



海洋化学理论与工程技术
教育部重点实验室(中国海洋大学)
Key Laboratory of Marine Chemistry Theory and Technology, MOE

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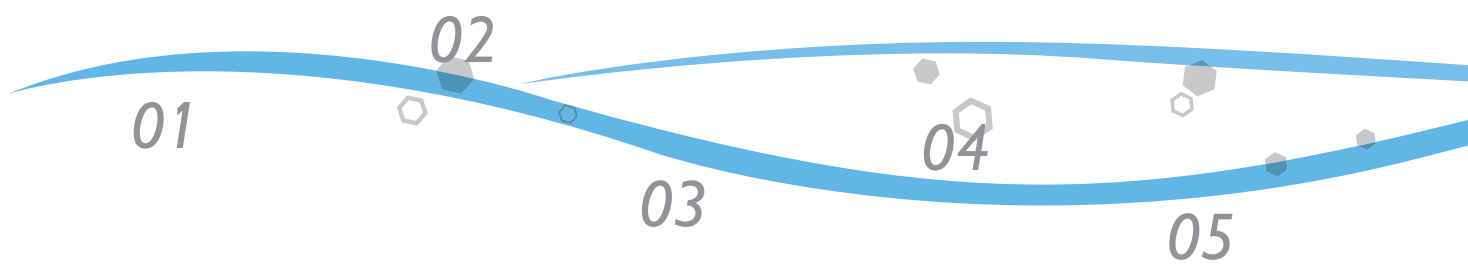
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学术委员会
Academic Committee



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海洋化学理论与工程技术教育部重点实验室（以下简称“实验室”）是在中国海洋大学海洋化学系的基础上建立和发展起来的。海洋化学学科是国家重点学科和“211工程”、“985工程”重点建设学科，分别于1982年和1986年获得硕士和博士学位授予权。实验室于2005年被批准立项建设，于2009年5月通过验收正式成立。

实验室以国家在海洋科学与技术领域的重大需求为指导，结合学科国际前沿发展趋势，主要在海洋化学理论研究、工程技术开发与应用两个方面开展研究工作，研究方向有：活性气体的生物地球化学过程及气候效应、有机生物地球化学过程及其对生态环境演变的响应、海水综合利用技术、环境友好型海洋功能材料与防护技术。

实验室拥有从事海洋化学理论与工程技术研究的先进仪器设备，总价值4000余万元；具有集海洋调查、现场实验、实验室测定、数值模拟、工程应用与技术开发于一体的先进的研究开发平台。经过几年的人才队伍建设，实验室目前已形成一支结构合理、层次均衡、优势突出的学术团队，现有固定人员59人，其中中国工程院院士1人、国家杰出青年基金获得者2人、长江学者特聘教授2人、山东省泰山学者攀登计划人选1人、山东省泰山学者1人、中国海洋大学“筑峰人才工程”特聘教授1人、中国海洋大学“绿卡人才工程”特聘教授1人。

The Key Laboratory of Marine Chemistry Theory and Technology (Ocean University of China), Ministry of Education (MCTL) was constructed since 2005 and founded formally in May, 2009. MCTL is currently an advanced research institution carrying out marine chemistry and technology research at the national level.

Based on the target of achieving the international advanced research level, MCTL mainly focuses on marine chemistry theory, engineering development and utilization with 4 research scopes: biogeochemical process and climate effects of reactive gases, organic biogeochemistry processes and responses to the evolution of ecological environment, seawater multipurpose utilization and environmental-friendly marine functional materials and protection technology.

MCTL has 59 staff including 1 Academician of Chinese Academy of Engineering, 2 Cheung Kong chair professors, 2 winners of National Foundation for Distinguished Young Scholars, 1 Taishan Scholar, 5 New Century Excellent Talents.

简介

Introduction

1959

山东海洋学院海洋化学系海洋化学实验室

Laboratory of Marine Chemistry was established in Department of Marine Chemistry of Shandong Oceanography College.

1982

全国第一个海洋化学硕士点

The first master degree program in marine chemistry was set.

1986

全国第一个海洋化学博士点

The first doctoral program in marine chemistry was set.

1993

海洋物理化学山东省重点实验室成立

Key Laboratory of Marine Physical Chemistry of Shandong was founded.

1996

海洋生物地球化学青岛市共建实验室成立

The joint Laboratory of Marine Biogeochemistry was founded with co-sponsorship from the University and Qingdao municipal government.

2002

海洋化学学科—国家重点学科

海洋精细化工青岛市重点实验室成立

Marine Chemistry became the national key discipline.

Key Laboratory of Marine Fine Chemicals of Qingdao was founded.

2005

海洋化学理论与工程技术教育部重点实验室立项建设

Key Laboratory of Marine Chemistry Theory and Technology, Ministry of Education began to construct.

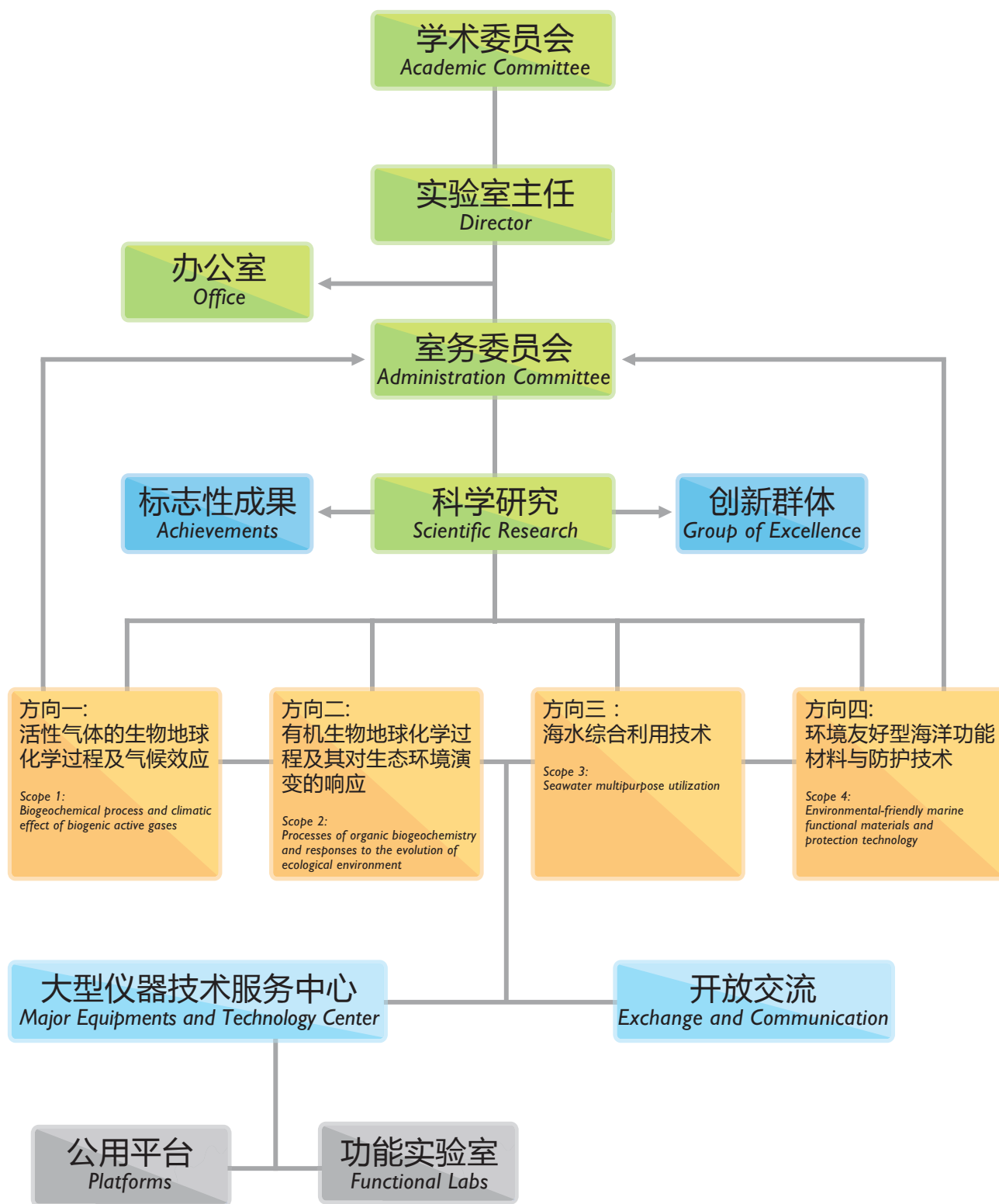
2009

实验室通过验收正式成立

Key Laboratory of Marine Chemistry Theory and Technology, Ministry of Education was established.

