

NCIIA News

National Collegiate Inventors & Innovators Alliance ■ Fall 2009

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- NCIIA grant awards: May 2009 cycle
- Spotlight on clean energy E-Teams focused on residential markets

Innovation in higher ed at *Open*: The NCIIA 14th Annual Conference

We at NCIIA believe that now is the time to push toward the future of technology entrepreneurship in higher education. We're moving in that direction with our 14th Annual Conference, known simply as *Open*. The conference will feature a number of opportunities designed to help you change the face of engineering education in the US.

Track focused on high-impact, actionable items

The first results-based highlight of this year's conference is a new track of NSF-sponsored workshops focused on high impact, actionable tools, ideas and techniques that faculty can use in their teaching. The workshops will run throughout the conference schedule, and, after the conference, NCIIA staff will follow up with attendees to see how (or if) the techniques and tools learned in the workshop are being applied.

Conference attendees will have a variety of workshops to choose from, including the opportunity to participate in small teams designing new social entrepreneurship ventures, or, in another workshop, learning how to use modules designed to give students experience with a variety of tools and manufacturing techniques while at the same time exposing them to simple, elegant appropriate technologies. A third workshop will offer practical ideas and a tool kit of resources (including video clips, books and mentoring approaches) to create and support high-functioning student E-Teams.

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NCIIA News is the bi-annual newsletter of the National Collegiate Inventors and Innovators Alliance (NCIIA)
Editor: Tim Binkert, Program Associate for Communications

Email comments to tbinkert@nciiia.org
www.nciiia.org

New opportunities for students and faculty

After fourteen years of innovative education in US colleges and universities, the NCIIA is continuing to expand, helping facilitate change in higher education with several new and growing initiatives.


Topping the list is BMEStart, NCIIA's new undergraduate biomedical engineering competition. BMEStart is designed to promote innovation and entrepreneurship at the undergraduate level with a focus on mastery of design and product development skills. Eligible competition entries must address a real medical clinical need with a clearly defined solution. Read the sidebar on page 4 for more information on BMEStart, or head to www.nciiia.org/competitions/bmeidea.

More than seventy E-Team innovations have already reached the market, including some that address residential energy consumption. The article on page 2 spotlights a handful of NCIIA E-Teams that are working toward making our homes cleaner and more energy efficient, with innovations that have the potential to make a lasting impact on the environment and our children's future.

Next year's Annual Conference, *Open*, focuses directly on action and impact. We are adding a full track of workshops during the conference focused on high impact, actionable outcomes that attendees can use to inform and improve their teaching. The Venture Well Forum is designed to bridge the gap between university start-up and full-fledged, capitalized venture, helping teams achieve real market impact. Visit www.nciiia.org/network/conference/2010 to find out more about *Open*.

Lastly, I want to call your attention to the upcoming deadlines for our Advanced E-Team and Course & Program grants. The next deadline for both is **December 4th, 2009**. Don't miss out on the chance to strengthen invention, innovation, and entrepreneurship education at your institution through curricular development and support for the work of E-Teams.

Sincerely,



Phil Weilerstein,
Executive Director

Clean energy hits home

E-Team grantees focusing on new ways to meet residential energy needs

Even a brief look at the statistics regarding home energy consumption in the US can be staggering: American households consume 355 billion kwh per year for heating and cooling alone; US homes produce 21 percent of the country's total global warming pollution; by 2020, the US residential sector will account for 11.4 quadrillion BTUs of end-use energy annually...In the long run, satisfying our energy needs while decreasing CO₂ emissions will require a coordinated effort on a number of fronts, including developing renewable energies and increasing energy efficiency. Over the years, a number of NCIIA E-Teams have looked to do just that, finding newer, cleaner ways to harness energy for home use and helping us make our homes more efficient. We're happy to report that some of their efforts are starting to pay off in real commercial outcomes.

Heat Assured Systems

One of our first E-Teams, Heat Assured Systems, began as a group of senior engineering and economics majors at Swarthmore College determining the feasibility of a residential heating system that could operate during grid power outages.

