ISIE Spring 2014

ISIE News Volume 14, Issue 1
International Society for Industrial Ecology

Dear ISIE Members,

Spring and summer present some exciting opportunities to connect with industrial ecologists around the world. There are many opportunities outlined in this issue of the newsletter and we hope you consider participating.

The ISIE office will have a temporary staff member to serve in my place while I am on maternity leave through August. Please welcome Judy Crocker who will take over the helm of ISIE in my absence.

Best wishes,

Melanie Quigley
Program Manager, ISIE

From ISIE President Marian Chertow

To our Industrial Ecology Community:

I was delighted to receive the appreciation of many members at our Ulsan, Korea meeting last year for bringing forward a comprehensive update about ISIE. It is very important to remember how necessary and continuous is the need to communicate. In that spirit I would like to offer a quick update and also mention some of my activities and some of the organizational issues we are working on at the level of the ISIE Council.

First, I remind you that we are very pleased to have engaged Mak Dehejia as our Executive Director as of January 1, 2014 following the excellent service of Prof. Roland Clift. I note Mak's long career at the IFC, the private sector arm of the World Bank, and as a technology innovator. You may wonder what the Executive Director of ISIE does. It is fair to say that the ED handles many business and strategic issues such as developing the plans for specific ISIE events including negotiating agreements and determining budgets with the on-site sponsors. The Executive Director works on internal issues such as updating by-laws and other documents as well as on external outreach to other groups, creating partnerships, fundraising, and extending the reach of ISIE as a goodwill ambassador. The Executive Director works very closely with Melanie Quigley, coordinator of the ISIE Secretariat at Yale, and both work with me, our immediate past president, Greg Keoleian and our incoming president, Chris Kennedy. Melanie will be on maternity leave from April through August and I must say that all of the rest of us are concerned about our productivity without Melanie around who handles so much for ISIE and always keeps things on an even keel. In her absence Judy Crocker will staff the office (judy.crocker@yale.edu).

Next, upcoming events offer quite different experiences and are all looking great. More information is available for each:

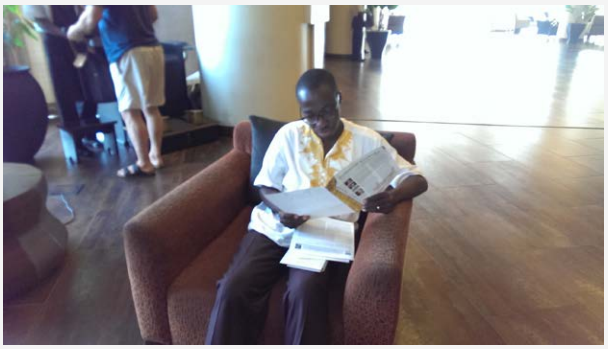
1. The Gordon Research Conference in Lucca, Italy from June 1 through June 6 on the theme Transforming the Industrial Metabolism, chaired by Helga Weisz
2. The Australian Meeting in November 17-19 2014 on the theme "Industrial Ecology in the Asia-Pacific Century: Interdisciplinary Science for Building Sustainable Industrial Systems and Human Settlements" chaired by Dr, Heinz Schandl involving sections EEIO, SEM and possibly IS –EIDC
3. The 2015 ISIE to be held July 7-10, 2015 at the University of Surrey on the theme "Taking Stock of Industrial Ecology" chaired by Prof. Roland Clift.

Professor Bart van Hoof and alumnus Juan Carlos Espinosa showed Marian the sights in Bogota, Colombia in February 2014 as part of her program at the University of the Andes School of Management

I have been doing my best to reach out to areas of the world where our membership is quite low. Since the beginning of the year I have had two significant trips – one to Bogota, Colombia and one to Accra, Ghana. My trip to Bogota was to the University of the Andes School of Management through the Distinguished Visitors Program-Corona Chair. Prof. Bart van Hoof

already teaches industrial ecology in the graduate school so I had the pleasure not only of lecturing broadly on industrial ecology, but also of teaching with Bart – where class begins at 7am – and being asked many questions by his curious students. (See photo above.) On the final day, Bart invited back alumni to present to me live case studies on how industrial ecology was playing out in Colombia –including one by Juan Carlos Espinosa about industrial ecology in the oil palm industry. I learned that a few more area universities are planning courses in industrial ecology and many people in the business community are following these approaches.