发展历史

Brief History



组织框架

Organization

主任:

傅家谟 中国科学院广州地球化学研究所
中国科学院院士

副主任:

高从堦 中国工程院院士, 国家海洋局杭州水处理
中心、中国海洋大学双聘院士

江桂斌 中国科学院生态环境研究中心
中国科学院院士

委员:

侯保荣 中国科学院海洋研究所
中国科学院院士

唐启升 中国水产科学研究院黄海水产研究所、
中国工程院院士

王颖 南京大学教授、中国科学院院士

蔡卫君 美国佐治亚大学教授

戴民汉 厦门大学教授

丁平兴 华东师范大学教授

黄天福 台湾“中央”研究院研究员

彭平安 中国科学院广州地球化学研究所研究员

杨桂朋 中国海洋大学教授

于志刚 中国海洋大学教授

张海生 国家海洋局第二海洋研究所研究员

张劲 日本富山大学教授

周怀阳 同济大学教授

Chair:

Prof. Jiamo Fu CAS Academician, Guangzhou
Institute of Geochemistry, Chinese Academy of
Science

Co- chairs:

Prof. Congjie Gao Jointly appointed CAE
Academician of Development Center of Water
Treatment Technology, SOA, Hangzhou and OUC

Prof. Guibin Jiang CAS Academician, Research
Center for Eco-Environmental Sciences, Chinese
Academy of Sciences

Members:

Prof. Baorong Hou CAS Academician, Institute
of Oceanology, Chinese Academy of Sciences

Prof. Qisheng Tang CAE Academician, Yellow
Sea Fisheries Research Institute, Chinese Academy
of Fishery Sciences

Prof. Ying Wang CAS Academician, Nanjing University

Prof. Weijun Cai University of Georgia, USA.

Prof. Minhan Dai Xiamen University

Prof. Pingxing Ding East China Normal University

Prof. George T. F. Wong Academia Sinica(Taiwan)

Prof. Pingan Peng Guangzhou Institute of
Geochemistry, Chinese Academy of Science

Prof. Guipeng Yang Ocean University of China

Prof. Zhigang Yu Ocean University of China

Prof. Haisheng Zhang Second Institute of
Oceanography, SOA

Prof. Jing Zhang University of Toyama, Japan

Prof. Huaiyang Zhou Tongji University

学术委员会

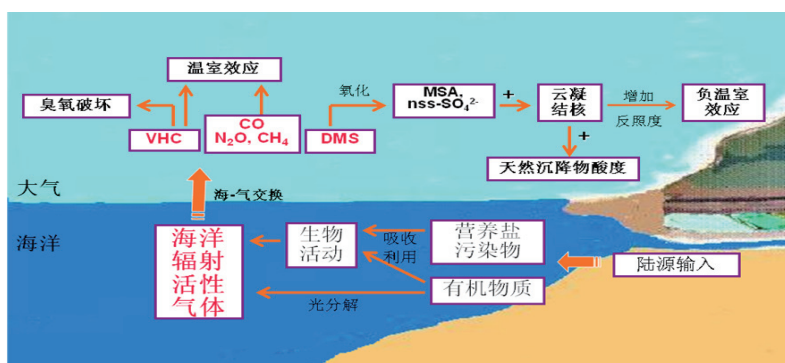
Academic Committee

方向一：活性气体的生物地球化学过程及气候效应（首席科学家：杨桂朋）

Scope I: Biogeochemical process and climate effects of reactive gases (Chief Scientist: Guipeng Yang)

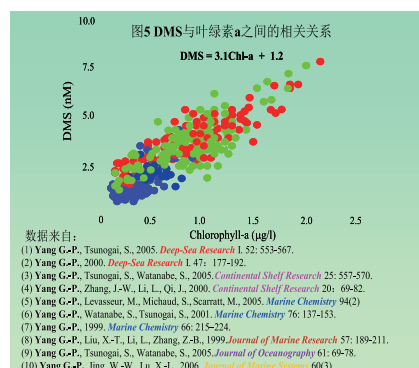
本方向系统研究我国海域活性气体（DMS、VHC、CO、CH₄、N₂O）的时空分布特征、海-气通量、影响因素及其与海区内生物特征、生态环境影响因子之间的关系，揭示控制它们在海洋生成转化过程及在海-气界面交换过程的关键物理和生物地球化学因素，由此评价我国海域活性气体释放对区域和全球环境、气候变化的影响。

This study mainly focuses on the concentration distribution, spatial and temporal change features, the sea-to-air fluxes of marine biogenic gases including dimethylsulfide (DMS), volatile halocarbons (VHC) and carbon monoxide (CO), methane (CH₄) and nitrous oxide (N₂O) and seek possible relationships between these active gases and biological feature and eco-environmental parameters, explore their source and sink processes, and finally establish the biogeochemical cycling pattern of these active gases. On the basis of the above study, the effects of emissions of these biogenic gases on regional environments and global climate change will be quantitatively estimated.



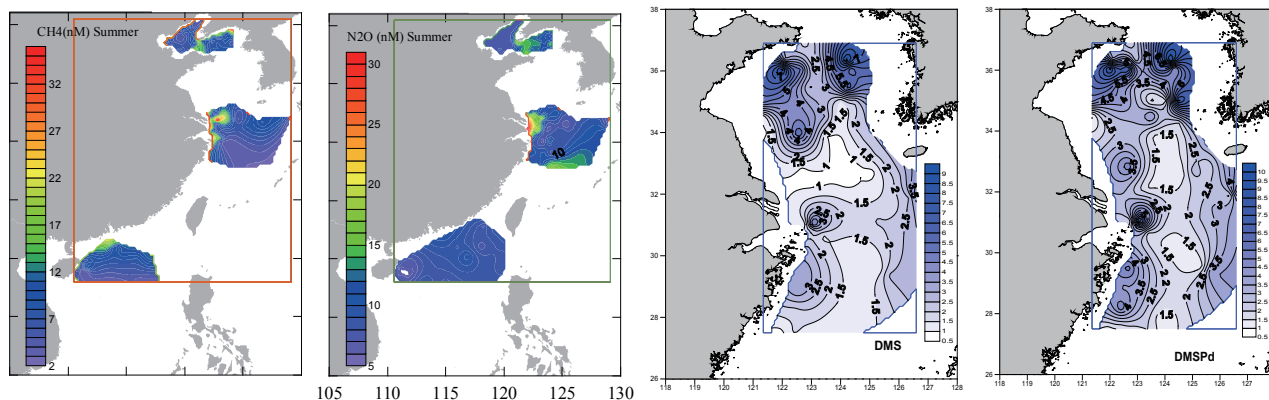
海洋活性气体释放及其对环境气候的影响

The influence of oceanic reactive gas emissions on the global climate



DMS与Chl-a的相关关系

Relationship between DMS and Chl-a



中国近海活性气体的分布

Distribution of reactive gases in costal area in China

方向二：有机生物地球化学过程及其对生态环境演变的响应(首席科学家：刘素美，于志刚，赵美训)

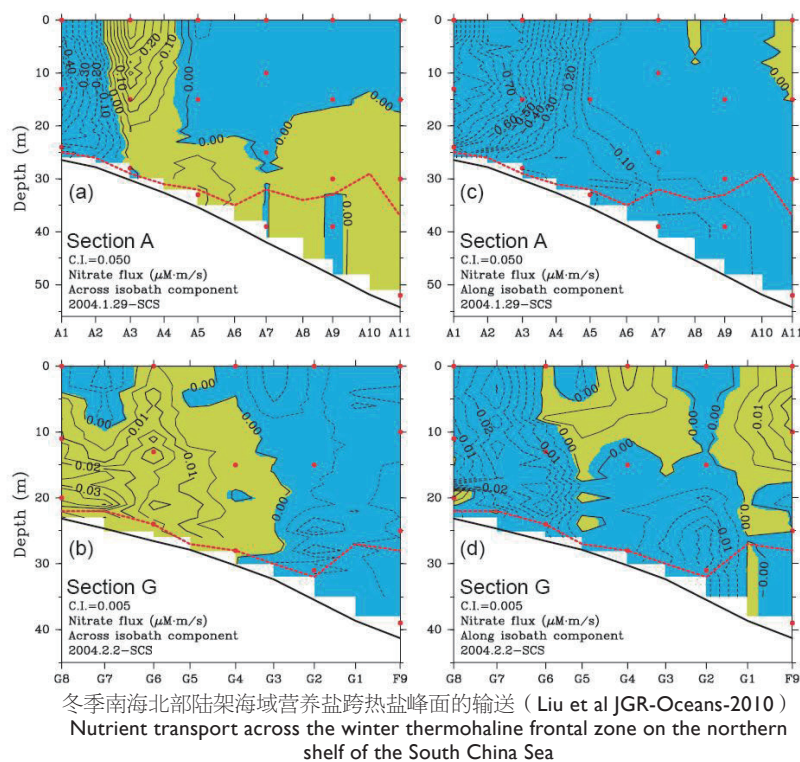
Scope 2: Organic biogeochemical processes and responses to the evolution of ecological environment (Chief Scientists: Sumei Liu, Zhigang Yu, Meixun Zhao)

