

**SFI weekly newsletter for the week of August 2, 2009**  
**A weekly service of SFI**



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**JOBS & POST DOCS, INTERNSHIPS, FELLOWSHIPS, and SCOLARSHIPS**

1. Project Staff Assistant or Associate; full or part-time hours negotiable
2. Ecologist
3. Program Associate/Manager

**NEW RESOURCES**

1. *Industrial Biotechnology* June 2009, Vol. 5, No. 2: 93-103
2. *Sustainability: The Journal of Record*

**EVENTS & CONFERENCES**

1. Education for Sustainability | 30th September to 2nd of October 2009 | Germany
2. The Healing Our Waters - Great Lakes Coalition 5th Annual Great Lakes Restoration Conference

*In an effort to increase recognition and enhance SFI's image, we want to include more publicity about SFI member achievements. Please send announcements of your publications, presentations, awards, and names of awarded proposals to Denise Heikinen at [dmheikin@mtu.edu](mailto:dmheikin@mtu.edu).*

## SFI NEWS AND ANNOUNCEMENTS

### 1. Meet Robert Handler, SFI's Newest Staff Member



Robert Handler joined the SFI this week as a Post-doctoral Associate. Robert recently completed his PhD in Environmental Engineering at the University of Iowa, where he studied iron redox chemistry in simulated groundwater systems. Prior to that, he received his Bachelors Degree in Chemistry from Gustavus Adolphus College.

He is excited to learn about and contribute to a variety of SFI programs. Feel free to stop in at Room 841 Dow to discuss possible projects with him. His email is [rhandler@mtu.edu](mailto:rhandler@mtu.edu) and phone is 487-1092. Robert and his wife Shannon, pictured together, are looking forward to life in the UP, as are their two Springer spaniels, Stella and Chester.

### 2. Congratulations to the 2009 Keweenaw Copperman Triathlon SFI participants!



Aspirus Keweenaw  
Copperman Triathlon  
Saturday, August 1, 2009  
Copper Harbor, Michigan

Seven members of SFI were among the 165 finishers in last Saturday's 2009 Aspirus Keweenaw Copperman Triathlon, proving once again that SFI builds strong bodies as well as strong minds! In the swim-bike-run race were Richard Donovan, David Flaspohler, Valerie Fuchs, Melanie Kueber, Cory McDonald, Richard Vendlinski, and David Watkins. This was SFI Operations Manager Rick Donovan's first triathlon in the Copper Country. Noting that he finished behind all the other SFI participants, Rick said he "finished dead last at SFI but it was fun...brutal fun...but fun." All participants completed the course in very respectable times. For more news and results of the event see: <http://www.keweenawcopperman.org/>  
Also check out the DMG: <http://www.mininggazette.com/page/content.detail/id/506067.html?showlayout=0>  
A video is at: <http://www.keweenawcopperman.org/video/index.htm>

### 3. Unlocking Energy Efficiency in the U.S. Economy

The McKinsey & Company report, *Unlocking Energy Efficiency in the U.S. Economy*, should be of interest to SFI and Energy Advisory Group members (Economist.com and Forbes.com took note): In this report, McKinsey & Company offers a detailed analysis of the magnitude of the efficiency potential in non-transportation uses of energy, a thorough assessment of the barriers that impede the capture of greater efficiency, and an outline of the practical solutions available to unlock the potential. The research shows that the U.S. economy has the potential to reduce annual non-transportation energy consumption by roughly 23 percent by 2020, eliminating more than \$1.2 trillion in waste – well beyond the \$520 billion upfront investment (not including program costs) that would be required. The reduction in energy use would also result in the abatement of 1.1 gigatons of greenhouse gas emissions annually – the equivalent of taking the entire U.S. fleet of passenger vehicles and light trucks off the roads. Such energy savings will be possible, however, only if the United States can overcome significant sets of barriers. These barriers are widespread and persistent, and will require an integrated set of solutions to overcome them – including information and education, incentives and financing, codes and standards, and deployment resources well beyond current levels. [www.mckinsey.com/client-service/electric-power-natural-gas/US\\_energy\\_efficiency/](http://www.mckinsey.com/client-service/electric-power-natural-gas/US_energy_efficiency/)

## SUSTAINABILITY NEWS

### 1. Lawmakers Ask National Academies to Study Ways to Help Research Universities

On June 22, four members of Congress sent a letter asking the National Academies to appoint a national commission to identify the "top 10 actions" that Congress, state governments and others could take to strengthen the international competitive position of American research universities, saying: "We are concerned that they are at risk." The signers were Sens. Barbara Mikulski (D-Md.) and Lamar Alexander (R-Tenn.), and Reps. Bart Gordon (D-Tenn.) and Ralph Hall (R-Texas).