In Ghana, I worked with an environmental services company that was clearly already working on industrial ecology ideas through other names. I visited a 600 ton per day waste composting plant that was trying to reuse all streams. The photo shows George Rockson, a key advisor to the compost plant and newly minted PhD, reading one of our IE brochures. (See photo below.) I also visited a plastic recycling plant and some assembly operations. I met with many leaders and made general plans to help organize some events at the new Africa Institute of Sanitation and Waste Management Training Center including industrial ecology.



Newly minted PhD from Kwame Nkrumah University of Science and Technology, George Rockson, reading up on Industrial Ecology concepts in Accra, Ghana during a March 2014 visit with Marian.

Even with this small degree of globetrotting, I report that interest in industrial ecology is great. So many people are now asking the question: what can we actually do to implement sustainability in a positive framework? It is clear to me that industrial ecology holds numerous keys to action. Consequently, one important challenge for us is to make sure we are ready at the organizational level to figure out how best to attract the many new interested people in ways that will also continue our leadership in cutting edge research and practice. We have to think hard about our organization to see that it can adapt to serve the needs of students, a key and vital constituency; recent graduates, too many of whom we lose after graduation even when they stay in the field as consultants, LCA researchers, and so forth; young professionals who now want to organize in business and academia; core long-term academic and non-academic members; and those especially from developing regions who are eager to share and learn.

You have all heard me say that I find ISIE to be a rare instance of an organization that is both global, but still small and intimate. Perhaps we can work on organizational structures that are more permeable and inclusive, without eroding the high levels of collegiality and acceptance we now enjoy despite very different educational and cultural backgrounds. If you have ideas about how to widen the tent that at the same time preserves our core assets and strengths, I would love to hear from you as we tackle this through formal conversations at the ISIE Council level, and informal levels across the membership.

Very best,

Marian

ISIE Sections Update

Update on IE / ISIE Promotional Booklet

We received a tremendous response to our request for input on the ISIE's promotional booklet summarizing achievements of IE. Contributions came in from all parts of the planet, e.g., Australia, Austria, China, Germany, Mexico, Portugal, Switzerland, UK and USA. We'd like to thank everyone who responded. The contributions were rich, and it is clear that Industrial Ecology is flourishing!

A draft of the booklet will be produced in the next month or so. There is still opportunity to accept further material, on the first two items (repeated below). Contributions can be sent to Melanie (melanie.quigley@yale.edu) in the next 2 weeks.

1. What have been the greatest impacts or achievements of IE? These might be practical applications, a body of research work, or policies or procedures developed by members of the IE community. Give us your top 5 list if you wish, and feel free to include your own work, if for example you've published in Nature, contributed to an IPCC chapter, formed a company practicing IE, etc.

2. Please tell us about any large grants you have received as an industrial ecologist (e.g., over $1 million, or similar adjusting for country context). Give details such as PI, collaborators, grant title, amount, funder, year and industrial partners, as applicable. Hopefully this is just a quick cut and paste from your CV.

Chris Kennedy, Julia Steinberger, Anthony Chiu

Journal of Industrial Ecology News

Enhancing the Review Process: Sending Decision Letters to Reviewers

In an effort to enrich and improve the review process for submissions, the JIE will start sending copies of decision letters, including reviews, to reviewers. Anonymity of reviewers will, of course, be maintained. This practice is followed in some fields, but is not common in interdisciplinary environmental journals.

The goal in doing this is to provide reviewers with information about the results of the review process in which they have invested (scarce!) time and to allow reviewers to see how others assessed submissions. We hope that this will make the review process more interesting and that it will also serve as a learning process as participants are exposed to the feedback of others.

Ultimately, the goal is to improve the caliber of reviews. In some cases, this will make recruitment of reviewers easier because the task is more interesting and in others it will make it harder because potential reviewers will not want others to see less than thorough feedback. Because of this, we view this initiative as experimental and welcome feedback from reviewers,

authors and members of our community in general.

