



SFI weekly newsletter for the week of March 8, 2010
A weekly service of SFI



Please send announcements of your publications, presentations, awards, events, and names of awarded proposals to sfi-admin@mtu.edu.

SFI NEWS:

1. [New Speaker Added to 2010 SFI Speaker Series:](#)
**Forest Biorefinery in Sweden -
Research and Commercial Introduction**

Thursday ,
March 25, 2010
11:00 a.m. Rekhi GO6

Dr. Rikard Gebart, Managing Director ETC - Pitea, Sweden

Abstract: Sweden is one of Europe's leading producers of traditional forest products, e.g. pulp, paper and sawn goods. In recent years, rising oil prices and tough international competition in the area of forest products has led industry to evaluate the possibility of making additional new products, e.g. synthetic motor fuels. Estimates have shown that the cash flow at a typical pulp mill can increase by almost 50% if the mill introduces gasification-based production of motor fuels and that the payback time for the investment is attractively short.

In this presentation, some of the on-going developments in the area of forest-based biorefining in Sweden is reviewed. Already commercial is the conversion of tall oil (a by-product from chemical pulp mills) into FAME diesel done by the company SunPine in Pitea, Sweden. Close to commercial is the production of DME via black

liquor (another by-product from chemical pulp mills) gasification developed by Chemrec. DME is a synthetic diesel fuel that burns without soot production and this has motivated Volvo Truck to develop a new diesel engine for heavy trucks that will be field tested in ten trucks with DME from a pilot plant in Pitea, Sweden.

Another technology that is under development is direct gasification of biomass in an entrained flow configuration developed by IVAB. This technology is being tested in a pilot gasifier in Pitea, Sweden. In addition to the review of on-going industrial developments some recent results from experiments in an industrial size black liquor gasifier will be presented and compared with predictions from a CFD based gasifier model.

2. [Call For Posters: CWS World Water Day, March 22, 2010](#)

Contact: Carol Asiala, GMES 487-2033/ mtcws@mtu.edu

Registration Deadline: March 17, 2010

Registration Forms: <http://www.mtcws.mtu.edu> A: Original Research

B: Coursework/Informational

Entries will be judged individually in

Dow 875 from 2:30 – 3:30 on March 22

Must be affiliated with the Center for Water & Society to qualify for cash awards



SUSTAINABILITY NEWS

1. [More, Better Biodiesel](#)

Yields of biodiesel from oilseed crops such as safflower could be increased by up to 24 percent using a new process developed by chemists at UC Davis. The method converts both plant oils and carbohydrates into biodiesel in a single process, and should also improve the performance characteristics of biodiesel, especially in cold weather. ([more](#))

2. [Isle Royale Park HQ Ponders Move](#)

The National Park Service is considering moving the Isle Royale National Park headquarters from Houghton, and where it might go was a topic of discussion during a joint meeting of the Houghton and Hancock city councils Monday night.

Meeting in the community room of Lakeview Manor in Hancock, the two councils heard from Jim Corless, Keweenaw National Historical Park superintendent, and Scott See, KNHP Advisory Commission executive director, about the plans for reuse of the Quincy Smelting Works in Ripley, which is owned by Franklin Township, and the possibility of relocating the Isle Royale park headquarters and its Ranger III tour boat there. ([more](#))

3. [Superconducting DC Cables: Technology is Ready](#)

Superconducting direct current (DC) cables, capable of moving thousands of megawatts of electricity between regions, are ready for commercial development using today's technology, according to a new report by the Electric Power Research Institute (EPRI).

The EPRI analysis points to significant efficiency gains using superconducting DC transmission lines, with the capability to reduce transmission losses at full load by more than 150% compared to alternating current (AC) or high-voltage DC systems. Assuming the trend continues for cost-performance improvements in superconducting wire, such a line could become an option within a decade along with Extra High Voltage (EHV) AC lines that are currently used to move large amounts of power over long distances. ([more](#))

SEMINARS

1. Environmental Engineering Seminar

Speaker: Dr. Eric Seagren, Department of Civil & Environmental Engineering, MTU

Date: Monday March 15

Time & Location: 3 pm, DOW 642

Title: Transport and Capture of Pathogenic Indicator Bacteria from Urban Stormwater Runoff Using Bioretention

