

**China-US 2010 Joint Symposium**  
**“Energy, Ecosystem, and Environmental Change”**

**CONFERENCE AGENDA**



**September 22-24, 2010, Beijing, China**

**China-US 2010 Joint Symposium**  
**“Energy, Ecosystem, and Environmental Change”**



**INTRODUCTION**

On July 20, 2006, in Beijing, representatives of the University of Tennessee-Oak Ridge National Laboratory's (UT-ORNL) Joint Institute for Biological Sciences (JIBS) and UT's Institute for a Secure and Sustainable Environment (ISSE) signed a framework agreement establishing the **China-US Joint Research Center for Ecosystem and Environmental Change** (<http://jrceec.utk.edu>). The focus of this agreement is to promote research collaboration, academic exchange, student education, and technology training and transfer in areas of environmental concern. This specific agreement was reached with two Institutes of the Chinese Academy of Science (CAS)—the Institute of Geographical Science and Natural Resources Research (IGSNRR) and the Research Center for Eco-Environmental Science (RCEES)—both in Beijing. The Joint Center's primary collaborative themes include: (1) ecosystem processes and management, (2) environmental sustainability of bioenergy production, (3) ecological foundations of water resources and quality, and (4) technologies for improvement of eco-environmental systems.

Since establishment of the Joint Center, an Environmental Sustainability and Bioenergy theme has arisen and been the topic of several reciprocal visits and joint workshops in China and the US. The first annual workshop was convened on September 11-14, 2007, in Knoxville, Tennessee, to address the environmental aspects of bioenergy production and sustainability. Approximately 40 scientists from the partnering institutions and six program officers from the US National Science Foundation (NSF) and the Chinese government attended the workshop.

The second China-US workshop, sponsored by the US NSF and the Natural Science Foundation of China (NSFC), was held on October 15-18, 2008, in Beijing, China, with a focus on bioenergy consequences for global environmental change. About 80 scientists, program leaders, and students attended the conference, including officials from US Embassy in Beijing.

The third China-US workshop, “Climate-Energy Nexus,” jointly sponsored by the US NSF and US Department of Energy, was held on November 11-13, 2009, at Oak Ridge National Laboratory, Oak Ridge, Tennessee. More than 50 presentations were made at the conference, with a focus on climate-energy interactions and their global impacts. About 120 leading scientists, program leaders, and students attended the conference.

This year's workshop, “Energy, Ecosystem, and Environmental Change,” is being organized by the Research Center for Eco-Environmental Sciences of the Chinese Academy of Sciences and will be held on September 22-24 in Beijing, China. It will bring together more than 200 leading scientists in the areas of renewable energy, ecology, environmental science and engineering, and biology from China and the US to exchange perspectives and findings, identify opportunities, and develop action plans for promoting bilateral research collaboration in energy, ecology, and environment. The 2010 symposium will be an important communications tool among the leading scientists of

the US and China in preparation for future United Nations conferences on global climate and sustainable development. The workshop is fully consistent with the US-China Ten-Year Energy and Environment Cooperation Framework agreed to by the two governments in June 2008.

## **BACKGROUND**

The economies of the US and China are the globally dominant drivers of fossil fuel consumption and the release of greenhouse gases and are thus strategically linked to the challenges of global climate change and the sustainable development of alternative and renewable energy sources. In addition, the US and China are natural partners for protecting climate through the transformation of energy production and use. These two nations share responsibility for developing realistic goals, effective strategies, and practical protocols for the best solutions for global energy, climate, and environmental problems. More than ever before, the US and China need to exchange perspectives at all levels and develop a sustainable, mutually beneficial joint agenda on sustainable development and the mitigation of greenhouse gas emissions. More importantly, US-China collaboration in energy and climate will not only represent the realization of a series of bilateral environment and energy agreements signed at the annual meetings of the **US-China Strategic Economic Dialogue (SED)**, but will also create new economic opportunities through technology transfer under the established goals of clean and sustainable development mechanisms.

