



国家自然科学基金委员会  
重大国际合作研究项目（2012-2016）

“纳米颗粒的环境行为及生物响应机制”国际研讨会  
“Environmental Behavior & Impact of Engineered Nanoparticles”

# 会议手册



海洋科学与技术  
青岛协同创新中心



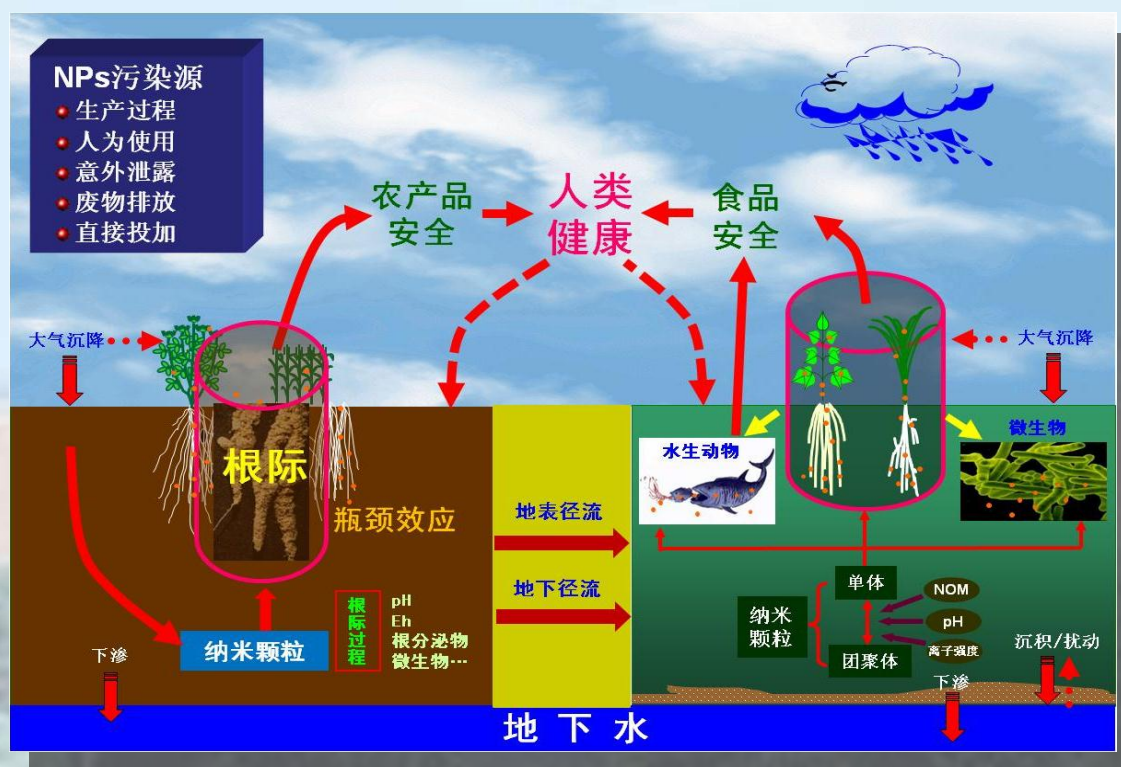
中国海洋大学  
海洋环境与生态  
教育部重点实验室

## 研讨会简介

为加强纳米颗粒环境行为和效应研究领域的学术交流，提升整体研究水平，促进创新，推动该研究领域与其他相关学科间的交流与发展，拟定于2015年4月3-5日在中国海洋大学（青岛）召开“纳米颗粒的环境行为及生物响应机制”国际研讨会。

随着纳米技术的快速发展，被释放到环境中的纳米颗粒逐渐增多。纳米颗粒具有的独特物理化学性质，使得纳米颗粒在环境中会发生团聚、沉降及转化，并对生物及环境带来潜在影响。近年来，有关纳米颗粒环境效应的研究已逐渐引起国际环境科学领域研究者的关注。为推动纳米科技持续、快速的绿色发展，关于纳米颗粒的环境行为及其生物响应机制亟需探明。

本次会议特邀该研究领域做出突出成就的国外专家3名、国内专家6名做专题报告，重点介绍关于纳米颗粒环境行为及生物响应机制的国际最新研究成果，共同探讨今后研究的重点方向。