Calls for Papers for Special Issues

Environmental Impacts of Demand-Side Technologies and Strategies for Carbon Mitigation – Deadline Extended: 30 June 2014

Strategies to reduce the emission of greenhouse (GHG) gases include supply and demand side approaches. The focus of this special issue is on the **demand side approaches**, which include but are not limited to:

- Efficient lighting technologies,
- Building energy management and behavioral changes,
- Efficient energy technologies including heating and cooling,
- Low-carbon transportation technologies including light-weighting and electrification,
- Low-carbon materials processing and production technologies including metal processing and cement production,
- Fuel shifting and other efficiency strategies in power generation, and
- Efficiency improvement through a smart use of information communication technologies. [RJL1]

Most research focuses on the efficacy and cost of these technologies and strategies in reducing GHG emissions. These strategies, however, also have **non-GHG** environmental impacts on air and water quality, on human and ecosystem health as well as natural resource impacts. Research on these non-GHG impacts is less developed than that which examines carbon mitigation. This is especially true for demand-side strategies which focus on improvements in energy and material efficiency. This special issue is intended to fill that gap.

Edgar Hertwich, Norwegian University of Science & Technology, Sangwon Suh, University of California, Santa Barbara, Stefanie Hellweg, Swiss Federal Institute of Technology Zurich (ETHZ), and Alissa Kendall, University of California, Davis will serve as co-editors. The full call for papers can be found at http://jie.yale.edu/JIE_cfp_UNIRP

Special Feature on Frontiers in Footprinting

A special feature in the February 2014 issue of the JIE presented contrasting viewpoints on the value of footprinting and explores new opportunities that this still-evolving field continues to offer. Articles debate the merits of ecological footprinting (EF) and use of LCA in footprinting, and explore the use of water footprinting. Opportunities to extend the concept of footprinting through new application areas are discussed including social input-output analysis, the use of geo-demographics, and "big data." See **https://tinyurl.com/Yale-JIE-footprint.**

Do you receive the JIE table of contents alerts? If not, be sure to sign up to receive these emails or RSS feeds so that you always have the latest in industrial ecology research: http://onlinelibrary.wiley.com/myprofile/alertManager

IE News from around the world

Horizon 2020: funding opportunities for Industrial Symbiosis (IS) and Circular Economy (CE) projects

Horizon 2020 is the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020). It is the financial instrument that implements the initiatives INNOVATION UNION and EUROPE 2020, aimed at securing Europe's competitiveness.

Horizon 2020 is open to everyone, with a simple structure that reduces red tape and time so participants can focus on what is really important. This approach makes sure new projects get off the ground quickly – and achieve results faster.

The program comprises 6 sections, one of which - "Societal Changes" and sub-section "Climate Action, Environment, Resource Efficiency and Raw Materials" – includes an explicit call for IS and CE under the theme "Waste: A Resource to Recycle, Reuse and Recover Raw Materials". These are:

WASTE-1-2014: Moving towards a circular economy through industrial symbiosis
Proposals should aim to demonstrate and analyse, with a life cycle perspective, innovative processes and services, including organisational and management systems and business models, or a combination thereof, that increase product life-spans, enable product and material reuse, recycling, recovery, with an upgrading cascading approach for recovered materials and products, and reduce generation of waste along product chains in different production processes as well as reduce the utilisation of feedstock materials and the emission of harmful substances. Proposals may also address design for repairability and recyclability, and should either focus on a specific production value chain, or have a cross-sectoral approach establishing industrial symbiosis leading to closed-loop processes, or combine both.

CALL NOW OPEN UNITL APRIL 8TH(more details for applicants):
http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/2111-waste-1-2014.html#tab1

Other calls under this section include:

- WASTE-2-2014: A systems approach for the reduction, recycling and reuse of food waste
- WASTE-3-2014: Recycling of raw materials from products and buildings
- WASTE-4a-2014: An EU near-zero waste stakeholder platform
- WASTE-4b-2014: Global waste dimension
- WASTE-4c-2014: Secondary raw materials inventory
- WASTE-4d-2015: Raw materials partnerships
- WASTE-5-2014: Preparing and promoting innovation procurement for resource efficiency

For more information on these and other funding opportunities under Horizon 2020, please visit: http://ec.europa.eu/programmes/horizon2020/en

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Project Summary: "The Metabolism of Megacities" by Iain D. Stewart