## **WORKSHOP GOALS AND OBJECTIVES**

The workshop will seek to strengthen and promote China-US research partnerships through specific joint research and education initiatives related to clean energy, ecosystem management, and mitigation of environmental damages. Specifically, the conference will address:

- Advances in critical research and development of microbial ecology and technologies that are used for bioenergy production, bioremediation, and below-ground ecological restoration;
- Coupled cycles of carbon and nitrogen associated with rural and urban ecosystems as well as other processes that influence net greenhouse gas (GHG) emissions;
- Technologies and deployment strategies for renewable energy production, energy efficiency, and other energy supply options that reduce GHG emissions and maintain ecosystem services;
- Environmental health issues such as risk assessment approaches, environmental contamination and remediation, ecotoxicological processes, and waste reduction and treatments;
- Joint programs of research for students and young faculty.

## **SPONSORS**

Ministry of Science and Technology of China

Chinese Academy of Sciences  
Natural Science Foundation of China  
US Department of Energy  
US National Science Foundation  
US Environmental Protection Agency

## **PARTICIPANTS**

Participants will include scientists, students, industry experts, and government officials from

- The University of Tennessee (UT)
- Purdue University (Purdue)
- Oak Ridge National Laboratory (ORNL)
- US Department of Energy (USDOE)
- US National Science Foundation (USNSF)
- US Embassy in Beijing, China
- University of Oklahoma
- Chinese Academy of Sciences (CAS)
- China Ministry of Science and Technology of China (MOST)
- University of Science and Technology of China (USTC)
- Tsinghua University (Tsinghua)
- East China University of Science and Technology (ECUST)
- Hunan University of Technology

## **WORKSHOP ORGANIZERS AND COMMITTEE**

### **Organizing Committee**

Chairperson: Dr. Gui-Bin Jiang (Research Center for Eco-Environmental Sciences [RCEES], CAS)

Co-Chairperson: Dr. Gary S. Sayler (Director, UT-ORNL Joint Institute of Biological Science [JIBS])

Members: Dr. Zhi-Yun Ouyang (Deputy Director, RCEES, CAS)

Dr. Ru-Song Wang (RCEES, CAS)

Dr. Gui-Rui Yu (Deputy Director, Institute of Geographic Sciences and Natural Resources Research [IGSNRR], CAS)

Dr. Sheng-Gong Li (Associate Director, Synthesis Center of Chinese Ecosystem Research Network, IGSNRR, CAS)

Dr. Qing-Xiang Guo (Director, Anhui Key Laboratory of Biomass Clean Energy, USTC)

Dr. Han-Qing Yu (Director, Environmental Engineering Laboratory, USTC)

Dr. Randall W. Gentry (President, UT Research Foundation; Director, ISSE, UT)

Dr. Jie Zhuang (Research Director, ISSE, UT)  
Dr. John W. Bickham (Director, Center for the Environment, Purdue University)  
Dr. Pankaji Sharma (Associate Director, Discovery Park, Purdue University)  
Dr. Keith Kline (Staff Scientist, Center for Bioenergy Sustainability, ORNL)

**Secretary General**

Dr. Zhi-Yun Ouyang (Deputy Director, RCEES, CAS), [zyouyang@rcees.ac.cn](mailto:zyouyang@rcees.ac.cn)

Dr. Jie Zhuang (Research Director, ISSE, UT), [jzhuang@utk.edu](mailto:jzhuang@utk.edu)

**Secretary:**

Dr. Bing Han (RCEES, CAS) [hanbing666@rcees.ac.cn](mailto:hanbing666@rcees.ac.cn)

Ms. Hong Gao (RCEES, CAS), [gaohong521@gmail.com](mailto:gaohong521@gmail.com)

Dr. Qiu-Feng Wang (IGSNRR, CAS), [qfwang@igsnr.ac.cn](mailto:qfwang@igsnr.ac.cn)