## 2. Michigan Tech gets \$2.98 million in battery grants



At Detroit's groundbreaking and high-tech NextEnergy Center, Vice President Joe Biden announced \$2.4 billion in grants to accelerate the development of next-generation batteries and electric vehicles. More than \$1 billion of that money will be coming to Michigan in several major grants, including \$2.98 million for Michigan Tech for "Educational programs for graduate, undergraduate and secondary students and the general public. Partnering with Argonne National Laboratory, AVL, General Motors Corp. Eaton Corp., Horiba, MathWorks and Schweitzer Engineering Laboratories." <http://www.wwj.com/Michigan-Gets--1-Billion-Plus-In-Battery-Grants/4947276>

**Chevy Volt battery**  
**GLIT Report 8/6/09**

For a gallery of photos of Biden's visit, see <http://www.wwj.com/Biden-at-NextEnergy/4946929>

To view a DOE map of the award locations, visit

[http://www1.eere.energy.gov/recovery/pdfs/battery\\_awardee\\_map.pdf](http://www1.eere.energy.gov/recovery/pdfs/battery_awardee_map.pdf) (Note that the DOE map put Michigan Tech in the lower peninsula!)

For a recent background article on the push for lithium battery research, see "A Quest for Batteries to Alter the Energy Equation" By Matthew L. Wald who reports that the competition is on to build smaller, more powerful batteries that could help transform the energy economy.

[http://www.nytimes.com/2009/07/28/science/28batt.html?\\_r=1&emc=eta1](http://www.nytimes.com/2009/07/28/science/28batt.html?_r=1&emc=eta1)

## 3. Sports and Sustainability

Environmental initiatives are a top priority for many colleges, but they are an afterthought -- or a distraction -- for most sports programs, new survey finds. <http://www.insidehighered.com/news/2009/07/30/sustainable>

## 4. State governments turning to golf courses, long seen as water guzzlers, for tips on water conservation



In an August 06, 2009 *New York Times* article entitled "On the Fairway, New Lessons in Saving Water," Leslie Kaufman reports that golf courses have learned several ways to conserve water.

<http://www.nytimes.com/2009/08/06/science/earth/06golf.html?emc=eta1>

**New York Times photo**

## 5. International battery companies being courted by Gov. Granholm

Gov. Jennifer Granholm has returned from an international trade trip and announced that a German battery technology company plans to search for a manufacturing location on the west side of the state. Fortu PowerCell soon will begin a site search pending approval of state and local tax incentives. The company would build a battery pack manufacturing facility. Governor Granholm also met with Belgium-based Hansen Transmissions, a producer of wind energy gearboxes, to promote Michigan as a possible location for a service and repair facility.

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## FUNDING & AWARD OPPORTUNITIES

*To submit research proposals through the Sustainable Futures Institute, add "SFI" to the DEPT/CENTER/INSTITUTE(S) column for identifying the PI's and co-PI's. SFI Director, John Sutherland, will sign the transmittal sheet on page 3. (If John Sutherland is unavailable for signing transmittal sheets, Qiong (Jane) Zhang can also sign for SFI). Submitting proposals under SFI provides wider publicity and recognition for your research as well as a 10% return on your incentive account.*

### 1. \$100,000 Lemelson-MIT Award for Sustainability

Deadline to nominate a candidate: Oct 06, 2009

Amount: \$100,000 Winners will be invited and encouraged to participate in Lemelson-MIT Program activities, including outreach opportunities to inspire young people to pursue creative lives and careers in sustainable inventiveness.

The \$100,000 Lemelson-MIT Award for Sustainability honors inventors whose products or processes are in areas that impact issues of global relevance, and also issues that may have more local significance, such meeting basic human needs and building

sustainable livelihoods for the world's poor people. To foster technological invention in the area of sustainability, the Lemelson-MIT Award for Sustainability celebrates outstanding inventors whose technological products or processes collectively enhance human development, mitigate human environmental impact, or provide adaptations to environmental changes that are unalterable in the near term. These types of changes often adversely impact the most vulnerable populations. Through their work, successful candidates help to ensure effective pathways for global coexistence and the vitality of future generations.