Abstract: Bioretention, a nature-based treatment practice, has significant potential for reducing the threat of microbial pollutants from urban stormwater runoff to receiving water bodies. The overall goal of this research was to evaluate the removal efficiency for bacteria from urban stormwater runoff in bioretention systems and the potential of an engineered media (iron oxide-coated sand (IOCS)) for enhancing bacterial removal. This investigation was accomplished through laboratory column studies coupled with field tests. Column studies on the transport and destruction of *Escherichia coli* O157:H7 strain B6914 (a surrogate of pathogenic *E. coli*) in conventional bioretention media (CBM) and IOCS demonstrated that the bacteria were well removed in CBM (a mean 70% efficiency), but IOCS significantly enhanced the capture of strain B6914 (a mean 99.4% efficiency) due to the greater positive charge and surface roughness. However, the decay of trapped strain B6914 cells was much faster in CBM compared to the IOCS. More than 99.98% of B6914 cells attached to CBM died off within one week, while approximately 48% of trapped cells still survived in the IOCS after one week. Predation by indigenous protozoa in the CBM appears to play a dominant role in the faster decline of the number of trapped B6914 cells in CBM. Additionally, long-term (18 months) column experiments indicated that during the



periodic application of simulated rainfall, the removal efficiency for strain B6914 improved over time, achieving 97% or higher efficiency after six months. Consistent with the laboratory studies, two years of field studies showed that bioretention systems reduced the concentration of indicator bacteria in the outflow during most storm events and increased the probability of meeting specific water quality criteria. The concentration of indicator bacteria in the input flow generally increased with higher daily temperature. No clear trend for the bacterial removal efficiency with respect to temperature was found in laboratory and field studies. However, the bacterial decay coefficients in CBM increased exponentially with elevated temperature. Based on these results, it is concluded that CBM not only achieves good removal for bacteria, but also has the potential to render the process sustainable.

2. **Welcome to STARS** - a transparent, self-reporting framework for colleges and universities to gauge relative progress toward sustainability. STARS was developed by AASHE with broad participation from the higher education community. ([STARS website](#))



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, David Shonnard, will sign the transmittal sheet on page 3. (If David Shonnard is unavailable for signing transmittal sheets, Rick Donovan 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. Please feel free to contact SFI in regards to proposal development – SFI can serve as a hub for bringing together different faculty, merging concepts related to sustainability, providing literature review assistance, etc.

1. [Energy for Sustainability - PD 10-7644](#)

Deadline: Sep. 23, 2010

Amount: \$100,000

Sponsor: NSF

The **Energy for Sustainability** program supports fundamental research and education that will enable innovative processes for the sustainable production of electricity and transportation fuels. Processes for sustainable energy production must be environmentally benign, reduce greenhouse gas production, and utilize renewable or bio-based resources that are abundant in the United States.

2. [Environmental Engineering and Sustainability](#)

Deadline: Sep. 23

Amount: \$100,000

Sponsor: NSF

The **Environmental Engineering** program supports fundamental research and educational activities across the broad field it serves. The goal of this program is to encourage transformative research which applies scientific principles to minimize solid, liquid, and gaseous discharges into land, inland and coastal waters, and air that result from human activity, and to evaluate adverse impacts of these discharges on human health and environmental quality. 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; 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.

3. [Environmental Implications of Emerging Technologies](#)

Deadline: September 23, 2010

Amount: \$100,000

Sponsor: NSF

The **Environmental Implications of Emerging Technologies** 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.

4. [Environmental Sustainability](#)

Deadline: September 23, 2010

Amount: \$300,000

Sponsor: NSF

The **Environmental Sustainability** 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 which are supported, but others can be proposed: **Industrial Ecology; Green Engineering; Ecological Engineering; Earth Systems Engineering.**

Topics of interest in **Industrial Ecology** include advancements in modeling such as life cycle assessment, materials flow analysis, input/output economic models, and novel metrics for measuring sustainable systems. Understanding materials flow and taking advantage of such understanding to substitute less toxic, longer lived materials are important areas for consideration. The effects of substituted materials on waste streams can be explored. Innovations in industrial ecology are encouraged. Engineering tools for estimating costs and ramifications of sustainable development must be developed, tested, and evaluated.

5. [NEW: CLIMATE SCIENCE & POLICY MASTER'S DEGREE](#)

BARD CENTER FOR ENVIRONMENTAL POLICY

Bard Center for Environmental Policy is now accepting applications for a new degree in [Climate Science & Policy](#). This new degree helps to provide the trained workforce critical for businesses, non-profit organizations, and governments at all levels as they face the increasing challenges posed by climate change.

We hope to be awarded six generous NSF fellowships to support students entering this program in the Fall of 2010, 2011, and 2012.