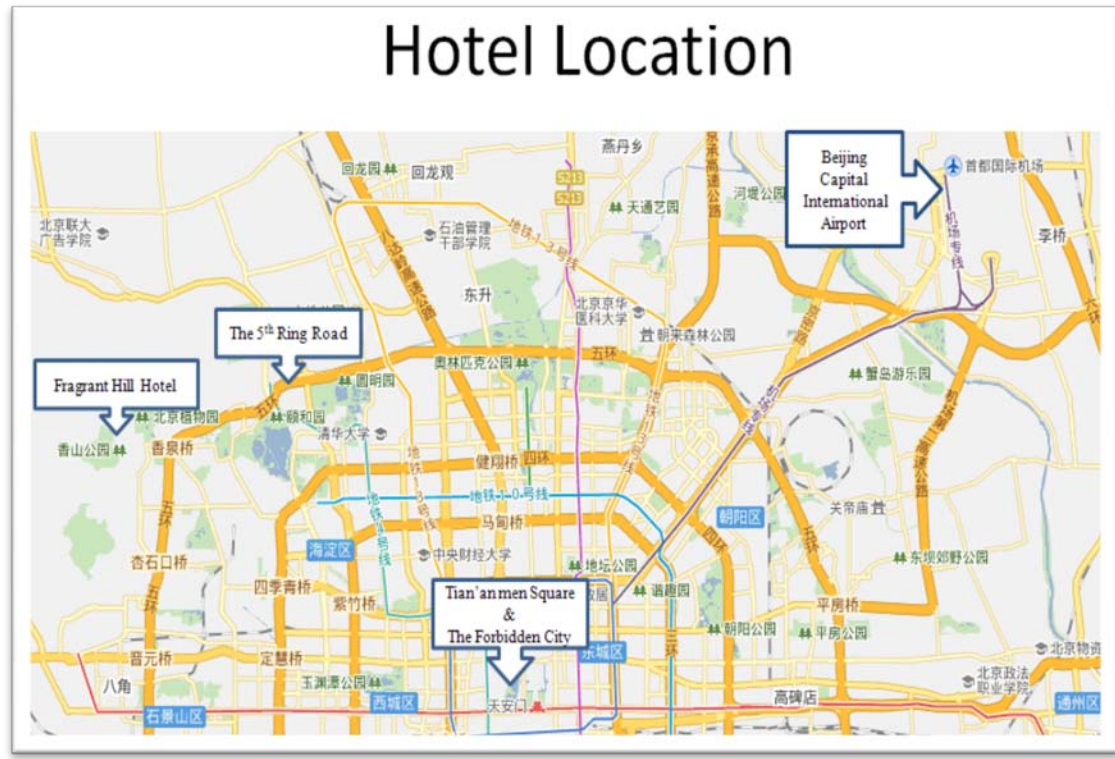
**Hotel**

Participants will stay at the Fragrant Hill Hotel located at Fragrant Hill Park, Number 40 Mai Mai street, Hadian District, Beijing, China. Conference organizers will reserve hotel rooms for the invited American participants.

Fragrant Hill Hotel is four-star hotel designed by the world-famous architect, I. M. Pei. It's well-known for the Chinese classicism architecture garden scenery and human studies. The hotel is situated at a former royal garden of western hills scenic area in Beijing. It's just by the western road of No. 5 Ring easy and fast for car driving.

Hotel Tel: 0086-010-62591166

## Hotel Location



## Contact Information

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**Tuesday, September 20-21, 2010**