Eligibility The award is open to individuals who

- have created a product, process, or material that has been adopted for practical use with demonstrated outcomes; made a technology more affordable; redesigned a system; or otherwise demonstrated remarkable technological inventiveness in addressing sustainability issues;
- have developed processes that positively impact quality of life (e.g., quality of air, water, or soil; or pertain to health, energy, agriculture, shelter, biodiversity, or ecosystem management);
- are involved in mentoring or youth outreach activities; and
- are working legally in the United States or are U.S. citizens or permanent residents.

Email [lemelson\\_awards@mit.edu](mailto:lemelson_awards@mit.edu)

Bookmark Url <http://fundingopps.cos.com/cgi-bin/fo2/getRec?id=102101>

URL for more info <http://mit.edu/invent/a-award.html>

## 2. NSF Environmental Implications of Emerging Technologies

Amount \$100,000 for up to three years

Small equipment proposals of less than \$100,000 will also be considered .

Deadlines Sep 17, 2009 and Mar 03, 2010

This program provides support to develop and test the environmental effects of new technologies. Fundamental and basic research is sought to establish and understand outcomes as a result of the implementation of new technologies such as nanotechnology and biotechnology. The program also supports research on the development and refinement of sensors and sensor network technologies that can be used to measure a wide variety of physical, chemical, and biological properties of interest in characterizing, monitoring, and understanding environmental impacts. The program emphasizes engineering principles underlying technology impacts. Innovative production processes, waste reduction, recycling, and industrial ecology technologies are of interest. All of these have implications that would be relevant to this program.

Current areas of support include

- understanding and mitigating how new developments in nanotechnology and biotechnology will interact with the environment;
- nanotechnology environmental, health, and safety implications and applications;
- predictive methodology for the interaction of nanoparticles with the environment and with the human body, including predictive approaches for toxicity;
- fate and transport of natural, engineered, and incidental (by-product) nanoparticles;
- risk assessment and management of the effect of nanomaterials in the environment;
- evaluation of the effect of increased usage of renewable resources on water supply and land use; and
- sensor and sensor network technologies as they relate to the measurement of these environmental implications.

Bookmark Url <http://fundingopps.cos.com/cgi-bin/fo2/getRec?id=103130> URL for more info

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=501030](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501030)

## 3. NSF Environmental Sustainability

Deadlines Sep 17, 2009 and Mar 03, 2010

This program supports engineering research with the goal of promoting sustainable engineered systems that support human well-being and that are also compatible with sustaining natural (environmental) systems. These systems provide ecological services vital for human survival. The long-term viability of natural capital is critical for many areas of human endeavor. Research in environmental sustainability typically considers long time horizons and may incorporate contributions from the social sciences and ethics.

This program supports engineering research that seeks to balance society's need to provide ecological protection and maintain stable economic conditions. There are four principal general research areas that are supported, but others can be proposed:

1. Industrial Ecology
2. Green Engineering
3. Ecological Engineering
4. Earth Systems Engineering

URL for more info [http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=501027](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501027)

#### **4. NSF Environmental Engineering**

*Deadlines Sep 17, 2009 and Mar 03, 2010*

The program fosters cutting-edge scientific research based on fundamental science for identifying, evaluating, and developing new methods and technologies for assessing the waste assimilative capacity of the natural environment and for removing or reducing conventional and emerging contaminants from polluted air, water and soils. The program is based on four types of engineering tools - measurement, analysis, synthesis, and design.

Major areas of interest and activity in the program include

- developing innovative biological, chemical, and physical treatment processes to remove and degrade pollutants from water and air;
- measuring, modeling, and predicting the movement and fate of pollutants in the environment; and
- developing and evaluating techniques to clean up polluted sites by preserving and enhancing the self-purification ability or waste assimilative capacity of natural environmental systems, such as landfills and contaminated aquifers; restoring the quality of polluted water, air, and land resources, and rehabilitating degraded ecosystems.

Along with its sibling environmental programs (Energy for Sustainability, Environmental Implications of Emerging Technologies, and Environmental Sustainability), the program fosters environmental sustainability through pollution control and resource management/conservation, and development of techniques to minimize or avoid generating pollution. Research may be directed toward improving the cost-effectiveness of pollution avoidance, as well as developing new principles for pollution avoidance technologies. Research for new and improved sensors of environmental conditions and innovative waste reduction and recycling processes also are important components of this program.