6. **Great Lakes Restoration Initiative Request for Proposals**

Note: SFI will be coordinating several responses to this RFP. Please feel free to contact Richard Donovan, SFI's operations manager regarding how you can participate.

<http://epa.gov/greatlakes/fund/2010rfp01/index.html>

HUFY2010 Great Lakes Restoration Initiative Interagency Funding Guide U

U.S. EPA, August 24, 2009

Bob Shuchman's write-up of the summer EPA presentations on the GLRI is here:



<http://www.mtri.org/GreatLakesRestorationInitiative.html>

7. Fundamental Research Program for Industry/University Cooperative Research Centers (FRP) - NSF 10-507

Amount \$50,000 to \$200,000 for ~10 awards No cost sharing required.

Deadline Feb 17, 2010 to Feb 02, 2011

Industry participation extends the scope and horizon of center research projects so as to drive innovation with industrially relevant fundamental research projects. Industry-defined fundamental research projects must demonstrate measurable industry collaboration and involvement that accelerates fundamental research.

The I/UCRCs contribute to the knowledge base of a large number of industrial manufacturing processes that involve a wide range of technological pursuits and are found in areas such as aerospace, electronics, chemicals, recovery of natural resources, the environment, petroleum, biochemicals, materials, food, power generation, and allied activities. To better enable these processes, the I/UCRC fundamental research program supports research that involves the development of fundamental engineering and science principles, process control and optimization strategies, mathematical models, and experimental techniques, with an emphasis on projects that have the potential for innovation and broad application in areas in industry. This fundamental research is leading to applications that include sensors, materials, pharmaceuticals, imaging, visualization, embedded systems, next generation computers, medical devices and instrumentation, alternative energy, ecological engineering, water and waste treatment, and robotics. Should the fundamental research proposals be awarded, there may be opportunities for additional funding for opportunities such as those listed below:

1. GOALI (NSF-09-516) - Graduate and Undergraduate Student Industrial Fellowship
2. Research Experienced for Undergraduates (NSF 09-598) - REU

Bookmark Url <http://fundingopps.cos.com/cgi-bin/fo2/getRec?id=115693>

URL for more info <http://www.nsf.gov/pubs/2010/nsf10507/nsf10507.htm>

8. ERDC BAA - Construction Materials Made From Recycled Wastes (CERL-11)

Sponsor: DOD

Amount not listed

Deadline Continuous

The Construction Engineering Research Laboratory announces research opportunities involving construction materials made from recycled wastes. Research is currently being conducted on construction materials made from recycled, post-consumer wastes with a primary focus on products made from recycled plastics. Required research on these polymeric materials includes, but is not limited to, studies concerning the relationship of fabrication techniques to end-product properties, degradation mechanisms in various environmental exposures, long-term mechanical properties and durability in severe and varying environments, creep behavior at varied temperatures and loads, behavior and design of bolted connections, quality assurance techniques, design criteria for structural applications, and modeling techniques to predict material behavior in different loading situations over the life-cycle of the product.

Bookmark Url <http://fundingopps.cos.com/cgi-bin/fo2/getRec?id=41644>

9. [How Does Chemistry Help YOU Be Green? Video Contest](#)

2010 is a milestone year for environmental awareness, marking the 40th anniversary of the celebration and recognition of Earth Day, the founding of the Environmental Protection Agency and the National Environmental Policy Act that have all helped to shape the way we think and the way we live our lives with respect to the environment.

In recognition of these significant milestones and the part we can all play, [Environmental Science & Technology](#) would like to give you the chance to show the world how chemistry helps you be green. Please share with us what you are doing in your own community, school, workplace, etc. to be more green and how chemistry can help sustain both your efforts and the world you live in.

Submit a video on your own, or join up with a research partner, a classmate, a professor, you can even submit a video as a whole class or lab—but please be creative, have fun, and help us show the world how chemistry helps you, or can help us all to be green!



JOBS, POST DOCS, INTERNSHIPS, FELLOWSHIPS, SCHOLARSHIPS

1. REFERRED BY SFI MEMBER Dana Johnson:

Opening for a Graduate Researcher

"...I have an opening in my research lab for a Ph.D. student to be funded by an NSF grant, starting next Fall. Below is a very brief description of the research opportunity and links to my websites. The ideal student would be strong in math and/or CS, have an interest in energy and the environment, as well as an interest in human decision making. But the most important qualities are intellectual curiosity and an interest in addressing public policy questions.