## 特邀专家简介 (in alphabetical order)

### From USA:

**Alvarez, Pedro J.J.** is the George R. Brown Professor and chair of the Department of Civil and Environmental Engineering at Rice University. His research interests include bioremediation, fate and transport of toxic chemicals, water footprint of biofuels, water treatment and reuse, and environmental implications and applications of nanotechnology. Pedro received the B. Eng. Degree in Civil Engineering from McGill University and MS and Ph.D. degrees in Environmental Engineering from the University of Michigan. He is the 2012 Clarke Prize Recipient and also won the 2014 AAEES Grand Prize for Excellence in Environmental Engineering and Science. Pedro is also a Fellow of AAAS, ASCE, IWA, WEF and the Leopold Leadership Foundation, and a founding member of the Nicaraguan Academy of Sciences. Past honors include President of AEESP, the AEESP Frontiers in Research Award, the WEF McKee Medal for Groundwater Protection, the SERDP cleanup project of the year award, the Button of the City of Valencia, the Collegiate Excellence in Teaching Award from the University of Iowa; the Alejo Zuloaga Medal from the Universidad de Carabobo, Venezuela; a Career Award from the National Science Foundation; a Rackham Fellowship, and various best paper awards with his students. Pedro currently serves as Associate Editor of Environmental Science and Technology, and as honorary professor at Nankai University in Tianjin and the Chinese Academy of Sciences in Beijing, China, and as adjunct professor at the Universidade Federal de Santa Catarina in Florianopolis, Brazil; he recently completed service on the EPA's Science Advisory Board.

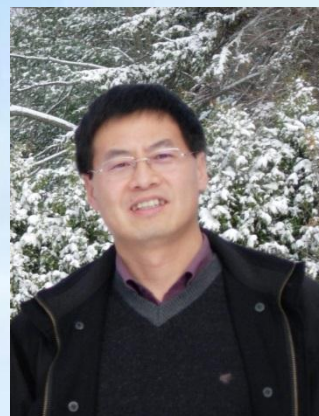


**Holden, Patricia (Trish)** is a Professor in the Bren School of Environmental Science & Management at the University of California, Santa Barbara, and Director of the UCSB Natural Reserve System. Her group researches across disciplines of environmental microbiology, microbial ecology, and environmental chemistry in the context of natural and contaminated



sites. Currently-funded projects include: 1) the urban water environment (UWE): integrating spatial relationships between urban infrastructure and subsurface contamination for diagnosing and addressing shallow groundwater micro- and conventional pollutants, 2) origins and fates of microbiological contamination in coastal watersheds, 3) the distribution and function of bacteria in subsurface soils, including controls on carbon availability and processing, 4) and microbial interactions with engineered nanomaterials in terrestrial ecosystems, towards understanding efficacy of safe-by-design nanomaterial engineering for hazard mitigation. Within the NSF- and EPA-funded University of California Center for Environmental Implications of Nanotechnology (UC CEIN), Holden is a Co-PI, and leads Theme 4 (Terrestrial Ecosystems Impact and Hazard Assessment) and the Carbonaceous Nanomaterial Working Group. Holden's B.S. and M.S. degrees are in Civil & Environmental Engineering from the University of Tennessee and Purdue University; her Ph.D. is in Soil Microbiology from U.C. Berkeley. Holden's professional work history includes eight years in the public and private sectors performing civil / environmental engineering planning and design.