研究重点1：痕量与营养元素的海洋生物地球化学

I. Marine biogeochemistry of trace and nutrient elements

开展海洋氮循环关键过程（如反硝化、缺氧铵氧化、硝化和异化硝酸盐还原为氨）研究；利用天然氮同位素手段研究氮的转化与归宿；采用多种技术手段研究我国近海海域生态环境的演变历史，富营养化与低氧的形成过程；全球变化与人类活动影响下，不同来源生源要素对海洋浮游植物群落结构的影响，营养元素循环与食物网的相互作用；完善低浓度营养盐分析方法；开展生物硅的溶解度与溶解速率及其对硅藻生长的调控作用研究。建立适合于痕量元素分析的洁净采样系统与洁净实验室；利用痕量金属（如铝、稀土元素等）为示踪剂，开展陆源物质输送对陆架边缘海及西北太平洋的影响研究。

We focus on key processes of marine nitrogen cycle, such as denitrification, anammox and dissimilatory nitrate reduction to ammonium; the developing processes of eutrophication and hypoxia in China Seas; the impact of various nutrient sources on phytoplankton composition and the interaction between nutrient cycles and food web affected by global change and human activities; improving low concentration nutrient measurement methods; the solubility and dissolution rate of biogenic silica, and their impact on diatom growth. We also focus on establishing in situ clean sampling systems for trace elements; using trace metals (i.e. Al and rare earth) as tracer to study the impact of terrestrial materials transport on marginal seas and northwestern Pacific.



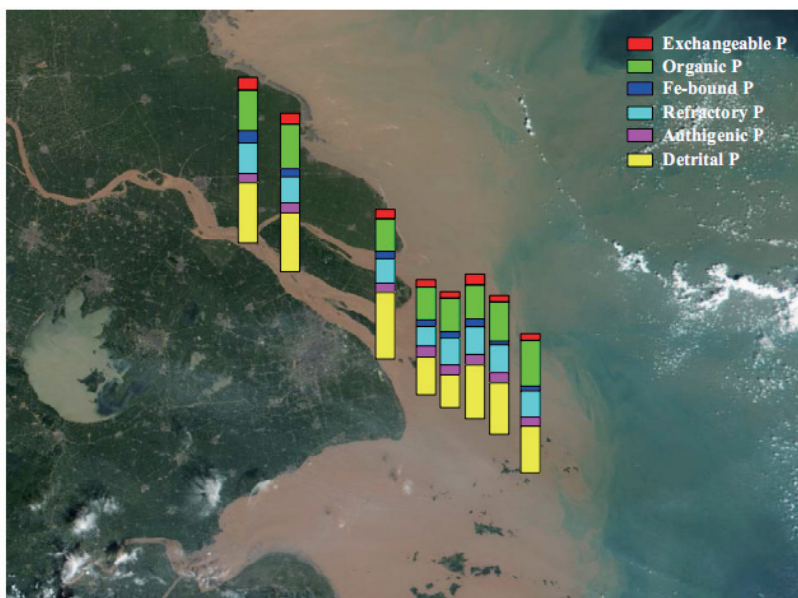
研究方向
Research Scopes

研究重点2：大河影响下的陆架边缘海生物地球化学

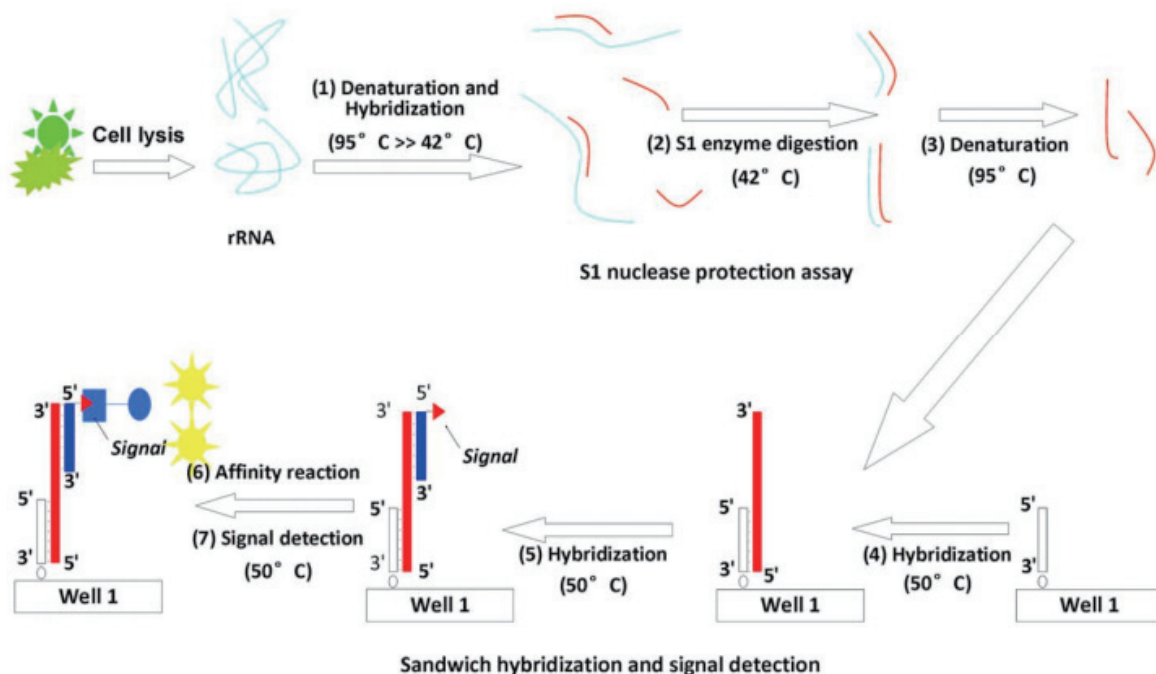
2. Organic biogeochemistry in large river dominated ocean margins

主要内容包括生源要素的生物地球化学、水生生态系统中化学与生物标志物分析及应用等。综合运用生物地球化学、分子生物学、有机地球化学、同位素示踪技术等多学科研究手段，研究大河河口和陆架边缘海生源要素的生物地球化学循环，以及特定微生物、浮游生物功能类群等在大河影响下的边缘海生物地球化学过程中的作用。

Our general areas of expertise are biogeochemistry of biogenic elements, analysis and application of chemical and biological markers in aquatic ecosystem. We focus on the integrated application of multi-disciplinary methods, such as biogeochemistry, molecular biology and organic geochemistry to study the biogeochemical cycles of elements in estuaries and ocean margins, and the role of specific functional groups of microorganisms and phytoplankton in biogeochemical processes of large river dominated ocean margins.



长江口悬浮颗粒物中的磷的赋存形态（2011年8月）
Phosphorus forms in suspended particulate matter of the Changjiang River Estuary



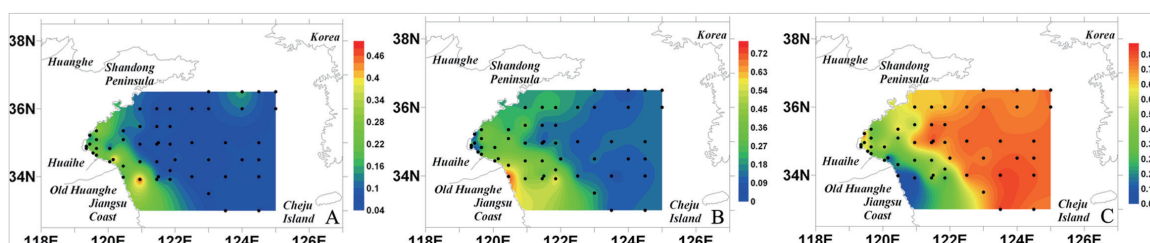
双特异分子探针杂交技术
Sandwich Hybridization Integrated with Nuclease Protection Assay (NPA-SH)

研究重点3: 有机碳循环

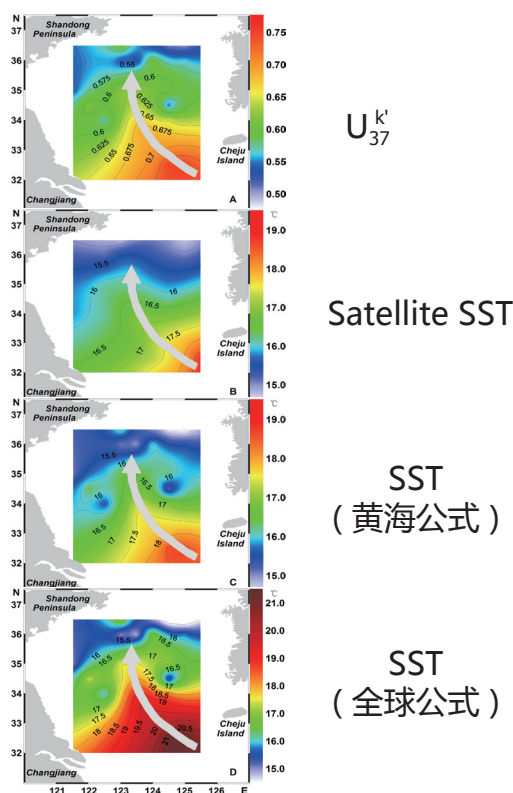
3. Organic carbon cycle

主要研究海洋环境中有机质的结构和成分、含量、同位素比值, 有机碳循环与环境变化和人类活动的关系; 以生物标志物及其稳定同位素, ^{14}C 同位素等有机地球化学指标为主要手段, 揭示海洋有机质的来源、分布、转化降解和归宿, 从而示踪海洋有机碳循环、海洋生态环境和古环境演变的重要过程。研究结果对于了解海洋生物地球化学循环的关键过程尤其是碳循环、揭示全球环境和气候变化过程与机制有重要意义。

The evolutions of marine ecological environments are revealed using a series of biomarkers and their stable isotope and radio carbon isotope. The main contents include: the composition and origin of sedimentary organic matter to reconstruct carbon sink in marginal seas; transform and diagenesis of organic matter in marine environment; the evolution of marine ecosystem and paleo-ocean environment and their relationships with carbon cycle and climate change. Our research results provide significant evidence for understanding critical process of marine biogeochemistry and revealing the mechanisms of global environment and climate changes.