After a series of E-Team grants and an initial business planning effort, the company is up and running along with its subsidiary, Heat Assured Systems of New York. Their product is EROHS: the Efficient, Robust, Off-grid Heating System. Based on a patented scheme that includes an innovative proprietary controller, EROHS solves two problems at once by enabling several types of home heating systems to function normally during power grid outages and improving energy efficiency when the grid is operational. It's the kind of integrated, multi-purpose technology that we'll need in order to reduce our carbon footprint.

Commenting on EROHS' commercialization potential, Heat Assured Systems President Fred Orthlieb said, "Tests of the EROHS prototype have exceeded the company's performance goals. We're conducting field tests this winter and plan to launch the first generation of the product commercially shortly thereafter. With energy prices rising and the green economy finally taking hold, the timing could not be better."

Solar Ivy

Another novel clean energy system comes from a brother-and-sister startup team from Brooklyn, NY that received E-Team funding in 2006. Teresita and Samuel Cochran founded SMIT (Sustainably Minded Interactive Technology), whose first product is GROW, a hybrid solar and wind panel designed to resemble ivy vines. Based on principles of biomimicry in which technology imitates nature, GROW consists of flexible solar foil molded to look like ivy and piezoelectric generators that are

activated by the leaves. The panels are beautiful, too, hanging vertically on the walls of buildings to form a product that is both environmentally and aesthetically sound.

While GROW hasn't made it to market as yet—they're currently seeking investor funding—the product has been featured in a number of media outlets (Fox Business, Planet Green, Inhabitat) and design exhibits. The exposure is generating demand: according to Teresita Cochran, they're getting calls weekly from companies in France, Italy, Great Britain, Greece and South Africa saying they want GROW *now*.

i-conserve

One home energy E-Team that has already met with success is i-conserve, a Penn State company. I-conserve developed the Home Energy Monitor™, a handheld device that communicates with a home's utility meter, graphing electrical consumption, estimating utility bills, showing the current price of electricity, and calculating the carbon footprint generated by the building, all in real time. The idea, of course, is to get people to understand how much electricity they're using—and encourage them to use less. In November of 2007, i-conserve sold its IP portfolio and technology assets to Greenbox, a California company creating an interactive energy management platform for the home.

ecoMOD

One of our newer green building grantees is ecoMOD, an ongoing project at the University of Virginia in which students construct affordable, modular homes that use 30-50% less energy than similar houses. This one hits on the concepts of both equity and environmental responsibility: not only should good housing be affordable for all, it should be lean and green as well. This means integrating a whole suite of energy-saving techniques and devices into the house: solar water heaters, passive design, using reclaimed materials, designing for disassembly and much more. They've built five houses so far, funded by a variety of non-profits, corporations and the EPA.

According to PI Paxton Marshall, the group is pursuing two commercialization initiatives. "We're promoting the house designs to affordable housing agencies and modular manufacturers. Meanwhile, we're promoting our residential energy monitoring system as a solution to provide residents timely feedback on their energy use, and also as a building block for developing energy-saving automation and control applications to interface with smart grid technologies."

Each of these companies is bringing to market technology that we can use to make our homes more efficient in the long run—small parts of a larger effort that will contribute to the green economy. ○

Funded NCIIA grants: May 2009

Advanced E-Team grants

Solar Ease

Mingui Sun, University of Pittsburgh
\$20,000

Polytech Waterbag: Water Treatment for Disaster Relief

Tryg Lundquist, California Polytechnic State University,
San Luis Obispo
\$20,000

Dairy Pasteurization for Rural Peru

Lupita Montoya, Rensselaer Polytechnic Institute
\$16,000

GlobalResolve: Development of the Twig Light

Brad Rogers, Arizona State University at the Polytechnic
Campus
\$16,000

Sheba Water Filter: A Product of AYZH

Paul Hudnut, Colorado State University
\$16,700

Automating Long-range Vibrometry through Vision and Web Technologies

Zhigang Zhu, CUNY City College
\$18,144

Reverse Engineering Bicycles to Develop New Businesses, Products, and Increased Income for the Metalworking and Agriculture Industries in Lebialem (Cameroon)