**Xing, Baoshan** is Full Professor of Environmental & Soil Chemistry at Stockbridge School of Agriculture/College of Natural Sciences, University of Massachusetts Amherst, where he has been actively involved in teaching and research since 1996. Dr. Xing received his Ph.D. degree from University of Alberta, Canada in 1994. His current research includes environmental behavior and toxicity of engineered nanomaterials, interfacial processes in the environment, sorption and fate of organic chemicals in soils and sediments, natural organic matter isolation and characterization, and characterization and use of biochar for soil improvement and remediation. Along with his students and colleagues, he has published over 300 refereed journal articles, most of which are frequently cited by his peers. His research work is ranked in the top 0.1% of cited authors for journals in environmental sciences and ecology with a total citation exceeding 14,000. He is one of the “Most Cited Scientists 2014” (Thomson Reuters), showing the impact and significance of his research. Currently, Dr. Xing is teaching 1) Environmental Soil Chemistry, 2) Advanced Soil Chemistry, 3) Inorganic Contaminants in Soil, Water, and Sediment, and 4) Environmental Impact of Manufactured Nanomaterials. He has been invited to present his research results at many universities and institutions. Dr. Xing is/was a technical editor of *Journal of Environmental Quality*, and an editorial board member of *Environmental Science & Technology*, *Environmental Pollution*, *Chemosphere*, *International Journal of Phytoremediation*, *Communications in Soil Science and Plant Analysis*, and *Pedosphere*. Dr. Xing has won numerous awards including the outstanding researcher award of his college in 2003, outstanding research achievement award from Soil Science Society of America (SSSA) in 2005, NSFC Overseas Outstanding Young Scientist Award in 2005, Cheung Kong Visiting Scholar (China’s Ministry of Education) in 2008, ACSPSNA distinguished career award in 2012, the university exceptional merit award in 2012 and 2015, Kingenta Agricultural Science Award in 2013, and Marion L. and Chrystie M. Jackson Soil Science Award in 2014. He was early promoted to Associate Professor with tenure in 2000 and to Full Professor in 2004. Dr. Xing is Fellow of both SSSA and Agronomy Society of America (ASA). His research program is recognized internationally.

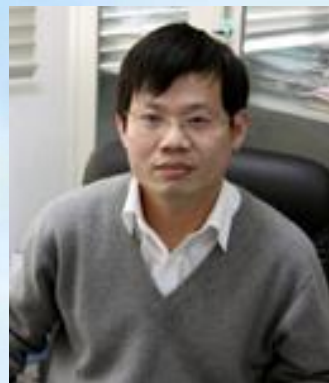


## **From China:**

**Chen, Jingwen** is Full Professor (since 2001) of environmental chemistry and the dean for the School of Environmental Science and Technology at Dalian University of Technology. He graduated from the Northeast Normal University, received his B.S. in 1991 and M.S. in 1994. After getting Ph.D. from the Nanjing University in 1997, he performed postdoctoral studies at the German Research Center for Environmental Health as an Alexander von Humboldtian. His research interests concern ecological chemistry and computational toxicology on organic chemicals. His research was supported by multiple grants from the National Natural Science Foundation, National Basic Research Program and the National High-tech Research and Development Program. He has published over 200 peer-reviewed papers (in journals like Environ. Sci. Technol., Environ. Health Persp. Chem. Res. Toxicol., Environ. Pollut., Atmos. Environ., Chemosphere, Chin. Sci. Bull.), reviews, book chapters; and 2 books (1 monograph and 1 textbook). He serves as a member of editorial boards of several international (Ecotox. Environ. Safe., J. Environ. Sci.) and domestic (Chin. Sci. Bull., Environ. Chem., Asian J. Ecotox., Mar. Environ. Sci.) journals, as a member of consultant board for the Resource and Environmental branch of the National High-tech Research and Development Program and a member of Teaching Steering Committee on Environmental Science and Engineering of Ministry of Education. He was a recipient for the Teaching and Research Award for Outstanding Young Teachers in Higher Education Institutions of MOE (2000), and a winner (Second Class, the second contributor) for the National Natural Science Award (2011). In 2013, he won the National Science Fund for Distinguished Young Scholars and was appointed as chair professor of “Cheung Kong Scholars Program” by China’s Ministry of Education.



**Liu, Jingfu** received his B.Sc. in chemistry from Nanchang University, China in 1986, and his Ph.D. from the Graduate University of Chinese Academy of Sciences in 2002. Dr. Liu finished his postdoctoral research in Lund University (Sweden) in 2006, and joined the State Key Laboratory of Environmental Chemistry and Ecotoxicology, Research Center for Eco-Environmental Sciences (RCEES), Chinese Academy of Sciences, as a full professor with the “100 Talents Project of Chinese Academy of Sciences”. Prof. Liu’s major research interests involve the environmental analysis, as well as environmental processes and effects of persistent toxic substances, including emerging contaminants such as engineered nanomaterials. He is the author and co-author of over 170 peer-reviewed original research papers and invited reviews. His publications have been cited more than 4500 times by other SCI papers. Prof. Liu was awarded the second prize of The State Natural Science Award of China (2011), the National Science Fund for Distinguished Young Scholars (2010), 100 Talents Project of Chinese Academy of Sciences (2006), 100 Excellent Doctoral Dissertations of China (2004), special prize of Presidential Scholarship of Chinese Academy of Sciences (2002), and New Star of Science and Technology of Beijing (1996).