Please circulate this announcement and have interested students contact me soon. I particularly encourage women and underrepresented minorities to apply. Moreover, UMass has an excellent program for underrepresented minorities who are citizens or permanent residents, including mentoring and additional funding opportunities.

Energy Technology Policy in the Face of Climate Change. Pursue a Ph.D. (or Ph.D./M.S.) in Industrial Engineering & Operations Research. Funded by NSF. Research entails mathematical modeling; and designing, implementing, and analyzing economic experiments. Background in mathematics, economics, computer science, or engineering preferred. See <http://www.ecs.umass.edu/index.pl?id=3984> and <http://mielsvr2.ecs.umass.edu/E3lab/> for more information." Erin Baker, Associate Professor University of Massachusetts, Amherst; Visiting Associate Professor, Precourt Energy Efficiency Institute, Stanford University ph .650-723-0884; edbaker@ecs.umass.edu;

2. [People, Ecology and Development Study Abroad Program - Thailand](#)

Deadlines: Fall Semester, March 15; Spring 2011 Semester, September 15, 2010

The International Sustainable Development Studies Institute is now accepting applications for its Fall 2010 and Spring 2011 People, Ecology and Development study abroad semester in Thailand. Designed in partnership with local communities, courses focus on sustainable development by experientially studying the link between culture and ecology. Students will be learning from local activists and village elders, backpacking into remote Karen villages, and sea kayaking and skin diving the reefs and mangroves of Southern Thailand. Summer internships with Thai NGOs are also available for spring semester participants.

3. [2010 Green Building in Higher Education Fellowships](#)

Deadline: March 15, 2010

The Kresge Fellowship Program within the Advancing Green Building in Higher Education Initiative will provide free registration, accommodations, and travel expenses (up to \$2000/fellow) for fellows to attend one national green building-related conference. As part of the program, Second Nature will award fellowships to 25 university executives who will learn the skills and technical information they need to be effective champions for green building at their own under-resourced campuses. Schools that have received Title III/V designation from the Department of Education are invited to apply. Senior Managers of colleges and universities including campus planners, facilities directors, or vice presidents of finance and business are eligible for the fellowships through which they will take part in learning and networking opportunities, such as AASHE's 2010 Conference and the U.S. Green Building Council's Greenbuild Conference 2010.

4. [Coordinator, Community Carbon Fund Project, Yale U](#)

Yale University (CT) is seeking applicants for the position of Yale Community Carbon Fund (YCCF) project coordinator. YCCF makes investments in local carbon offset projects within the City of New Haven and across the state of Connecticut. The coordinator will be directly responsible for managing, implementing, developing, and promoting YCCF in its second year. A bachelor's degree in a related field and a minimum of two years professional experience or the equivalent combination of education and experience in the energy and/or carbon area are preferred.

5. [Adjunct Instructor, Sustainability, Rosemont College](#)

Rosemont College (PA) invites applications for adjunct instructors to develop and teach new general education courses in the accelerated bachelor's degree programs. One instructor is sought in the area of sustainability. Desired qualifications include a doctorate in the field of the specific courses proposed



and experience teaching and designing courses both online and on the ground to adult learners at the college level. The position is open until filled.

6. [Assistant Professor, Environmental Studies, Southern Oregon](#)

Southern Oregon University invites applications for a tenure-track position at the assistant professor level in the Department of Environmental Studies. Candidates in the geosciences, earth sciences, environmental sciences or related fields are encouraged to apply. The University seeks a scholar excited by problem-driven field-based research, committed to interdisciplinary undergraduate education, and enthusiastic about joining a department faculty that spans the natural and social sciences. A scientist with a comprehensive knowledge of surficial processes: geomorphology, soils, slope stability, hydrology, water quality, and watershed science, with applied skills and facility with geospatial technologies is preferred. The position is open until filled.

7. [Sustainability Graduate Fellow, U Vermont](#)

Deadline March 31, 2010

The University of Vermont is hiring a sustainability graduate fellow. The sustainability education and outreach work involved in this position will be conducted under the supervision of the Director of the Office of Sustainability. The fellow's primary responsibility is to coordinate and manage the UVM Eco-Reps Program. The fellow will train previously hired students and update the program's curriculum and organize related activities, utilizing student help whenever possible. Applicants should be an enrolled graduate student with two to four years academic study or experience in sustainability-related field.