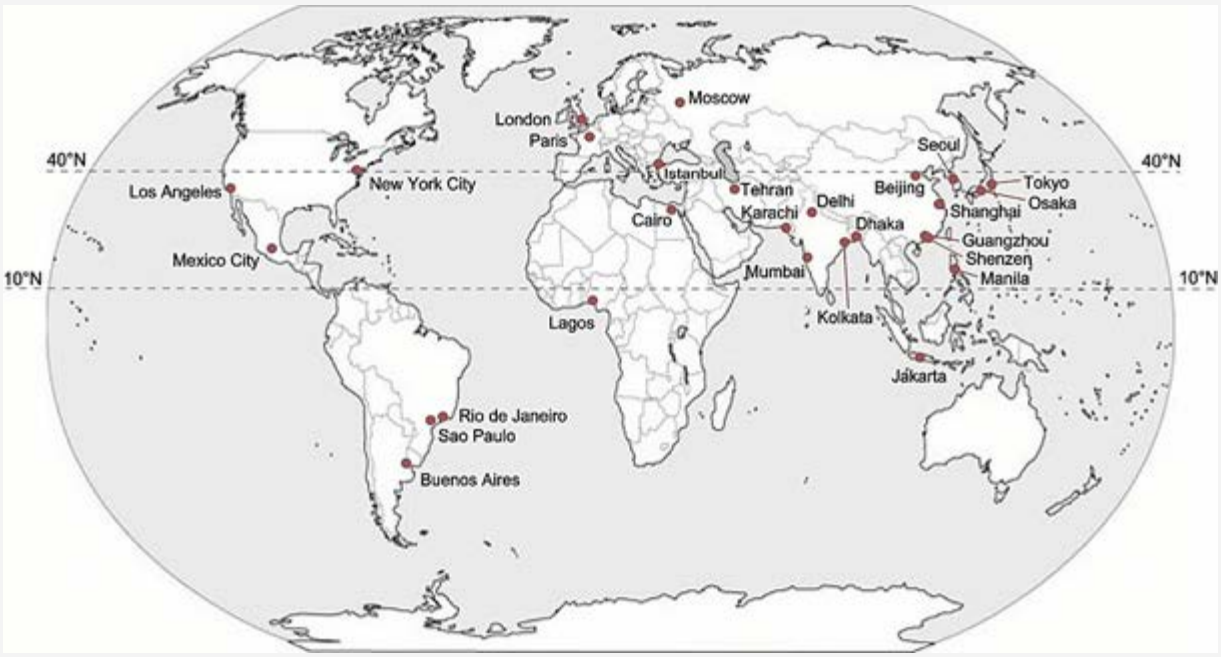
In the past half-century, megacities of >10 million people have become a global phenomenon. Many of these cities are located in low/middle income regions of Asia, where rapid urbanization has put significant demands on resource use and the provision of basic human needs such as water, food, shelter, and sanitation. However, the quantification of resource and waste flows through these giant cities has rarely been undertaken, despite their important implications for policy development.

Professor Chris Kennedy and Postdoctoral Fellow Iain Stewart (both of Civil Engineering, University of Toronto) are heading a major international research project called "The Metabolism of Megacities." The project is supported jointly by the University of Toronto and Enel Foundation (Italy), and its aim is to

assess the energy, water, food, material, and waste flows through the world's 27 biggest cities. In year 1 of the project (2013-14), resource and waste flows were quantified in each of the 27 megacities.

These data were then studied for changes in flow rates across a 10-year growth period (2001 to 2011), revealing statistical relations among megacity population, energy use, water use, waste production, material consumption, standard of living, regional climate, and local land use. In year 2 (2014-15), detailed metabolism studies of specific megacities will include extension to socio-economic measures of community livability and human welfare. These studies will develop scenarios of urban evolution, and, with attention to the role of utilities, help to build a general roadmap for sustainable urban development in megacities.

This spring, Chris and Iain will be attending the *Seventh World Urban Forum* (April 5-11, 2014) in Medellin, Colombia, where they will host a Side Event titled "Inequality of Access to Resources in Megacities." The Event will take place on April 10 (12 to 1 pm) and will provide the first presentation of results from the metabolism of megacities project. To register for the Event or to inquire about the megacities project, contact Iain at iain.stewart@utoronto.ca.



Global distribution of megacities.

New Course on Circular Economy at BNU

In October 2013, a new course titled Circular Economy and Sustainable Development Enterprise (CESDE) obtained the New Undergraduates Research & Discussion Course (NURDC), which is a Teaching Reformation Program of Beijing Normal University (BNU).