**Wang, Xiangke** is now the dean of the School of Environment and Chemical Engineering, North China Electric Power University, China. He has published to date more than 190 refereed articles and invited reviews in professional journals (such as Chem. Soc. Rev., Adv. Mater., Chem. Sci., ACS Nano, Chem.-Eur. J., Nanoscale, J. Mater. Chem., Geochim. Cosmochim. Acta, Environ. Sci. Technol., Appl. Catal. B: Environ., Chem. Commun., Water Res.) and 2 chapters for 2 books. His published papers have been cited more than 7600 times by other researchers and his H-index is 59 now. Dr Wang's research has focused on environmental fate of radionuclides, heavy metal ions and organic pollutants management, and treatment of wastewater by nanomaterials and natural clay minerals. His current research areas also include the application of plasma technique and nanomaterials in environmental pollution cleanup. He is also the highly cited researcher in Environment area and Engineering area of 2002-2012 by Thomson Reuters in 2014.





**Yao, Jun** is a Professor at the University of Science and Technology Beijing (China) and visiting professor at Yale university (USA) and HELMHOLTZ Centre for Environmental Research-UFZ (Germany), vice dean in Civil & Environment Engineering School and dean in National “Environment & Energy International Cooperation Base”. Prof. Yao is a winner of National Science Fund for distinguished young scholars, and advanced science and technology workers in Chinese Ministry of Environmental Protection. Her research focuses on environmental & biogeochemical behavior of chemical pollutants, response of geomicrobe, microcalorimeter technology, ecotoxicology research (such as pesticide, organic pollutant, heavy metal and nanoparticles), and bacteriophage physiology research (aerobic and anaerobic environment). Prof. Yao carries out dozens of key projects from National Natural Science Foundation of China, Chinese Ministry of Education, Chinese Ministry of Science and Technology, Chinese Ministry of Environmental Protection, Sino-Germany PPP Project of China Scholarship Council. Prof. Yao is also journal reviewers of Environmental Science & Technology, Bioresources Technology, Ecotoxicology, Geomicrobiology Journal, Biosensors and Bioelectronics, Journal of Hazardous Materials and so on. Prof. Yao has published more than 100 articles as first author or corresponding author in SCI journals including Environmental Science & Technology, Chemosphere, Fuel, Environmental Pollution, Journal of Hazardous Materials, Bioresources Technology.



**Zhang, Zhiyong** is the deputy director of Division for Multi-disciplinary Research, Institute of High Energy Physics, The Chinese Academy of Sciences. He obtained his Ph.D. from Peking University in 1997. He is a fellow member of Isotope Society of China, Chinese Nuclear and Radiochemistry Society, Committee on Synchrotron Radiation, Chinese Physical Society, Committee on Agriculture and Medicine, the Chinese Society of Rare Earths, and Committee on Nanotoxicology, Chinese Society of Toxicology.



His current research interests are in coordination chemistry, bioinorganic chemistry, and environmental chemistry of rare earth elements, as well as toxicology and ecotoxicology of nanomaterials.

He has been carrying out research on rare earth elements (REEs) since 1990. His recent research focuses on the environmental behavior and biological effects of rare earth nanomaterials. The distribution and fate of nanocerium in simulated aquatic ecosystems were investigated and the impacts of nanocerium on various model animals such as *Escherichia coli*, *Caenorhabditis elegans*, rats and mice were assessed. He systematically studied the interactions between rare earth nanomaterials and plants. For the first time, he reported that high-stability nanocerium can undergo biotransformation in plant systems and the heavy metal ions released in biotransformation play an important role in the phytotoxicity of metal based nanomaterials. He developed a new high-quality gadolinium-loaded liquid scintillator for the Daya Bay Reactor Neutrino Experiment. As one of the most important breakthroughs of the project, this solved a major technical problem in neutrino detection.