基于多元有机地化指标重建的南黄海沉积物中土壤有机质、植被有机质及海源有机质的分布
Soil OM (A), plant OM (B) and MOM (C) fraction ($\times 100\%$) in the southern YS sediments calculated by three end-member mixing model based on multiple proxies



黄海指标重建的海水表层温度与卫星遥感观测资料的年表层平均温度比较
Comparison of U'_{37} SST and satellite SST in the southern Yellow Sea

研究方向

Research Scopes

方向三：海水综合利用技术（首席科学家：高从堦）

Scope 3: Seawater multipurpose utilization (Chief Scientist: Congjie Gao)

1. 海水淡化

包括海水淡化用相关组器的研制；海水淡化预处理和后处理研究；海水淡化过程的集成与优化；海水淡化浓盐水对环境的影响评价及应对措施研究；海水淡化新方法的探索。

2. 海水化学资源综合利用

包括海水（浓盐水）提钾、溴、镁、碘综合利用新技术及深加工的研究；海水中铀、锂、铷、铯、锶等高附加值和战略性资源的提取新方法和工艺的研究；海水综合利用集成技术的探索。

3. 膜科学与水处理技术

包括膜材料的制备与表征、膜材料的分子结构设计、目标导向的膜结构设计、水处理技术、膜过程的设计、模拟与仿真等，并努力拓展膜分离技术在化工、环保、制药、食品等领域中的应用。

I Seawater desalination

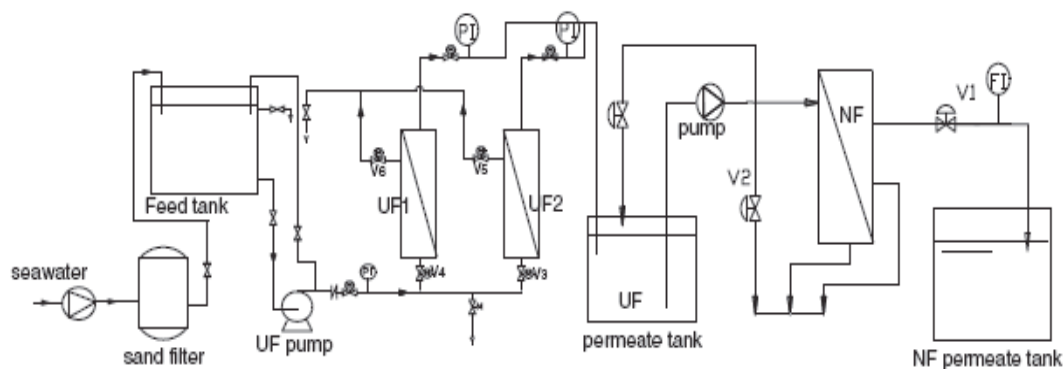
R&D on new components and device, pretreatment and post treatment for seawater desalination; process integration of seawater desalination; environmental impact assessment (EIA) of brine and best available techniques (BAT).

2 Seawater multipurpose utilization of chemical resources

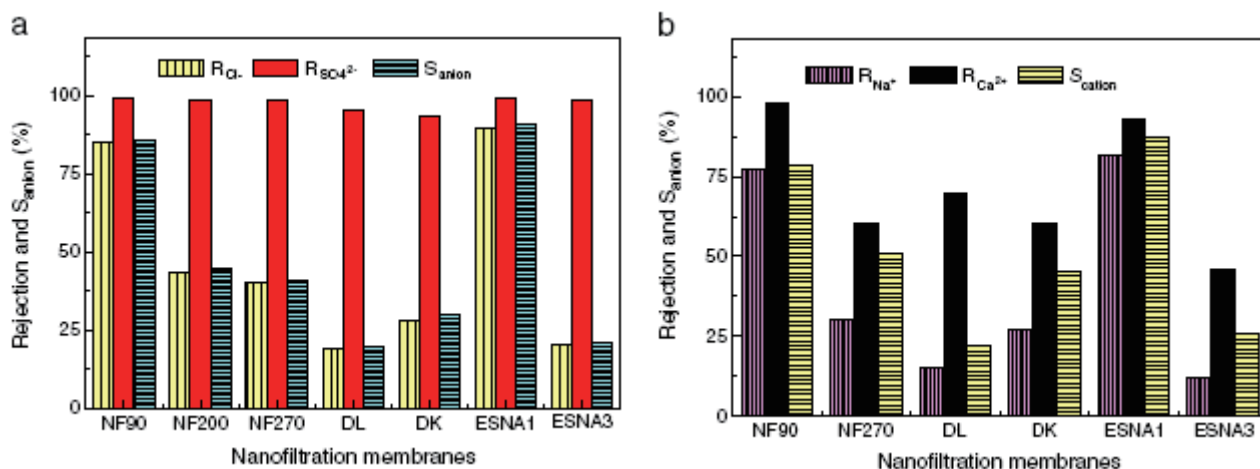
Multipurpose use and deep processing of extracting potassium, bromine, magnesium and iodine from seawater (brine); new technology of extracting strategic resources with high added value such as uranium, lithium, rubidium, cesium, germanium from seawater; exploration of integrated techniques of seawater comprehensive utilization.

3 Membrane science and Technology of water treatment

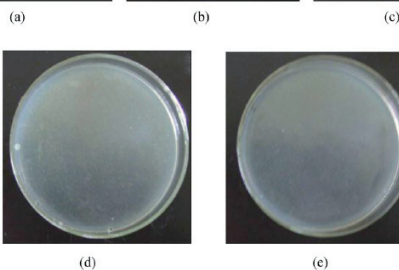
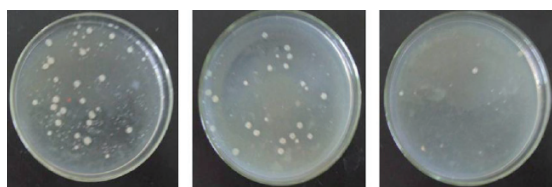
Preparation, characterization and molecular design of membrane materials; object-oriented design of membrane structure; technology of water treatment; design of membrane application process, simulation and modeling of filtration process and so on; striving to expand the membrane separation technology in the field of chemical industry, environmental protection, pharmacy, food, etc.



超滤-纳滤双膜法海水软化系统示意图
Flow diagram of the integrated UF-NF system for seawater softening



不同纳滤膜对海水中离子截留率和选择性的影响
Ion rejection and selectivity of different NF membranes in treating seawater
(a):anion; (b):cation

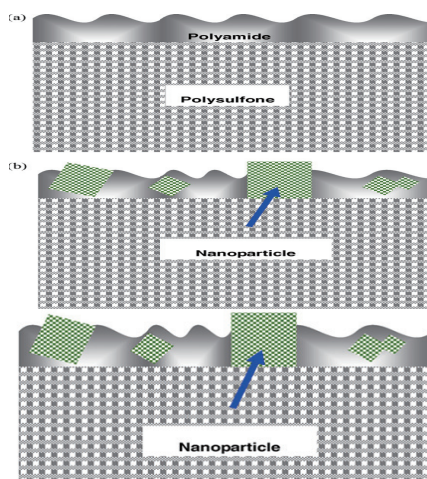


超滤膜抑菌性实验图片

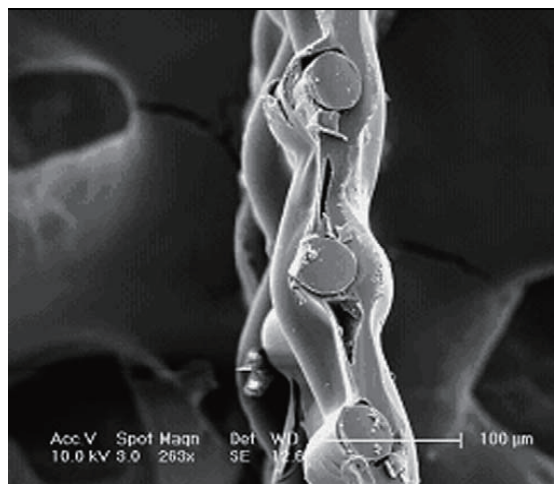
- (a) 未改性PVDF膜
(b) polyDOPA涂层改性PVDF膜, 采用ATRP季铵化1小时
(c) 和3小时(d)的PVDF-g-PDMAEMA膜
(e) 季铵化PVDF-g-PDMAEMA-b-PHEMA膜

Photo images of pristine PVDF membrane

- (a), polyDOPA-coated PVDF membrane
(b), quaternized PVDF-g-PDMAEMA membrane with an ATRP time of 1 h
(c) and (d) 3 h, quaternized PVDF-g-PDMAEMA-b-PHEMA membrane (from 3 h of ATRP of DMAEMA and subsequently 1 h of ATRP of HEMA)
(e) after antibacterial assay.