According to the requirement of Teaching Business Department of BNU, CESDE should be performed as a research & discussion course and multiple free academic discussion and exchange will be hold between teachers and students, so that the comprehensive ability of students from thinking to writing will be totally improved. CESDE will be open for all the new undergraduates of BNU but limited for 12-30 persons per class so that every participant can enjoy discussion.

CESDE will take circular economy as the core topic and consist the following three parts: the promotion mode of sustainable development, circular economy and its assurance system, sustainable development enterprises and its construction and management. These contents will be performed in 5 chapters with 16 topics to lead participants to thinking series questions such as why and how to implement circular economy, what are the main progresses and problems existed, what knowledge need to be prepared, and so on. So that the participants can understand the primary knowledge and the multidisciplinary relationships between industry ecology, circular economy, enterprise management.

In addition, an education approach of combining theory with practice would be explored and settled, and the comprehensive abilities of students for serving future demand can be totally improved.

CESDE is applied and taken charge of by Professor Jiansu MAO from School of Environment of BNU, and a multidisciplinary team with 6 professional teachers from School of Environment, College of Resource Science & Technology, School of Economics and Resource Management was organized. CESDE will be conducted in 32 class periods for 2 academic credits and will begin in the spring of 2014.

New Course on Economy, Technology, and Sustainability at RPI

In Spring 2014 The Rensselaer Polytechnic Institute is offering for the first time an upper-division undergraduate course called "Economy, Technology, and Sustainability," which is cross-listed by two departments: Economics and STS (Science and Technology Studies).

The course will be taught by Prof. Faye Duchin, who aims to provide an advanced introduction to what constitutes an economy and how the global economy operates, identify the major challenges to sustainability, and focus on the lifestyle, technological, and policy options that can significantly reduce the environmental pressures. Many of the readings are taken from the Industrial Ecology literature. Through discussions surrounding their oral presentations, and a research paper, students will go progressively deeper into a topic of their choosing.

New Project on Industrial Symbiosis

In Leon City (México), a 1.2 million inhabitants industrial city, a new Industrial Symbiosis project is being conducted by Instituto Politecnico Nacional (coord. Gemma Cervantes) and Universidad de Guanajuato (coord. German Cuevas). The industries of the southwest of Leon are being studied and classified and placed in a map by a GIS software. Interviews and visits to industries are now being developed in order to start an industrial symbiosis system.

Teaching Industrial Ecology at the Technical University of Denmark (DTU)

The Department of Chemical and Biochemical Engineering at DTU has started teaching in Industrial Ecology in 2013. Three courses (each of 5 ETCS) are being given:

1. *Industrial Ecology*: An introduction to the concepts and theories within Industrial Ecology and sustainable engineering, and discusses strategies and methods for quantitative analysis and implementation of these concepts. The course demonstrates how chemical engineers may design and manage production and consumption processes in a more sustainable manner, resulting in speeding up technological evolution towards a state of material and energy use with more efficiency and with less unusable side products. A company visit is part of the course.
2. *Engineering and Environmental Sustainability:* Chemical processing interacts with the environment in two ways: it requires natural resources and it has an impact on natural systems. Chemical industries will in the future face severely reduced availability of non-renewable resources and become more dependent on renewable resources. The course investigates such relationships for specific types of chemical processing now and in near future. The way chemical industries have impacted natural systems and which measures have successfully reduced environmental risks from chemical engineering will be illustrated with prominent examples. The students will make two company visits.
3. *Bioenergy and sustainability - recycling of ash fractions from thermal gasification*: This 3-week course includes lecturing, student presentations, facilitated classroom interactions and hands-on experimental work dealing with: a) Defining steps to include in a sustainability assessment; b) Understanding the chain from biomass production to energy/materials including recycling of residuals; c) Biomass growth and green house gas (GHG) emissions; d) Thermal gasification technologies and feedstock chemical characteristics; e) Ash as a potential renewable fertilizer/soil improver including crop responses.