8. [Faculty – Alternative Energy Engineering Technology – Lansing Community College](#)

Qualifications: Required Bachelors Degree in energy management, energy efficiency, alternative energy engineering, HVAC/R, electrical engineering, engineering technology, construction management, [more](#)

9. [Student Internships in Energy Efficiency and Renewable Energy](#)

Deadline: Ongoing

The United States Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) offers exciting student volunteer internships throughout the year in its Washington, DC headquarters. These volunteer internships provide exciting opportunities for students to learn through direct experience about the field of energy efficiency and renewable energy. In addition, some colleges and universities give academic credit for federal government internships - and an internship with the government could transition into a full-time paid position after graduation.

10. [Energy Manager, Meredith College](#)

Meredith College (NC) is seeking applicants for the energy manager position. The manager will monitor the energy use of the campus and assess and analyze the energy performance of each building through energy audits, reviewing the efficiency of electrical and mechanical systems, and developing energy management action plans in cooperation with the Facility Services Department, Sustainability Office, and the campus community. The manager will also seek to achieve energy savings, promote indoor air and environmental quality, and minimize the overall environmental impact of campus buildings and infrastructure. A bachelor's degree in a related technical, scientific or engineering discipline or equivalent is required, as is a minimum of three years experience in energy management, facility mechanical systems design, construction and/or maintenance.

11. [Kathryn Fuller Fellowships](#)

Advancing Conservation through Science

World Wildlife Fund – US (WWF-US) is pleased to announce the availability of Kathryn Fuller Fellowships for 2010. For nearly 50 years WWF has committed to delivering science-based conservation results while incorporating the latest research and innovations into our work. As part of its commitment to advancing conservation through science, WWF established Kathryn Fuller Fellowships to support PhD students and postdoctoral researchers working on issues of exceptional importance and relevance to conservation in WWF-US priority places. This year, the Kathryn Fuller Science for Nature Fund will support doctoral and postdoctoral research in the following three areas: (1) ecosystem services; (2) measuring and monitoring carbon stocks in forests; (3) climate change impacts on and adaptation of freshwater resources.

EVENTS, CONFERENCES, & CFPs



1. [SUSTAINABILITY VIRTUAL SUMMIT – Main Topic “Smart ITC”](#)
March 30 – April 1, 2010
First in a series of virtual events focusing on Information and Communications Technologies that will dramatically contribute to mitigating the effects of climate change. Topics covered will include, ICT (Information and Communications Technologies) for Virtualization and Dematerialization, ICT for Smart ICT. Event will be archived until May 10, 2010.
2. [Measuring the Real Cost of Parking and Alternative Transportation Options :: Webcast](#)
Tuesday, March 9, 2010
Institutions that are growing or are greening their campuses often face significant challenges with respect to parking. Before moving forward with new parking construction, replacing existing parking spaces, or implementing alternative transportation options, institutions must be able to quantify the true costs of parking. Having this data allows you to determine the right mix of transportation options for your campus.
3. [Sustainability in Construction Symposium](#)
Wednesday, April 21, 2010 Los Angeles California
4. [MIT Sustainability Summit 2010](#)
April 23, 2010 Cambridge, MA
Conference Title - Mind the Gap: Communicate and Collaborate for a Sustainable World
All the technology and great ideas in the world cannot achieve sustainability by themselves. This summit focuses on the communication and collaboration necessary to make sustainability a reality. Attendees will learn and practice innovative methods for creating effective dialogue and working together during complex decision-making situations and multi-stakeholder engagements. The conference welcomes all attendees interested in sustainability, including but not limited to students, engineers, business leaders, nonprofit leaders, academics, environmental activists, and public servants.
5. [LCA Sustainable Supply Chain USA](#)
April 28-29, 2010 Merriot Chicago Midway
Benchmarking experiences on developing models, principles and standards for measuring and addressing environmental and social impacts throughout the entire life cycle and supply chain.
6. [Ecological Restoration 2010 UnConference](#)
May 3, 2010 North Carolina State University
7. [The Sustainable Operations Summit](#)
May 16, 2010 San Antonio, Texas
8. [Uptime Institute Symposium 2010](#)
May 17-19, 2010 NY, NY
The Uptime Institute Symposium, one of the most influential events on the IT industry and data center operator calendar, is the only event focused entirely on data center efficiency and green enterprise IT. The Symposium attracts stakeholders in enterprise IT, finance, executive management, data center facilities, and corporate real estate to deal with the critical issues surrounding enterprise computing, resource and energy efficiency, availability and productivity.
9. [ASME 2010 4th International Conference on Energy Sustainability](#)
May 17, 2010 Phoenix, AZ
10. [4th Annual Algae Biomass Summit](#)
September 28, 2010 Phoenix, AZ

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