Leslie Speer, San Jose State University
\$20,000

A Medical Device to Treat Gallstone Disease

Thomas Krummel, Stanford University
\$18,968

Magnetic Ventures

Aileen Huang-Saad, University of Michigan
\$16,700

Development of a Dynamic EUS Needle: Improving the Efficacy of Endoscopic Needle and Noninvasive Surgical Procedures

Timothy Allen, University of Virginia
\$19,990

Optimization of a Novel Device to Measure the Intrinsic Muscles of the Hand

Maria Oden, Rice University
\$13,200

OsmoPure

Burt Swersey, Rensselaer Polytechnic Institute
\$10,500

Course & Program grants

Enhancing Entrepreneurship Education and Training via the Rutgers Entrepreneurship Lab

Benjamin Melamed, Rutgers University
\$10,000

UW Environmental Innovation Challenge

Emer Dooley, University of Washington
\$15,000

Social Entrepreneurship Program for Technology Innovation

Josee Vedrine, University of Puerto Rico, Humacao
\$7,500

Information, Innovation, and International Development (I3D)

Tapan Parikh, University of California, Berkeley
\$36,500

Entrepreneurial Ventures for Journalists

Monica Dean, Baruch College, CUNY
\$21,200

Technology Commercialization in Developing Countries

Rebecca Richards-Kortum, Rice University
\$32,000

Creating Social Value and Pattern-breaking Change through Design

Karen Hofmann, Art Center College of Design
\$22,500

Renewable Energy Entrepreneurship Partnerships (REEP)

Asad Yousuf, Savannah State University
\$24,000

Facilitating Entrepreneurship in Lighting

Russell Leslie, Rensselaer Polytechnic Institute
\$29,394

The KINDLE Student Mentoring Program

Jonathan Rosen, Boston University, \$33,000

Building a Design and Innovation Professional Masters Degree Program at the University of Cincinnati

Mary Beth Privitera, University of Cincinnati
\$7,500

E-ship Engineering Entrepreneurship Innovation Development Directive at the University of Colorado at Boulder

Kurt Smith, University of Colorado at Boulder
\$7,500

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It's all part of an effort to make the conference as useful as possible, impacting both faculty and the students they teach.

For a full list of the workshops, see the conference schedule at <http://nciia2010.sched.org/>.


Venture Well Forum and Sustainable Vision workshop

Pre-conference activities will feature the annual Venture Well Forum and the Sustainable Vision workshop. Venture Well is NCIIA's new seed investment program for promising start-ups and E-Teams—again, we're focusing on real outcomes, in this case helping teams bridge the gap between university research and market impact. The 2010 Venture Well Forum will feature a small group of teams presenting their innovative technologies to investors for possible collaboration and investment. If you're interested or have questions, contact Joseph Steig at jsteig@nciia.org.

The Sustainable Vision workshop is a gathering of NCIIA's Sustainable Vision grantees—people doing work creating breakthrough technologies for those living in poverty in the US and abroad. Faculty come to share their work, network with other like-minded colleagues and hear presentations from practitioners and funders interested in technology innovation and entrepreneurship as a solution to poverty.

Olympus Innovation Awards and March Madness for the Mind

Open will also feature two mainstays of the NCIIA conference: the Olympus Innovation Awards and March Madness for the Mind. The Olympus Innovation Awards recognize faculty and staff from NCIIA member institutions who have fostered or demonstrated innovative thinking in higher education, with prizes of \$10,000, \$2,500 and \$1,000. Commenting on the award, Deborah Streeter, professor of personal enterprise in Cornell University's Department of Applied Economics and Management and 2007 winner of the Olympus Innovation Award, said, "It is extremely encouraging to have the recognition and resources needed to push the boundaries and reach learners with new and innovative approaches." See www.nciia.org/competitions/olympus for more information.