<http://fundingopps.cos.com/alerts/103128>

#### **5. NSF Environmental Implications of Emerging Technologies**

*Deadlines Sep 17, 2009 and Mar 03, 2010*

This program provides support to develop and test the environmental effects of new technologies. Fundamental and basic research is sought to establish and understand outcomes as a result of the implementation of new technologies such as nanotechnology and biotechnology. The program also supports research on the development and refinement of sensors and sensor network technologies that can be used to measure a wide variety of physical, chemical, and biological properties of interest in characterizing, monitoring, and understanding environmental impacts. The program emphasizes engineering principles underlying technology impacts. Innovative production processes, waste reduction, recycling, and industrial ecology technologies are of interest. All of these have implications that would be relevant to this program.

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- fate and transport of natural, engineered, and incidental (by-product) nanoparticles;
- risk assessment and management of the effect of nanomaterials in the environment;
- evaluation of the effect of increased usage of renewable resources on water supply and land use; and
- sensor and sensor network technologies as they relate to the measurement of these environmental implications.

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=501030](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501030)

#### **6. NSF Fluid Dynamics**

*Amount \$100,000*

*Deadlines Sep 17, 2009 and Mar 03, 2010*

This program supports fundamental research and education on mechanisms and phenomena governing fluid flow. Topics include hydrodynamic stability; transitional flows and turbulence; Newtonian and non-Newtonian fluid mechanics; sediment transport; waves and coastal engineering; hydraulics; multi-scale, multi-phenomena models and computations; micro- and nano-scale flow phenomena; and biofluid mechanics. Proposed research should contribute to basic understanding, thus enabling the better design, predictability, efficiency, and control of systems that involve fluids. Proposals addressing innovative uses of fluids in materials development, manufacturing, biotechnology, nanotechnology, clinical diagnostics and drug delivery, sensors development and integration, energy and the environment, are encouraged.

URL for more info [http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=13365](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13365)

## 7. DOD Bioenergy - Mathematics, Information and Life Sciences

Air Force Office of Scientific Research (AFOSR)

Amount: Approximately \$200 million is available. Awards average \$150,000 per year for up to five years.

Deadline Continuous.

The primary objectives of this program are to understand and improve the facility of certain microorganisms to produce biofuels, specifically molecular hydrogen and algal lipids, for use in fuel cells and airbreathing engines, and to utilize other complex or impure biofuels for use in compact power generation. The capacity to supply renewable hydrogen and jet biofuels on a macro-scale using biologically based systems will enable the military to power tanks, planes and ships at a predictable cost basis independent of foreign oil markets. On the other hand, microorganisms that produce electricity on the micro-scale using readily available complex or mixed biofuels could serve as portable compact power sources for such devices as remote sensors or future miniature unmanned air and land vehicles. This program supports research that explores the biochemical and molecular processes found in certain oxygenic phototrophs, such as microalgae and cyanobacteria, which enable them to generate molecular hydrogen and lipid biofuels when supplied with only water, carbon dioxide and light. Knowledge of the physiological, biochemical and genetic factors involved in limiting and augmenting production of these biofuels will be used to bioengineer photosynthetic organisms whose generation of hydrogen and lipid biofuels will be both highly efficient and controllable. Basic research in photosynthetic biochemistry, hydrogenase enzymology, and lipid biosynthesis is viewed as essential in accomplishing these objectives and, eventually, in developing the biotechnology needed to generate renewable, carbon-neutral supplies of lipid-derived jet fuels and fuel-cell hydrogen.

This program also supports research to enable the development of biofuel cells, both microbial and enzymatic, that can convert complex and impure fuel sources into electrical energy at sufficiently high power densities to be useful in portable devices. The idea is that biofuel cells will sustain their power by utilizing a wide range of fuel sources from the environment, such as ambient carbohydrates and macromolecules. Development of self-sustaining microbial or enzymatic biofuel cells will require understanding certain basic fundamental issues, including optimizing current production under variable conditions, biological mechanical energy storage, electron and proton transfer reactions and kinetics between enzymes/microbes and the electrode surface, theoretical modeling of mass transport in model biofuel cells, novel electrode designs, and enzyme engineering for faster catalysis. <http://fundingopps.cos.com/cgi-bin/fo2/getRec?id=115239>  
<http://www.wpafb.af.mil/library/factsheets/factsheet.asp?id=8127>

