement is starting to bloom. In addition to being an international effort, green chemistry is an original one: new materials from unusual sources are being proposed for new and old applications alike; value added products are derived from waste. When I had to report back from the American Chemical Society's 2008 Green Chemistry & Engineering Conference for group meeting, I had no idea where to start. I thought, "How am I going to cover chicken feathers (Richard Wool), and water treatment (Julie Zimmerman, to name one) in the same talk"? Yet, despite its rapid germination, Green Chemistry is old: on multiple occasions I've heard the joke, "I've done green chemistry for years without knowing it"! Indeed, the age-old principle of catalysis is manifest in the 12 principles (Paul Anastas & John Warner). So what's the difference between then and now, between the old and new green chemistry? For the first time, green chemistry is being legitimized; it's gaining street credibility. The increasing number of Green Chemistry labs, conferences and research funds (\$200 Million from the NIH were released in April) indicate that "going green" is paramount. According to a recent study, 10% of Americans believe solving the energy crisis is a top priority. I'll leave the scholars and the media to debate the reasons for the timing, but now it is certainly cool to be green: green in chemistry, and green in dollar bills.

I feel fortunate to start my career as Green Chemistry burgeons. Fortunate because so many scientists before my era have proposed Green- allied research, but their timing was premature to widespread support. Thanks to this boost, I *will* create green energy, green materials, and green chemicals during my career. For some researchers, being Green-by-funding might be enough. In contrast, I see Green Chemistry as a symbol of my generation. For the first time, there is a collective understanding of the minimal tradeoff between a booming industry and a blooming environment. Green Chemistry provides a *purpose* in research. Alas, some critics might call my optimism youthful, inexperienced, or green. I call "green" science.

To contact Jonathan Hull, email jonathan.hull@yale.edu.

Editor's note: Have a story you would like to share? Please contact me at l_pirrone@acs.org

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Measure Your Carbon Footprint
<http://www.carbonfootprint.com/>



Upcoming Events

September 4, 2009: DEADLINE for pre-proposals. The **Request for Proposals** for the 2010 ACS GCI Pharmaceutical Roundtable Research Grant is available at www.acs.org/gcipharmaroundtable. The grant consists of \$150,000 for 12 to 24 months of research addressing the 12 key green chemistry research areas identified by the pharmaceutical industry.

September 25-27, 2009: The Hellenic Green Chemistry Network presents the 3rd **Conference on Green Chemistry and Sustainable Development** at the Sports Museum of Thessaloniki, Greece. One of the aims of the symposium is “to show that Green Chemistry and Green Chemical Technology can deal successfully with global environmental problems giving sustainable solutions.” www.chemistry.upatras.gr/hgcn

September 21-23, 2009: National Institute of Standards and Technology, Gaithersburg, MD is the site for the conference, **Micro-Reactor Technologies: A Critical Tool for Process Optimization and Intensification.** [Preliminary program](#) is located on the CCR website. World-leading experts will provide plenary presentations, with ample time allotted for questions and discussion. The speakers include experts from Corning, IMM-Mainz, MIT, Dow, Bayer, EPA, CPAC, Merck, and many others. This is a meeting on a transformational technology and promises to be of great interest to the chemical science community.

September 25, 2009: The Michigan Green Chemistry Conference will be held at the Fort Shelby Downtown Detroit Doubletree. Keynote speaker and “founding father” of green chemistry, John Warner will inspire and inform leaders across the state at Michigan’s First Annual Green Chemistry Conference. The conference will launch a multi-level approach to green chemistry and product and process design. Leading experts in the fields of business technology, chemistry, engineering, and process improvement will discuss ways to advance and sustain green products and processes in Michigan. Participants will receive fact-based strategies, along with tools and resources to develop first level action plans for their respective business models.

Registration and updated conference information is available on the Web at www.michigan.gov/greenup. For additional information, contact the *Environmental Assistance Center* at 1-

800-662-9278, or email at deg-ead-env-assist@michigan.gov.

September 28, 2009: early registration deadline for the **2009 AIChE Annual Meeting, Nashville, TN**. The meeting will run from November 8 through 13, 2009. www.aiche.org/annual

October 1, 2009: DEADLINE for abstracts for **Sustainability & Recycling: Raising the Bar in Today's Economy (GPEC[®] 2010)**, to be held March 8 – 10, 2010 at the Florida Hotel & Conference Center, Orlando, FL USA (www.thefloridahotelorlando.com). The Plastics Environmental Division of the Society of Plastics Engineers Global Environmental Conference is looking for high quality, technical business and marketing papers for presentation at their upcoming plastics environmental conference. See the [Call for Papers](#) for more information.

February 18, 2010 – The Green Exchange Breakfast will be co-produced by InformEx and the ACS Green Chemistry Institute[®], please contact Jennifer Jessup, jjessup@informex.com if you would like to participate. For more information, visit: www.informex.com

Greetings!

I hope you have enjoyed this issue of *The Nexus*. If you missed us last week at the Fall ACS National Meeting here in Washington, D.C., at exhibit booths, #1829 (chEMPOWER) and #1428 (ACS GCI and Chemical Society of Washington), I would still love to hear your feedback and suggestions for enhancements to this newsletter by email. You will notice we are attempting to provide a wide spectrum of information from articles as brief as "cliff notes" to full-blown listing of the accomplishments of our recent 13th Annual Green Chemistry and Engineering Conference.

If you have photos of your events, or content ideas for future issues, please share them with me; if space allows, they could appear in an upcoming issue. I look forward to hearing from you.

Our next issue will be sent in September.

Warm regards,
Linda Pirrone ACS GCI Writer/Editor *The Nexus* L_pirrone@acs.org

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