US delegates arrive in Beijing

**Wednesday, September 22, 2010**

- 8:30-9:00 am      **Opening Ceremony** (Moderator: Guibin Jiang)
- 8:30                Welcome and opening remarks (Guibin Jiang, RCEES-CAS)
- 8:35                Introduction about China-US Joint Research Center (Gary Saylor, UT/ORNL)
- 8:45                Welcome addresses by the representatives of government agencies
- 9:00-12:30 pm    **Keynote Addresses** (Auditorium)
- Chairs: Guibin Jiang (RCEES-CAS) and John Bickham (Purdue)
- 9:00                Microbial Ecology and Technology  
(Gary Saylor, UT/ORNL Joint Institute for Biological Sciences)
- 9:45                “Advances on the Carbon Cycle Research of China’s Terrestrial Ecosystems”  
(Guirui Yu and Shenggong Li, IGSNRR-CAS)
- 10:30-11:00 am   **Coffee Break and Group Picture**
- 11:00                “Funneling Photons: Two Parts Nature & One Part Material Science” (Barry Bruce, UT)
- 11:45                “Cutting edge technologies to combat natural water quality crisis” (Pan Gang, RCEES-CAS)
- 12:30-1:30        **Lunch and Poster Presentations**
- 1:30-5:40 pm      **Concurrent Sessions**
- Session 1: Microbial Ecology and Technology** (Room 1)
- Theme: *Bioenergy Science and Technology***
- Chairs: Steven Brown (ORNL) and Jie Bao (ECUST)
- 1:30                **Plenary:** “The Center for Renewable Carbon: Advancing the Green Economy”  
(Tim Rails, UT)
- 2:00                **Plenary:** Hydrogen production from phenol a two-step biological process (Hanqing Yu,  
USTC)
- 2:30                **Plenary:** “Novel Cellulolytic Microorganisms from Terrestrial Geothermal Springs”  
(James Elkins, ORNL)
- 3:00                “Switchgrass Biotechnology and Modifications for Improved Bioenergy Feedstocks”  
(David Mann, UT)
- 3:20                “Microbial communities assessed using a clone library analysis in a sulfide-fed microbial  
fuel cell” (Zhonghua Tong, USTC)
- 3:40-5:00        **Summary and Discussion**



## **Session 2: Ecosystem Cycles of Carbon and Nitrogen (Room 2)**

### **Theme: *Natural Ecosystem Processes***

Chairs: Indrajeet Chaubey (Purdue) and Jinshui Wu (Inst. of Subtropical Agriculture-CAS)

- 1:30 **Plenary:** “Mechanisms controlling soil organic matter dynamics in a forest under elevated CO<sub>2</sub> (Tim Filley, Purdue)
- 2:00 **Plenary:** “Effects of climate change and plantation on carbon budget of coniferous forests in Poyang Lake Basin from 1981 to 2008” (Shaoqiang Wang, IGSNRR-CAS)
- 2:30 “Nitrogen cycling and ammonia oxidation microorganisms in terrestrial ecosystems as revealed by bio-molecular techniques” (Jizheng He, RCEES-CAS)
- 2:50 “Controls on the speed of spring: challenges for terrestrial carbon cycle models” (Yuling Fu, IGSNRR-CAS)
- 3:10 “Precipitation-use efficiency along a 4500-km grassland transect” (Zhongmin Hu, IGSNRR-CAS)
- 3:30 “Effects of cloudiness change on net ecosystem exchange, light use efficiency, and water use efficiency in typical ecosystems of China” (Mi Zhang, IGSNRR-CAS)
- 3:50 “WUE and NUE trends and impacts of dominant species in the typical broadleaf forest ecosystems along NSTEC” (Wenping Sheng, IGSNRR-CAS)
- 4:10 “Assessment of nitrate concentration in groundwater on typical terrestrial ecosystem of Chinese Ecosystem Research Network during 2004-2009” (Zhiwei Xu, IGSNRR-CAS)
- 4:30-5:00 **Summary and Discussion**

## **Session 3: Renewable Energy and Emission Reduction (Room 3)**

### **Theme: *Energy Sustainability and Strategies***

Chairs: Keith Kline (ORNL) and Fu Zhao (Purdue)