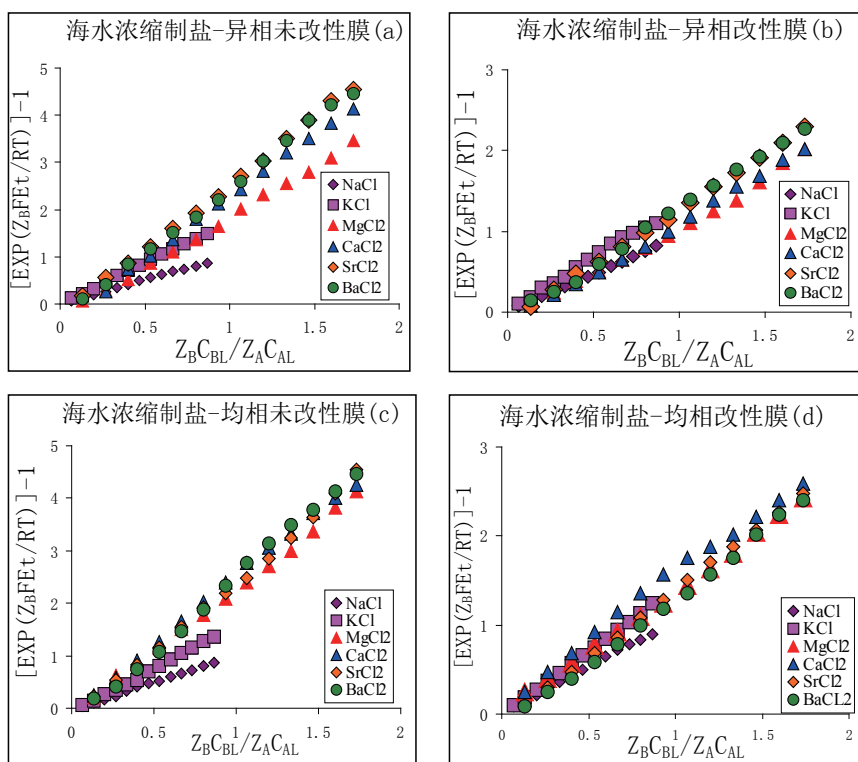


反应型有机-无机纳米杂化膜
Reactive organic-inorganic nano hybrid membrane

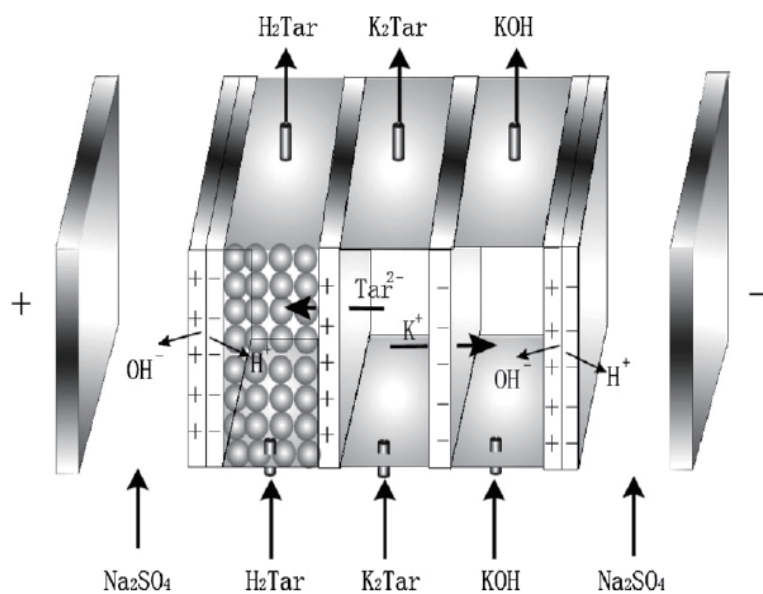


正渗透膜探索
Exploration of forward osmosis membrane

研究方向
Research Scopes



双-反离子膜电位法膜改性对一二价离子的影响
Effect of membrane modification on univalent and divalent cations
by double-counter ion potential method



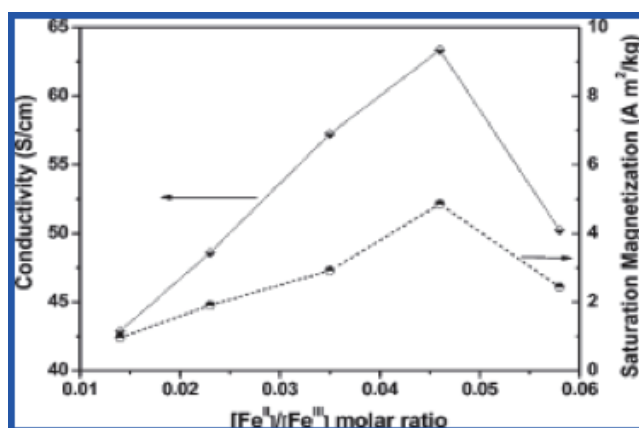
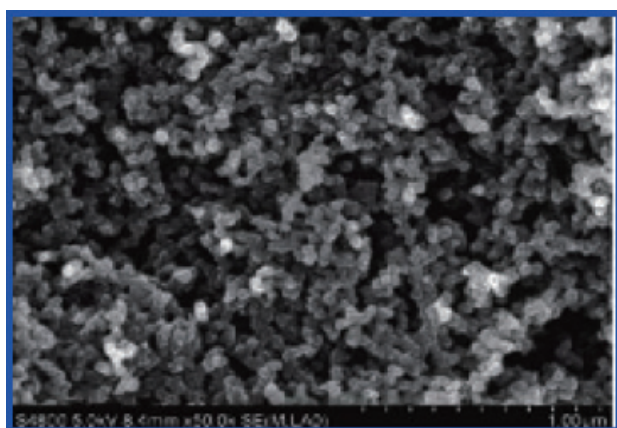
实验室规模离子填充交换树脂双极膜电渗析生产酒石酸示意图
Scheme of the lab-scale ion exchange resin-filling BMED for producing tartaric acid

方向四: 环境友好型海洋功能材料与防护技术 (首席科学家: 于良民)

Scope 4: Environment-friendly marine functional materials and protection technology (Chief Scientist: Prof. Liangmin Yu)

本方向以满足海洋资源开发利用的需求及海洋环境保护的要求为目的, 研究海洋环境对海洋污损生物附着和海洋构筑物材料腐蚀的影响规律, 发展应用性能评价、监测技术与方法; 研究开发环境友好的海洋防腐、防污和环境修复材料及其应用技术; 研究开发深海下潜浮力材料、能源材料及其应用技术; 开展各类功能材料在海洋工程设施上的应用研究。

Aiming at meeting the demand of exploring marine resources and protecting marine environment, what we are doing now is to study the effect of marine environment on the fouling of marine organisms and the corrosion of marine engineering materials, to develop the method of evaluating application performance and monitoring technology, to be involved in R & D of environment-friendly marine anti-corrosion, anti-fouling and environmental remediation materials and its application technology, as well as the R & D of deep-sea submerged buoyant materials, energy materials and its application technology, and to conduct the research on functional materials' application in marine engineering facilities.



改进了“化学一步法”, 首次实现了同时兼顾高电学和高磁学性能的电磁功能化导电聚合物纳米结构的制备, 达到了实际应用性能。

The “One-step chemical method” has been improved and the preparation of nanostructure of electromagnetic function of conducting polymer, which combines high electrical and high magnetic properties, has been successfully made.