Always a highlight of the conference, March Madness for the Mind is an annual celebration of E-Team innovation, with top teams showcasing their work at The Exploratorium (exploratorium.edu) in San Francisco. It is the signature event at a conference designed to propel engineering education in the US to new heights. Make your plans to attend now! 

Announcing a new undergraduate BME competition

We are proud to announce a new addition to NCIIA's suite of competitions: BMEStart. BMEStart is a new biomedical engineering student competition designed to promote product design and entrepreneurship at the undergraduate level. Much like BMEidea, in order to win the competition, entries must address a clinical need with a clearly defined solution. BMEStart, however, is focused primarily on providing senior capstone design teams with recognition and the motivation to excel.

BMEidea:

- Open to all BME students (grad and undergrad)
- 1 entry per department
- Emphasis is on innovation and commercial potential
- IP search & strategy required
- Criteria based on MDEA industry awards

BMEStart:

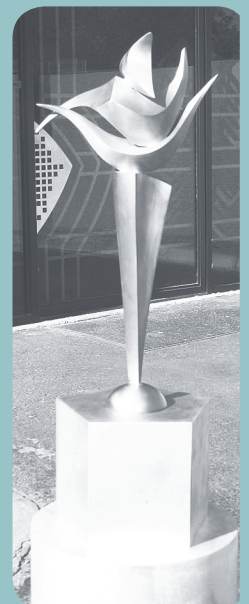
- Undergraduate BME student teams only
- Multiple entries per department
- Emphasis is on innovation and mastery of design and product development skills
- Criteria include engagement of industry advisors & ABET capstone objectives

For BMEStart, first place earns \$10,000, second place earns \$5,000, and third place \$2,500.

**Competition entry deadline:
May 14, 2010**

Meanwhile, the fifth annual BMEidea competition brought an exciting array of submissions from across the country, with winners from Stanford, University of Cincinnati and Brown. Visit nciia.org/competitions/bmeidea to read more about the winners.

The BMEidea trophy spends a year on display in the department of the first prize-winner's school.



Olympus Innovation Awards Program 2010



(l to r) Andrew Hargadon, 2009 Olympus Emerging Educational Innovator Award Winner; Michael Camp, 2009 Olympus Innovation Award Winner; and Gifford Pinchot III and Jill Bamburg, 2009 Olympus Lifetime of Educational Innovation Award Winners

The Olympus Innovation Awards Program has recognized faculty excellence and innovation in higher education since 2005.

- Olympus Innovation Award: \$10,000
- Olympus Lifetime of Educational Innovation Award: \$2,500
- Olympus Emerging Educational Leader Award: \$1,000

2010 Olympus Innovation Awards nominations are now open. Please nominate a colleague or yourself at nciia.org/competitions/olympus.

Nomination deadline is November 20, 2009.

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MARCH 25-27, 2010
SAN FRANCISCO, CA

 **14th** Annual Conference

There has never been a more important time to maximize the impact of universities and colleges on American innovation. Join us for our 14th annual conference, exploring the science, business and practice of **technology innovation and entrepreneurship** in higher education.

View the program and register at nciia.org/network/conference/2010

Next NCIA grant application deadlines

Course & Program and Advanced E-Team grants:
December 4, 2009

Olympus Innovation Awards nominations:
November 20, 2009

Advanced E-Team grants (\$1,000 - \$20,000) support commercial outcomes by moving innovative products or technologies from idea to prototype. E-Team grant proposals must demonstrate an idea's technical feasibility, potential for commercialization, and social value.

Course & Program grants (\$2,000 - \$50,000) are awarded to faculty and staff at colleges and universities to help improve existing curricular programs or build new programs in invention, innovation, and entrepreneurship. To obtain the full RFP and apply online, visit www.nciaa.org or e-mail info@nciaa.org.

Sustainable Vision grants (\$10,000 - \$50,000) support transformative educational programs where breakthrough technologies are created and commercialized for the benefit of people living in poverty in the US and abroad. Past grants have addressed basic human needs such as health, food, security, clean water and affordable energy for people living in poverty.

Use our online grant application system!
www.nciaa.org

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 100 Venture Way
 Hadley, MA 01035-9862