- 1:30 **Plenary:** “Renewable Energy Policy and its potentials for Emission Reduction in China” (Lei Shen, IGSNRR-CAS)
- 2:00 **Plenary:** “The global sustainable bioenergy project: reconciling large-scale bioenergy production with social and environmental concerns” (Keith Kline, ORNL)
- 2:30 **Plenary:** “Integrated bioprocessing technology of lignocellulose for production of ethanol with significant energy saving and waste reduction” (Jie Bao, ECUST)
- 3:00-3:20 pm **Coffee/Tea Break**
- 3:20 “Innovations in Sustainability” (Pankaj Sharma, Purdue)
- 3:40 “The Potentials of next generation bio-Jet fuels: a multi-agent life cycle assessment approach” (Fu Zhao, Purdue)
- 4:00 “Implications of bioenergy crop production on water quality” (Indrajeet Chaubey, Purdue)
- 4:20-5:00 **Summary and Discussion**



**Session 4: Environmental Change and Health (Room 4)**

**Theme: *Environmental Contamination, Remediation, and Risk Assessment***

Chairs: Hanqing Yu (USTC) and Alison Buchan (UT)

- 1:30            **Plenary:** “Colloid transport and mobilization under transient unsaturated flow conditions”  
(Jie Zhuang, UT)
- 2:00            **Plenary:** “PAH-degrading mycobacteria: distribution, prevalence and evolution” (Jennifer  
DeBruyn, UT)
- 2:30            **Plenary:** “Arsenic remediation and remobilization in water treatment adsorbent”  
(Chuanyong Jing, RCEES)
- 3:00-3:20 pm    **Coffee/Tea Break**
- 3:20            “Robustness of *Archaeal* populations in anaerobic co-digestion of dairy and poultry Wastes”  
(Qiang He, UT)
- 3:40            “Preparation of cationic wheat straw and its application on anionic dye removal”  
(Lifeng Yan, USTC)
- 4:00-5:00        **Summary and Discussion**
- 5:30 pm         **Reception**

**Some directions about the conference**

**Breakfast :** Ju Xiang Ge ( on the second floor in fragrant hill hotel), Buffet

**Lunch:** Ju Xiang Ge( on the second floor in fragrant hill hotel), Buffet

**Dinner:** cultural dinner in Songlin restaurant( in the fragrant hill park), 10 minutes’ walk,

**Auditorium:** on the first floor

**Room1-3:** on the second floor

**Room4:** on the first floor

**Thursday, September 23, 2010**

- 8:30-12:00 pm      **Concurrent Sessions**
- Session 1: Microbial Ecology and Technology** (Room 1)
- Theme: *Belowground Ecological Processes***
- Chairs: Jizhong Zhou (Oklahoma) and Tim Filley (Purdue)
- 8:30                    **Plenary:** “Microbial mediation of carbon cycle feedbacks to climate warming” (Jizhong Zhou, University of Oklahoma)
- 9:00                    **Plenary:** “Soil nitrogen transformation: agricultural and environmental significance” (Xudong Zhang, Institute of Applied Ecology, CAS)
- 9:30                    Effects of temperature, glucose and inorganic nitrogen inputs on carbon and net nitrogen mineralization in a Tibetan alpine meadow soil (Minghua Song, IGSNRR-CAS)
- 9:50-10:10 am      **Coffee/Tea Break**
- 10:10                   The effect of biochar on the paddy soil in southern China (Jingyuan Wang, IGSNRR-CAS)
- 10:30                   Response of soil organic carbon to soil relocation from high- to low-elevation along natural altitudinal transect of an old temperate volcanic forest (Xinyu Zhang, IGSNRR-CAS)
- 10:50-12:00        **Summary and Discussion**
- Session 2: Ecosystem Cycles of Carbon and Nitrogen** (Room 2)
- Theme: *Managed Ecosystem Processes***
- Chairs: Rusong Wang (RCEES, CAS) and Qiang He (UT)
- 8:30                    **Plenary:** “Carbon Preservation in Subtropical Paddy Ecosystems” (Jinshui Wu, Institute of Subtropical Agriculture, CAS)
- 9:00                    **Plenary:** “Low carbon city development in China: potential and challenges” (Zhiyun Ouyang, RCEES-CAS)
- 9:30                    “Impacts of ecosystem services change on human well-being in the Loess Plateau” (Lin Zhen, IGSNRR-CAS)
- 9:50-10:10 am      **Coffee/Tea Break**
- 10:10                   “Assessment of the damage caused by the 2008 ice storm on subtropical forest in Jiangxi, China” (Huimin Wang, IGSNRR-CAS)
- 10:30                   “Assessing the long-term environmental risk of trace elements in cropland soils” (Weiping Chen, RCEES-CAS)
- 10:50                   “Nutrient Cycling Dynamics in Perennial Bioenergy Crops” (Jennifer Burks, Purdue)
- 11: 10                  “A study on the mechanism of mitigating methane and ingredient benefits of no-tillage in rice-duck complex system”(Huang Huang, Hunan Agricultural University)
- 11:30-12:00        **Summary and Discussion**