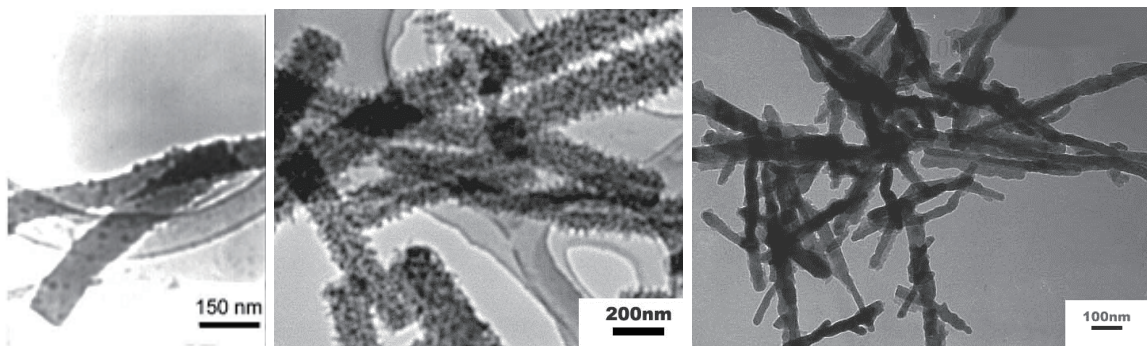
研究方向
Research Scopes



一年后，使用SEA-EF99船舶防污涂料的船底几乎光洁如新
After one year, the ship bottom still looks new, thanks to the SEA-EF99 antifouling paint.

SEA-EF99船舶防污涂料已纳入“中国用于防污漆生产的DDT替代项目”推广产品。环境保护部对其评价：“中国海洋大学研发的SEA-EF99船舶防污涂料同时满足三个海区使用要求，具有完全自主知识产权，具有重要推广价值和应用潜力，为我国履行《关于持久性有机污染物斯德哥尔摩公约》提供了重要技术支撑。”“符合最新国际公约与法规要求，且防污性能能够满足近海中小型船舶对防污涂料换代产品的迫切需要。”

The SEA-EF99 antifouling paint has become one of the recommended products of Alternatives to DDT in the Production of Antifouling Paint. Just as the Ministry of Environmental Protection put it, "The SEA-EF99 antifouling paint developed by Ocean University of China can meet the demand of being used in three different sea areas at the same time. Thanks to its huge potential of being widely utilized and its fully independent intellectual property, this product has a great value of promotion." It has provided an important technical support to China's implementation of Stockholm Convention on Persistent Organic Pollutants. The new product conforms with the latest international conventions and laws and its antifouling function can meet the urgent demand of upgrading the antifouling paint on the small and medium-sized vessels at the coastal waters.



“自组装”方法合成含磁性纳米粒子的导电聚合物纳米结构
Conducting polymer nanostructures containing magnetic particles prepared by “self-assembly” method

研究方向

Research Scopes

方向一:活性气体的生物地球化学过程及气候效应

Scope 1: Biogeochemical process and climatic effect of biogenic active gases



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中国海洋大学海洋化学博士 (1996)
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教育部“长江学者”特聘教授 (2009)
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PhD, Ocean University of Qingdao (1996)
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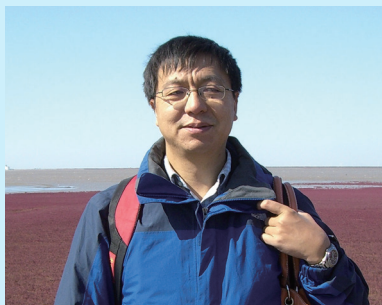
研究方向/领域: 海洋生源活性气体的生物地球化学、海洋界面化学、海洋有机化学、海洋光化学等

Research Interest: Biogeochemistry of marine biogenic active gases, marine interfacial chemistry, marine organic chemistry, marine photochemistry.

Selected Publications:

1. **Yang, G.P.**, C.Y. Ren, X.L. Lu, C.Y. Liu, H.B. Ding. 2011. Distribution, flux and photoproduction of carbon monoxide in the East China Sea and the Yellow Sea in spring. *Journal of Geophysical Research*, 116, C02001, doi: 10.1029/2010JC006300.
2. **Gui-Peng Yang**, Maurice Levasseur, Sonia Michaud, Anissa Merzouk, Martine Lizotte, Michael Scarratt, 2009. Distribution of dimethylsulfide (DMS) and dimethylsulfoniopropionate (DMSP) in the surface microlayer of the western North Atlantic during summer. *Biogeochemistry* 94: 243-254. DOI 10.1007/s10533-009-9323-y.
3. **Yang, G.P.**, H.H. Zhang, L.P. Su, L.M. Zhou. 2009. Biogenic emission of dimethylsulfide (DMS) from the North Yellow Sea, China and its contribution to sulfate in aerosol during summer. *Atmospheric Environment*, 2009, 43, 2196-2203.
4. **Gui-Peng Yang**, Wei-Lei Wang, Xiao-Lan Lu, Chun-Yan Ren, 2010. Distribution, flux and biological consumption of carbon monoxide in the Southern Yellow Sea and the East China Sea. *Marine Chemistry* 122: 74-82.
5. **Gui-Peng Yang**, Qiang Chen, Xin-Xin Li, Xiao-Yan Cao, 2010. Study on the sorption behaviors of Tween-80 on marine sediments. *Chemosphere* 79(11): 1019-1025.

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PhD, University of Georgia, USA (2004)
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New Century Excellent Talents in University (2010)
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研究方向/领域: 海洋生源活性气体的生物与化学动力学, 海洋生物地球化学、海洋界面化学、海洋生物化学等

Research Interest: Chemical and biological kinetics of biogenic active gases, marine biogeochemistry, marine interfacial chemistry, marine biochemistry, etc.

Selected Publications:

1. Ding H., Sun M.-Y. 2005, Effect of intracellular structural associations on degradation of algal chloropigments in natural oxic and anoxic seawater. *Geochim. Cosmochim. Acta*, 69, 4237-4254.
2. Ding H., Sun M.-Y. 2005, Biochemical degradation of algal fatty acids in oxic and anoxic sediment-seawater interface system effects of structural association and relative roles of aerobic and anaerobic bacteria. *Mar. Chem.* 93, 1-19
3. Ding H. Valentine D.L. 2008, Methanotrophic bacteria occupy benthic microbial mats in shallow marine hydrocarbon seeps, Coal Oil Point, California. *J. Geophys. Res.* 113, G01015, Doi: 10.1029/2007JG000357



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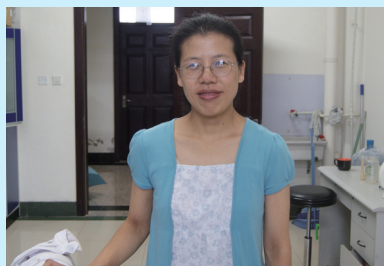
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Professor, Ocean University of China

研究方向/领域: 海洋生源活性气体的生物地球化学

Research Interest: Biogeochemistry of marine biogenic active gases

Selected Publications:

1. Zhang, G.-L., J. Zhang, S.-M. Liu, J.-L. Ren, and Y.-C. Zhao, Nitrous oxide in the Changjiang (Yangtze River) Estuary and its adjacent marine area: riverine input, sediment release and atmospheric fluxes, *Biogeosciences*, 2010, 7, 3505-3516.
2. Zhang, Guiling, Jing Zhang, Sumei Liu, Jingling Ren, Jie Xu, Feng Zhang, Methane in the Changjiang (Yangtze River) Estuary and its Adjacent Marine Area: Riverine Input, Sediment Release and Atmospheric Fluxes, *Biogeochemistry*, 2008, 91 (1): 71-84.
3. Zhang, Guiling, Jing Zhang, Jingling Ren, Jianbing Li, Sumei Liu, Distributions and sea to air fluxes of Methane and Nitrous Oxide in the North East China Sea in Summer, *Marine Chemistry*, 2008, 110 (1/2): 42-55


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研究方向/领域: 二甲基硫 (DMS) 的生物地球化学循环, 环境生态学

Research Interest: Biogeochemical cycle of dimethyl sulfide (DMS), environmental ecology

Selected Publications:

1. **Juan Yu**, Guipeng Yang, Jiyuan Tian. The effects of the harmful alga *Heterosigma akashiwo* on cultures of *Schmackeria inopinus* (Copepoda, Calanoida). *Journal of Sea Research*, 2010, 64: 287-294.
2. **Juan Yu**, Guipeng Yang, Jiyuan Tian. Effects of UV-B radiation on ingestion, fecundity, population dynamics and antioxidant enzyme activities of *Schmackeria inopinus* (Copepoda Calanoida). *Journal of Experimental Marine Biology and Ecology*, 2009, 381: 74-81.
3. Jiyuan Tian, **Juan Yu**. Changes in ultrastructure and responses of antioxidant systems of algae (*Dunaliella salina*) during acclimation to enhanced ultraviolet-B radiation. *Journal of Photochemistry and Photobiology B: Biology*, 2009, 97: 152-160.