Course responsibles: Andreas Ibrom, Teis N. Mikkelsen, Henrik Hauggard-Nielsen.
Contact: Kim Pilegaard (kipi@kt.dtu.dk)

Asia Pacific Industrial Engineering and Management Society (APIEMS) Conference

Asia Pacific Industrial Engineering and Management Society (APIEMS) is the leading professional organization in the Asia Pacific Region devoted to supporting industrial engineering and management profession by means of providing platform for exchange of enriched ideas on application, education, research, and development of IE and management, and for collaboration and engagement between countries. To facilitate dynamic interaction among international academicians, researchers, and business experts, since 1999 the society has carried out thirteen (13) successful IE and Management Systems Conferences in the region.

The theme “Operational Excellence towards Green Growth” was labelled for the 14th Asia Pacific Industrial Engineering and Management Systems (APIEMS) Conference as organized by the Philippine Institute of Industrial Engineers (PIIE) in cooperation with IFPR-APR, ERDT, and SEE Forum last December 3-6, 2013 at the Radisson Blu Hotel, Cebu City, Philippines. It was jointly held with:

The conference was co-chaired by Prof. Dr. (Anthony) Shun Fung Chiu (ISIE Secretary) and Prof. Dr. Aura Matias of University of the Philippines Diliman. It brought together more than 500 international leading researchers and industry practitioners coming from countries including Canada, China, Denmark, Germany, Hong Kong, Indonesia, Israel, Japan, Korea, Malaysia, Taiwan, Thailand, USA, UK, and Vietnam.

Prof. Dr. Shimon Nof of Purdue University in USA and Prof. Dr. Mitsuo Gen, APIEMS Past President, delivered the following keynote addresses respectively:

- Sustainability and Resilience in Supply Networks, and
- Advances in Hybrid Evolutionary Algorithms For Manufacturing and Logistics Optimization

Members' News

Dr. Miguel Brandão was appointed Senior Lecturer in Environmental Life Cycle Approaches at the New Zealand Life Cycle Management Centre Institute of Agriculture and Environment in Massey University.

Miguel has been working on Life Cycle Assessment (LCA) of land-use systems during the last 8 years, at the Centre for Environmental Strategy of the University of Surrey (Guildford, UK), at the Joint Research Centre of the European Commission (Ispra, Italy), and subsequently at the International Life Cycle Academy (Barcelona, Spain).

Upcoming Conferences

EcoBalance 2014: Creating Benefit through Life Cycle Thinking

The Institute of Life Cycle Assessment, Japan (ILCAJ) is pleased to announce that **EcoBalance 2014**, the 11th International Conference on EcoBalance, will be held in **Tsukuba, Japan, from 27 to 30 October 2014**.

The abstract (400 words or less) submission deadline is **25 March 2014**, 18:00 (JST, UTC+9). Please visit the conference website for instructions to authors. We are looking forward to your submission.

Contact:
Conference Chair, Yasushi Kondo, Waseda University <ykondo@waseda.jp>
EcoBalance 2014 Secretariat <EcoBalance2014@sntt.or.jp>
Conference website <http://ilcaj.sntt.or.jp/EcoBalance2014/>

2014 International Conference on WEEE & Used Battery Management and EPR Principle, May 21-23, 2014 in Peking University in Beijing

Following the 2013 Conference in Beijing, the coming 2014 conference will continue to be organized by Peking University and its partners to promote the circular economy in the electrical and electronic industry, exchanging the latest technical and technological innovation, creating international platform for cooperations among manufactures and recyclers, and facilitating communication between governments and enterprises. We warmly invite attendees from both academic and industries/NGOs to participate in our coming event.

For more information, please find the invitation letter in attachment, or access our conference website: http://www.cheari.org/conference2014/index_en.html

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Globe 2014

GLOBE 2014, North America's premier conference and trade fair exposition on business and sustainability, is taking place in Vancouver from March 26-28. We're particularly excited to see special themes focused on the Circular Economy and Building Resilient Cities!

Tracy Casavant from Light House and Peter Laybourne from NISP will be part of a session on Scaling Up Waste-to-Profit Strategies: New Tools & Best Practices that will focus on how companies are working to reduce their environmental footprints through waste minimization or zero waste strategies. The session will also explore how industrial symbiosis and other emerging tools are helping to turn waste streams into profit centers.Learn more about the conference and register at www.globe2014.com Use promo code LIGHTHOUSE10 to get 10% off the current delegate registration price.