**Session 3: Renewable Energy and Emission Reduction (Room 3)**

**Theme: Resources Utilization and Strategies**

Chairs: Sylvie Brouder (Purdue) and Lei Shen (IGSNRR, CAS)

- 8:30 **Plenary:** “Agroecological considerations when growing biomass” (Jeffrey Volenec, Purdue)
- 9:00 **Plenary:** “Establishing a feedstock supply chain for cellulosic ethanol in Tennessee”  
(Samuel Jackson, UT)
- 9:30 “Understanding the logistical challenges of supplying biomass for biopower production -  
Purdue University-Zhejiang University collaborative research effort” (Klein Ileleji, Purdue)
- 9:50-10:10 am **Coffee/Tea Break**
- 10:10 “Forest resources for bioenergy in the Southeastern USA: examples of modeling to optimize  
bioenergy plants and to assess sustainability” (Yun Wu, ORNL)
- 10: 30 “contribution Of ecology environment through energy saving technology for tubular-furnace  
optimizations biomass energy value of exergy and anergie lost work”  
(Deyuan Liu, Hunan University of Technology)
- 10:50 “Optimization of straw utilization in China for greenhouse gas mitigation” (Fei Lu, RCEES-  
CAS)
- 11:10-12:00 **Summary and Discussion**

**Session 4: Environmental Change and Health (Room 4)**

**Theme: Ecotoxicological Processes and Technology**

Chairs: (Yuguo Du, RCEES-CAS) and Erik Zinser (UT)

- 8:30 **Plenary:** “Evolutionary toxicology” (John Bickham, Purdue)
- 9:00 **Plenary:** “Microbial genes and communities Involved in mercury transformations”  
(Steven Brown, ORNL)
- 9:30 **Plenary:** “Sorption and toxicity of imidazolium based ionic liquids in the absence and  
presence of dissolved organic matter” (Jingfu Liu, RCEES-CAS)
- 10:00-10:20 am **Coffee/Tea Break**
- 10:20 “Application of omic’s approaches to studying toxic algal blooms in large freshwater lakes”  
(Steven Wilhelm, UT)
- 10: 40 “Mercury profiles in sediments of the Pearl River Estuary and the surrounding coastal area  
of South China” (Dr. Jianbo Shi, RCEES-CAS)
- 11:00 “Enhanced Toxicity of Acid-Functionalized Single-walled Carbon Nanotubes (SWCNTs)  
and Gene Expression Profiling in Murine Macrophages” (Bin Wan, RCEES-CAS)
- 11:20-12:00 **Summary and Discussion**