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Associate Professor, Ocean University of China

研究方向/领域: 海洋界面化学 **Research Interest:** Marine interfacial chemistry

Selected Publications:

1. **Xiaoyan Cao**, HuaYu Han, Guipeng Yang et al., The sorption behavior of DDT onto sediment in the presence of surfactant cetyl-trimethylammonium bromide, *Marine Pollution Bulletin*, 62, 2011, 2370-2376
2. **Xiaoyan Cao**, Guipeng Yang, Shuwei Wei, Hui Han. Sorption of heavy oil onto Jiaozhou Bay sediment, *Marine Pollution Bulletin*, 62, 2011, 741-746
3. **Cao Xiaoyan**, Yang Guipeng, et al. The electrochemical behavior of expanded graphite electrode in simulated sea water containing oil. *J. Applied Electrochim*, 2008, 38: 1571-75


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PhD, Nagoya University (2004)

Associate Professor, Ocean University of China

研究方向/领域: 海洋生物生产产物及关联物质对大气—陆地—海洋相互作用和环境变化的响应；近岸海域亲生物元素在海洋生物、生源颗粒物和沉积物中的生物地球化学循环。

Research Interest: Biological products and relating materials in the sea, and their response to land-atmosphere-ocean interactions and environmental changes. Biogeochemical cycles of biophile elements in marine organisms, biogenic particles and sediment in coastal seas.

Selected Publications:

1. **Li T.**, F. Gao, G.-P. Yang, 2010. Study of the geochemical forms of copper and lead in surface sediment of mud areas from the East China Sea. *Journal of Ocean University of China*, 40: 85-90 (in Chinese with English abstract).
2. **Li, T.**, T. Masuzawa, H. Katagawa. Seasonal variations in settling fluxes of major components in the oligotrophic Shikoku Basin, the western North Pacific: Coincidence of high biogenic flux with Asian dust supply in spring. *Marine Chemistry*, 91: 187-210.
3. Masuzawa, T., **T. Li**, Y. Duan, M. Yanamoto, Y. Hibi, T. Nakatsuka, H. Kitazato, Y. Kato, 2003. Temporal variations in major component composition and flux of sinking particles in Sagami Bay, off Japan. *Progress in Oceanography*, 57: 59-75.
3. Cao Xiaoyan, Yang Guipeng, et al. The electrochemical behavior of expanded graphite electrode in simulated sea water containing oil. *J. Applied Electrochim*, 2008, 38: 1571-75

研究队伍

方向二:有机生物地球化学过程及其对生态环境演变的响应**Scope 2: Processes of organic biogeochemistry and responses to the evolution of ecological environment****刘素美 教授****MCTL首席科学家**

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美国麻省州立大学访问学者 (2011)
中国海洋大学教授

Visiting scholar, University of Hamburg,
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PhD, Ocean University of Qingdao (2001)
Distinguished Young Scholars (2009)
Visiting scholar, University of Massachusetts
(2011)
Awardee of the National Science Fund for
Professor, Ocean University of China

研究方向/领域: 痕量与营养元素的海洋生物地球化学
Research Interest: Marine biogeochemistry of trace and nutrient elements

Selected Publications:

1. **Liu, Su Mei**, Rui Huan Li, Gui Ling Zhang, Dao Ru Wang, Jin Zhou Du, Lucia S. Herbeck, Jing Zhang, Jing Ling Ren. 2011. The impact of anthropogenic activities on nutrient dynamics in the tropical Wenchanghe and Wenjiaohe Estuary and Lagoon system in East Hainan, China. *Marine Chemistry*, 125, 49–68.
2. **Liu S.M.**, X. Guo, Q. Chen, J. Zhang, Y.F. Bi, X. Luo, J.B. Li. 2010. Nutrient dynamics in the winter thermohaline frontal zone of the northern shelf region of the South China Sea. *J. Geophys. Res.*, 115, C11020, doi:10.1029/2009JC005951
3. **Liu S.M.**, B.D. Zhu, J. Zhang, Y. Wu, G.S. Liu, B. Deng, M.-X. Zhao, G.Q. Liu, J.Z. Du, J.L. Ren, G.L. Zhang. 2010. Environmental change in Jiaozhou Bay recorded by nutrient components in sediments. *Marine Pollution Bulletin*, 60, 1591-1599
4. **Liu, S.M.**, G.-H. Hong, J. Zhang, X.W. Ye and X.L. Jiang. 2009. Nutrient budgets for large Chinese estuaries. *Biogeosciences*, 6, 2245–2263.
5. Duce, R. A., J. LaRoche, K. Altieri, K. R. Arrigo, A. R. Baker, D. G. Capone, S. Cornell, F. Dentener, J. Galloway, R. S. Ganeshram, R. J. Geider, T. Jickells, M. M. Kuypers, R. Langlois, P. S. Liss, **S. M. Liu**, J. J. Middelburg, C. M. Moore, S. Nickovic, A. Oschlies, T. Pedersen, J. Prospero, R. Schlitzer, S. Seitzinger, L. L. Sorensen, M. Uematsu, O. Ulloa, M. Voss, B. Ward, L. Zamora. 2008. Impacts of Atmospheric Anthropogenic Nitrogen on the Open Ocean. *Science*, 320, 893-897. DOI: 10.1126/science.1150369.



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研究方向/领域: 大河影响下的陆架边缘海生物地球化学, 生源要素的生物地球化学、水生生态系统中化学与生物标志物分析及应用

Research Interest: Biogeochemistry in large river dominated ocean margins, biogeochemistry of biogenic elements, analysis and application of chemical and biological markers in aquatic ecosystem

Selected Publications:

1. Xiangbin Ran, **Zhigang Yu**, Qingzhen Yao, Hongtao Chen, Hongbo Guo. Silica retention in the Three Gorges Reservoir. Biogeochemistry, 2012. Accepted
2. Jun Zhao, Thomas S. Bianchi, Xinxin Li, Mead Allison, Peng Yao, **Zhigang Yu**. Historical Eutrophication in the Changjiang and Mississippi Delta-Front Estuaries: Stable Sedimentary Chlorophylls as Biomarkers. Continental Shelf Research, 2012. Accepted
3. Peng Yao, **Zhigang Yu**, Chunmei Deng, Shuxia Liu, Yu Zhen. Spatial-temporal distribution of phytoplankton pigments in relation to nutrient status in the Jiaozhou Bay, China. Estuarine, Coastal and Shelf Science, 2010, 89(3): 234-244.
4. Huijun He, **Zhigang Yu**, Qingzheng Yao, Hongtao Chen, Tiezhu Mi. The hydrological regime and particulate size control phosphorus form in the suspended solid fraction in the dammed Huanghe (Yellow River). Hydrobiologia, 2010, 638: 203-211.
5. Qingzheng Yao, **Zhigang Yu**, Hongtao Chen, Pengxia Liu, Tiezhu Mi. Phosphorus transport and speciation in the Changjiang (Yangtze River) system. Applied Geochemistry, 2009, 24: 2186-2194.
6. Yu Zhen, Tiezhu Mi, **Zhigang Yu**. Detection of several kinds of harmful algal species with sandwich hybridization integrated with nuclease protection assay. Harmful Algae, 2009, 8(5): 651-657.

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(1991-1994)

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PhD, Scripps Institution of Oceanography,
University of California, San Diego, USA (1991)

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Biogeochemistry Centre, University of Bristol,
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(1996-2005)

Distinguished Professor, School of Ocean and
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Distinguished Professor, Ocean University of
China (2008-)

Chief scientist, 973 National Program (2010-)

研究方向/领域: 海洋有机地球化学、海洋碳循环、古海洋及古环境重建、稳定同位素地球化学、海洋生态系统演变记录与机制、海底冷泉区生物有机地球化学

Research Interest: Marine organic biogeochemistry, ocean carbon cycle, paleo-ocean and paleoenvironmental reconstruction, stable isotope geochemistry, mechanisms of marine ecosystem's changes, biogeochemistry in cold spring area

Selected Publications:

1. Xing Lei, Shuqing Tao, Hailong Zhang, Yanguan Liu, Zhigang Yu, **Meixun Zhao**. 2011. Distributions and origins of lipid biomarkers in surface sediments from the southern Yellow Sea. *Applied Geochemistry*, 26: 1584-1593.
2. Xing Lei, Hailong Zhang, Zineng Yuan, Yao Sun, **Meixun Zhao**. 2011. Terrestrial and marine biomarker estimates of organic matter sources and distributions in surface sediments from the East China Sea Shelf. *Continental Shelf Research*, 31, 1106-1115.
3. Tao, Shuqing, Lei Xing, Xiaofan Luo, Hao Wei, Yanguan Liu, **Meixun Zhao**. 2012. Alkenone distribution in surface sediments of the southern Yellow Sea and implications for the Uk 37 thermometer. *Geo-Mar Lett*, 32, 61-71.
4. Xing Lei, Rongping Zhang, Yanguan Liu, Xiaochen Zhao, Sumei Liu, Xuefa Shi, **Meixun Zhao**. 2011. Biomarker records of phytoplankton productivity and community structure changes in the Japan Sea over the last 166 kyr. *Quaternary Science Reviews*, 30, 2666-2675.
5. **Zhao, M.**, J. Mercer, G. Eglinton, M. Higginson, C.Y. Huang. 2006. Comparative molecular biomarker assessment of marine productivity of ODP Site 658 off Cap Blanc, N.W. Africa over the last 160 kyr. *Organic Geochemistry*, 37, 72-97.