NISP Canada

We are pleased to announce that **a national industrial symbiosis program is finally coming to Canada**. NISP Canada is a 3-year pilot launch of a national industrial symbiosis program comprising 3-5 integrated regional programs. Target regions include: Metro Vancouver, Metro Toronto, and Alberta Capital Region, Greater Montreal, and Halifax Region. Light House (www.lhsbc.com) and its partners will be hosting the official launch of NISP Canada March 27th during the GLOBE 2014 conference in Vancouver.

The primary goal of this initiative is to create a national industrial symbiosis programme with proven early success, a viable long-term business model, and strong stakeholder support. The pilot is an adaptation of the UK's (and now EU's) highly successful program developed by International Synergies Ltd., which has demonstrated a viable long-term business model and measureable support. Over 5 years, an independent verification found NISP-UK reduced GHGs by 6 Mt (average cost of $1 CAD/t), diverted 7 Mt of waste from landfill, and saved businesses $240 million. The government saw an astonishing ~ 40:1 return on its investment. Programs modelled on the UK NISP have been launched worldwide.

Learn more at www.nispcanada.com

2014 Absoils and Simm Center Conference

Helsinki Finland, September 11&12, 2014

This is a Baltic centered conference focused on improving the reuse, recycling, and logistics of heavy construction material such as soils, concrete, and asphalt.
The two day event will include focused presentations, workshops, site visits, and cluster grant planning.

The event's site has yet to be established. In the meantime you can read a bit about the two host groups on the following sites.
http://www.optimass.se/simm-center/ (in Swedish)
http://projektit.ramboll.fi/life/absoils/index_eng.htm

Some travel funding is available.
For more information on presenting or attending please contact Graham Aid at grahama@kth.se

Open Positions

Sustainability-related open positions at KTH, Stockholm

- Postdoc on Energy access for sustainable development KTH
- CHE - PhD student on a research project on Lignin Carbohydrate Complexes
- CHE - PhD student to a research project on Renewable materials design
- PhD student in Internal Combustion Engines
- PhD Position - Durable SOFC Tri-generation System for Low Carbon Buildings
- PhD student in organic chemistry with the research direction of solar cells.
- Associate Professor in Transport Systems Analysis at KTH
- 1-2 doktorander i planering och beslutsanalys
- Biträdande lektor i kollektivtrafiksystem

Graduate (Ph.D.) and Postdoctoral research positions at the Singapore University of Technology and Design (SUTD)

SUTD's PhD program in Engineering Systems and Design (ESD) is inviting applicants to study the energy and environmental impact of large scale complex systems, including supply chains and logistics, financial services, transportation, telecommunication, and energy systems. SUTD is Singapore's fourth national university, created in collaboration with the Massachusetts Institute of Technology (MIT). Competitive PhD fellowships are available. See: http://www.sutd.edu.sg/phd.aspx.

We also have two open postdoctoral associate/fellow positions for the following topics: (1) Uncertainty and variation in life cycle assessments; and (2) Urban traffic emissions modeling. Both are one-year appointments at SUTD, with the possibility of spending an additional year at MIT. See: http://www.sutd.edu.sg/mit_sutd_pdp.aspx. Interested applicants, please write to Prof. Lynette Cheah at lynette@sutd.edu.sg for more information, and send your CV and research interest statement. Applications will be accepted until the positions are filled.

PhD Scholarship on Sustainable, Economic and Effective Materials: Development of a Universal Assessment Model

Professors Steven Young and Guiddo Sonnemann are seeking a PhD candidate to develop a global approach for sustainability tools and techniques that deal explicitly with industrial materials.

The scholarship holder will work jointly in Canada and France:

- University Waterloo (Canada), School of Environment, Enterprise and Development (SEED) and Department of Environment and Resource Studies (ERS) http://gradcalendar.uwaterloo.ca/page/ERS-PhD-in-Social-and-Ecological-Sustainability

Université de Bordeaux (France) – Institut des Sciences Moléculaires (ISM, CNRS UMR 5255)

Remember to check www.is4ie.org/jobs regularly for job postings. Send your postings to is4ie@yale.edu

The ISIE newsletter is published four times a year. The aim of the newsletter is to keep our members informed about the latest and greatest ISIE news from around the globe. We can only do it with your help! Please send us any information you think is worth including in the newsletter (conference summary, important publications, job posting, new appointments, etc.) to Vered Blass, isienewsletter@gmail.com

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