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## JOBS & POST DOCS & INTERNSHIPS, FELLOWSHIPS, SCOLARSHIPS and CFPs

### 1. Project Staff Assistant or Associate; full or part-time hours negotiable

[Great Lakes Research Consortium](http://www.esf.edu/glrc/default.htm) <http://www.esf.edu/glrc/default.htm>

[Position Announcement](http://www.esf.edu/glrc/ANNOUNCEMENT%20OF%20PROFESSIONAL%20VACANCY.pdf) <http://www.esf.edu/glrc/ANNOUNCEMENT%20OF%20PROFESSIONAL%20VACANCY.pdf>

### 2. Ecologist

U.S. Section of the International Joint Commission, Washington, DC

[http://www.ijc.org/en/home/main\\_accueil.htm](http://www.ijc.org/en/home/main_accueil.htm)

### 3. Program Associate/Manager

The Council of Great Lakes Governors, Chicago, Illinois

<http://www.cglg.org/>

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## NEW RESOURCES



### 1. *Industrial Biotechnology* June 2009, Vol. 5, No. 2: 93-103

“Sustainable biofuels: A commonsense perspective on California’s approach to biofuels & global land use” by John J. Sheehan

<http://www.liebertonline.com/doi/pdfplus/10.1089/ind.2009.5.093>

## 2. Sustainability: The Journal of Record



“In the Green: Almost Extinct” by A. Naditz  
The shift to enviro-friendly products means the end for some everyday items

“Corporate/Higher Ed Outlook: Going Green to Make Green” by C. Arias  
Learn who's hiring and how to look for sustainable jobs

Roundtable: Change Management  
Consultant Leith Sharp and panelists talk about how to make seismic shifts toward sustainability

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<http://www.liebertpub.com/products/product.aspx?pid=252>

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### EVENTS & CONFERENCES

#### 1. Education for Sustainability | 30th September to 2nd of October 2009 | Germany



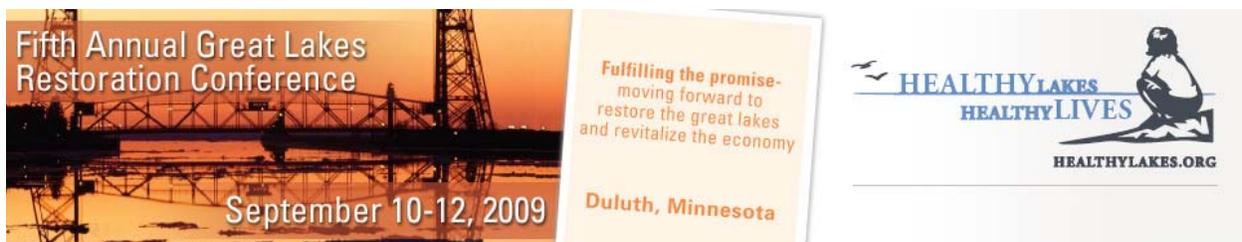
A three-day International Seminar on Greening Education will be held from 30th September to 2nd October 2009 in the "green" city of Karlsruhe, Germany. This event will take education and environmental policy makers, government and non-governmental organizations, education institutions, teachers, international agencies and environmental professionals through the need for greening education, and then discuss effective initiatives that governments, education institutions and development organizations need to take and can take to provide sustainable knowledge, skills, values and practices

in the classrooms and in the communities.

Further to the knowledge sharing on greening education including topics such as ecologizing curriculum (incorporating sustainability in curriculum), greening delivery of courses (sustainability compatible education delivery) and low carbon education institutions; the upcoming event also provides an excellent networking opportunity with education institutions, international agencies, governmental and non-governmental organizations, sustainable development practitioners and other stakeholders in Europe and beyond.

For further information, please see the event details <http://www.etechgermany.com/GreeningEducationEvent.pdf>

#### 2. The Healing Our Waters - Great Lakes Coalition 5th Annual Great Lakes Restoration Conference



Healthy Lakes 2009 September 10-12, 2009

FULLFILLING THE PROMISE- MOVING FORWARD TO RESTORE THE GREAT LAKES AND REVITALIZE THE ECONOMY

Holiday Inn Hotel & Suites Downtown Waterfront

200 West First Street

Duluth, MN 55802

REGISTER by August 19th, 2009. <http://www.healthylakes.org/09conference/>