12:30-1:30 pm	<b>Lunch and Poster Presentations</b>
1:30-5:00 pm	<b>Concurrent Sessions</b>
	<b>Session 2: Ecosystem Cycles of Carbon and Nitrogen (Room 2)</b>
	<b>Theme: Greenhouse Gas Emission and Land Use</b>
	Chairs: Jeffrey Volenec (Purdue) and Shenggong Li (IGSNRR, CAS)
1:30	<b>Plenary:</b> “Mitigating N-induced GHGs (N <sub>2</sub> O and CO <sub>2</sub> ) emission by improving N management in Chinese croplands” (Yao Huang, Institute of Atmospheric Physics, CAS)
2:00	<b>Plenary:</b> “Greenhouse gas emissions and pelicans: ecological accounting in bioenergy cropping systems” (Sylvie Brouder, Purdue)
2:30	<b>Plenary:</b> “Soil respiration and nitrous oxide emissions after the conversion of wheat cropland to apple orchard in Loess Plateau, China” (Xiaoke Wang, RCEES-CAS)
3:00-3:20 pm	<b>Coffee/Tea Break</b>
3:20	“Mitigation of N <sub>2</sub> O emission from upland soil by applying modified N fertilizer” (Hui Xu, IAE-CAS)
3:40	“Teasing Apart the Influence of Past Land Use and Current Processes on the Controls of Soil Organic Matter Dynamics and Aggregation in Eastern Deciduous Forests, USA” (Yini Ma, Purdue)
4:00	“Greenhouse gas emissions from forest fires in China” (Chao Fu, IGSNRR-CAS)
4:20-5:00	<b>Summary and Discussion</b>
	<b>Session 4: Environmental Change and Health (Room 4)</b>
	<b>Theme: Microbe-Environment Interactions</b>
	Chairs: (Jingfu Liu, RCEES-CAS) and Steven Wilhelm (UT)
1:30	<b>Plenary:</b> “Heterotrophic bacteria protect the marine cyanobacterium, <i>Prochlorococcus</i> , from oxidative damage” (Erik Zinser, UT)
2:00	<b>Plenary:</b> “The Role of Pocket Plasticity in the ERa Modulation by Arg394” (Aiqian Zhang, RCEES-CAS)
2:30	<b>Plenary:</b> “Population dynamics of an ecologically important marine bacterial clade (Roseobacter) during an induced phytoplankton bloom” (Alison Buchan, UT)
3:00-3:20 pm	<b>Coffee/Tea Break</b>
3:20	Reduction of Atmospheric PCDD/Fs during the Beijing 2008 Olympic Games (Yingming Li, RCEES-CAS)

3:40                    “Assessment of the impact of carboxylated and PEGylated single-walled nanotubes (SWNT) in an anaerobic environment” (Leila Nyberg, Purdue)

4:00-5:00            **Summary and Discussion**

5:30 pm                **Dinner**

**Some directions about the conference**

**Breakfast: Ju Xiang Ge ( on the second floor in fragrant hill hotel), Buffet**

**Lunch: Ju Xiang Ge( on the second floor in fragrant hill hotel), Buffet**

**Dinner: cultural dinner in Songlin restaurant( in the fragrant hill park), 10 minutes’ walk,**

**Room1-3: on the second floor**

**Room4: on the first floor**

**Friday, September 24, 2010**

9-11 am: **Concurrent China-US panel meetings on international collaboration**

1. **Bioenergy Sustainability** (Room 1)  
(Moderators: Keith Kline, Lei Shen, Fu Zhao)
2. **Soil Carbon Preservation and Dynamics** (Room 2)  
(Moderators: Xudong Zhang, Tim Filley, Jingshui Wu)
3. **Ecological restoration and biodiversity** (Room 3)  
(Moderators: Zhiyun Ouyang, John Bickham, Shengong Li)
4. **Microbial ecotoxicology** (Room 4)  
(Moderators: Jizhong Zhou, Steven Wilhelm, Guibin Jiang)

11-12 pm: **Lunch**

12-5 pm: **Tours on laboratory and facility as well as shopping**

6-8 pm: **Chinese Cultural Dinner**

**Some directions about the conference**

**Breakfast: Ju Xiang Ge ( on the second floor in fragrant hill hotel), Buffet**

**Lunch: Ju Xiang Ge( on the second floor in fragrant hill hotel), Buffet**

**Room1-3: on the second floor**

**Room4: on the first floor**

**Saturday, September 25, 2010**

Route 1: Tour on Great Wall, and Forbidden City (Beijing)

Route 2: Depart for visiting the Institute of Karst Geology (Guilin, Guangxi province, South China)

Route 3: Depart for visiting Xi'an loess plateau