**Zhu, Dongqiang (Don)** is a distinguished Professor of Environmental Chemistry at Nanjing University, and the director of State Key Laboratory of Pollution Control and Resource Reuse at Nanjing University. He is the winner of The National Science Fund for Distinguished Young Scholars (2012) and The Chang Jiang Scholars Program (2014). He obtained his B.S. in Environmental Chemistry and M.S. in Organic Chemistry from Nankai University, and Ph.D. in Environmental Geochemistry from Department of Geology and Geophysics at Texas A&M University, College Station. His research interest has focused on the fate of contaminants, particularly processes occurring at surfaces, in both natural and engineered systems. Specific research areas include sorption of organic contaminants to both natural and synthetic materials, redox reactions of environmentally relevant chemicals mediated by carbons and natural macromolecules, environmental application and implication of engineered nanomaterials. He has authored and coauthored more than 70 peer-reviewed papers in leading scientific journals, and 23 of them were published in *Environ. Sci. Technol.* He served as an associate editor for *J. Environ. Qual.* (2008-2013), and is currently an advisory board member for *Environ. Sci. Technol. Lett.*



## 会议日程

日期	时间	内容	
4月3日	7:00-22:00	报到（索菲亚国际大酒店大堂）	
4月4日 上午	会议开幕		
	8:30-8:35	王震宇教授主持	
	8:36-8:55	相关领导致辞	
	特邀报告		
	9:00-9:50	<i>Nanotechnology-Enabled Water Disinfection and Microbial Control: Mechanisms, Applications &amp; Implications</i>	<b>Pedro J.J. Alvarez</b> , Dept. of Civil & Environmental Engineering Rice University, Houston, USA
	9:50-10:20	会间休息	
	特邀报告		
	10:20-10:50	<i>Interaction and reaction of environmentally relevant chemicals with engineered and naturally occurring nanoparticles</i>	<b>Dongqiang Zhu</b> , School of Environment, Nanjing University, Nanjing, China
10:50-11:20	<i>Application of graphene in the removal of radionuclides from solutions by batch and spectroscopy techniques</i>	<b>Xiangke Wang</b> , School of Environment and Chemical Engineering, North China Electric Power University, Beijing, China	
4月4日 中午	11:30-13:15	午休	

“纳米颗粒的环境行为及生物响应机制”国际研讨会

4月4日 下午	<b>特邀报告</b>		
	13:30-14:20	<i>Imposing Manufactured Nanomaterials on Plants and Microbes in Soil</i>	<b>Patricia A. Holden</b> , Bren School of Environmental Science & Management, University of California, Santa Barbara, CA , USA
	14:20-14:50	<i>Analytical Methods and Environmental Transformation of Silver Nanoparticles</i>	<b>Jingfu Liu</b> , Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing, China
	14:50-15:20	<i>Interactions between Plants and Rare Earth Oxide Nanoparticles</i>	<b>Zhiyong Zhang</b> , Institute of High Energy Physics, the Chinese Academy of Sciences, Beijing, China
	15:20-15:40	<b>会间休息</b>	
4月4日 下午	<b>特邀报告</b>		
	15:40-16:30	<i>Use of Surface-Enhanced Raman Spectroscopy (SERS) as a Novel and Rapid Method for Detecting Silver Nanoparticles in Consumers Products and Environmental Waters</i>	<b>Baoshan Xing</b> , University of Massachusetts, Amherst, USA
	16:30-17:00	<i>Sorption behavior of dialkyl phthalate esters and sulfamethoxazole on carbon nanoparticles.</i>	<b>Jun Yao</b> , Civil & Environment Engineering School, Beijing University of Science and Technology, Beijing, China
	17:00-17:30	<i>Simulating and Predicting Adsorption of Organic Pollutants on Carbon Nanotubes in Water</i>	<b>Jingwen Chen</b> , School of Environmental Science and Technology, Dalian University of Technology, Dalian, China

## 会议地址



会议地址: 青岛索菲亚国际大酒店(青岛市崂山区 香港东路 217 号)

主办单位: 中国海洋大学 海洋环境与生态教育部重点实验室

会议组织人: 王震宇 (中国海洋大学, OUC)

Baoshan Xing (美国麻省大学, UMass)

会议联系人: 赵建 (中国海洋大学, OUC)

邮箱: zhaojian047@126.com, 电话: 15610509685

会议地点: 索菲亚国际大酒店 (二号会议厅), 青岛

会议时间: 2015 年 4 月 3 日-4 月 5 日