研究方向/领域: 海底地下涌水的地球化学特征及其对沿岸海洋环境的影响; 海洋环流演变及其与全球气候变化的关系; 深海性化学合成生物群的形成机制

Research Interest: Geochemistry of submarine groundwater discharge and its impact on the costal marine environment; Oceanic circulation and variation related to global climate changes; The monitoring of formation mechanisms of chemical synthesis communities

Selected Publications:

1. Inamura O., **J. Zhang** and M. Minagawa, ^{13}C and ^{15}N values in scales of *Micropterus salmoides* largemouth bass as a freshwater environmental indicator. *Rapid Commun. Mass Spectrom.* 2012, 26, 17-24 (2012).
2. Persson, P.-O., Andersson, P.-S., **Zhang, J.** and Porcelli, D., Determination of Nd isotopes in water: A chemical separation technique for extracting Nd from seawater using a chelating resin, *Analytical Chemistry*, dx.doi.org/10.1021/ac102559k, 83, 1336-1341 (2011).
3. Ajit K. Mandala, **Jing Zhang** and Kazuyoshi Asai, Stable isotopic and geochemical data for inferring sources of recharge and groundwater flow on the volcanic island of Rishiri, Japan, *Applied Geochemistry*, doi:10.1016/j.apgeochem.2011.05.001 (2011).
4. Nahar, M.-S. and **Zhang, J.**, Assessment of sources variation in potable water quality including organic, inorganic and trace metals, *Environmental Geochemistry and Health*, DOI 10.1007/s10653-011-9397-z (2011).
5. Mandal A.K., **Zhang J.**, Climate change and the future of freshwater resources of the island: A case study on the Rishiri Island, Japan. *Environmental Earth Sciences*. Doi 10.1007/s12665-011-1340-1 2011.08.31(2011).



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研究方向/领域: 海洋系统中的陆源有机碳及其生物地球化学、现代有机污染物的海洋生物地球化学、海洋有机地球化学等

Research Interest: Terrestrial organic carbon and its biogeochemistry in marine system, marine biogeochemistry of modern organic pollutants, marine organic geochemistry.

Selected Publications:

1. Li Xian-guo, DENG Wei, ZHOU Xiao, TANG Xu-li, GUO Xin-yun, WANG Yan. 2012. Distribution of PAHs in Surface Seawater of Qingdao Coast Area and Their Preliminary Apportionment. Environmental Science (China), 33(3): 741-745.
2. WANG Yan, Li Xianguo, PENG Xuewei, TANG Xuli, and DENG Xiaoyan. 2012. Optimization of Sample Pretreatment for Determination of Polycyclic Aromatic Hydrocarbons in Estuarine Sediments by Gas Chromatography. Journal of Ocean University of China, 11 (2): 106-112. DOI 10.1007/s11802-012-1829-6.
3. ZHANG Ting, Li Xianguo, SUN Shuwen, LAN Haiqing, DU Peirui, WANG Min. Determination of Lignin in Marine Sediment Using Alkaline Cupric Oxide Oxidation-Solid Phase Extraction-On-Column Derivatization-Gas Chromatography. Journal of Ocean University of China (Accepted)



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德国热带海洋生态中心访问学者 (2006)
中国海洋大学博士 (2010)
印度海洋研究所访问学者 (2011)
德国波罗的海研究所访问学者 (2011)
中国海洋大学教授

Visiting scholar, Leibniz Center for Tropical Marine Ecology, Germany (2006)
PhD, Ocean University of China (2010)
Visiting scholar, National Institute of Oceanography (NIO), India (2011)
Visiting scholar, Leibniz Institute for Baltic Sea Research, Germany (2011)
Professor, Ocean University of China

研究方向/领域: 痕量元素的海洋生物地球化学

Research Interest: Marine Biogeochemistry of trace metal

Selected Publications:

1. Ren J.L., Zhang G.L., Zhang J., Shi J.H., Liu S.M., Li F.M., Jin J. and Liu C.G., 2011. Distribution of dissolved aluminum in the Southern Yellow Sea: Influences of a dust storm and the spring bloom. Marine Chemistry, 125: 69-81.
2. Ren J.L., Zhang J., Li D.D., Cheng Y. and Liu S.M., 2010. Behavior of dissolved inorganic arsenic in the Yellow Sea and East China Sea. Deep-Sea Research II, 57: 1035-1046.
3. Ren J.L., Zhang J., Li D.D., Cheng Y. and Liu S.M., 2007. Speciation and seasonal variations of dissolved inorganic arsenic in Jiaozhou Bay, North China. Water, Air & Soil Pollution: Focus, 7: 655-671.



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PhD, Ocean University of China (2004)

Associate Professor, Ocean University of China

研究方向/领域: 海洋有机地球化学, 海洋生态环境重建, 有机碳循环

Research Interest: Marine organic geochemistry, Reconstruction for marine ecosystem, Organic carbon cycle

Selected Publications:

1. **Lei Xing**, Shuqing Tao, Hailong Zhang, Yanguan Liu, Zhigang Yu, Meixun Zhao, Distributions and origins of lipid biomarkers in surface sediments from the southern Yellow Sea, *Applied Geochemistry*, 2011, 26 (8): 1584-1593.
2. **Lei Xing**, Rongping Zhang, Yanguan Liu, Xiaochen Zhao, Sumei Liu, Xuefa Shi, Meixun Zhao, Biomarker records of phytoplankton productivity and community structure changes in the Japan Sea over the last 166 kyr, *Quaternary Science Reviews*, 2011, 30, 2666-2675.
3. **Lei Xing**, Hailong Zhang, Zineng Yuan, Yao Sun, Meixun Zhao, Terrestrial and marine biomarker estimates of organic matter sources and distributions in surface sediments from the East China Sea Shelf, *Continental Shelf Research*, 2011, 31(10), 1106-1115.



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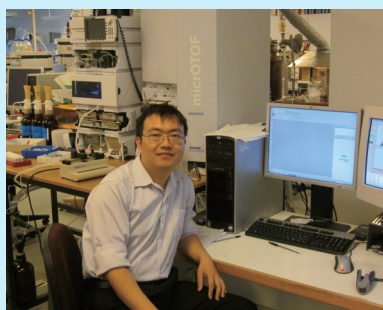
研究方向/领域: 近海富营养化污染物排海总量控制和有害赤潮防治; 微生物在溶解有机质中的形成、转化作用及其影响因素; 近海环境中持久性有机污染物的来源、归宿、生态效应和生物可降解性评价

Research Interest: Total amount control techniques for eutrophication pollutants discharge into coastal water and prevention of harmful red tide. Sources, fates, ecological effects and bioavailability of persistent organic pollutants in coastal environments. Bacterial contributions to DOM formation and transformation as well as the factors controlling these processes.

Selected Publications:

1. Zhu Sheng-feng, **Liang Sheng-kang**, You Xue-yi. Effect of rhamnolipid biosurfactant on solubilization and biodegradation of polycyclic aromatic hydrocarbons. *Procedia Environmental Sciences*, 2012, 9: 325~361.
2. **Liang Sheng-kang**, Song Dan-dan. Characteristics of an extracellular bioflocculant from a *Serratia plumthica* isolate. *Advanced Materials Research*, 2009, 80: 223~226.
3. Xiu-lin Wang, Liang-yu Gong, **Sheng-kang Liang**, Xiu-rong Han, Chen-jian Zhu, Yan-bin Li. Algicidal activity of rhamnolipid biosurfactants produced by *Pseudomonas aeruginosa*. *Harmful Algae*, 2005, 4: 433-443.

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中国海洋大学副教授
PhD, Ocean University of China (2005)
Visiting scholar, University of York, UK (2009-2010)
Associate Professor, Ocean University of China

研究方向/领域: 海洋有机生物地球化学

Research Interest: Marine organic biogeochemistry

Selected Publications:

1. Yao P, Yu Z G, Deng C M, Liu S X, Zhen Y. Classification of marine diatoms using pigment ratio suites. Chinese Journal of Oceanology and Limnology, 2011, 29(5): 1075-1085.
2. Yao P, Yu Z G, Deng C M, Liu S X, Zhen Y. Spatial-temporal distribution of phytoplankton pigments in relation to nutrient status in Jiaozhou Bay, China. Estuarine, Coastal and Shelf Science, 2010, 89(3): 234-244.
3. Yao P, Yu Z G, Deng C M. Pigment signatures of some diatoms isolated from China seas. Acta Oceanologica Sinica, 2006, 25(1): 108-118.



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华东师范大学自然地理学博士 (2006)
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中国海洋大学副教授
PhD, East China Normal University (2006)
Postdoctoral Researcher Ocean University of China (2006-2008)
Associate Professor, Ocean University of China

研究方向/领域: 营养盐与痕量元素在河口与近岸的循环

Research Interest: Cycle of nutrient and trace metal in estuary and coastal area

Selected Publications:

1. Qing-Zheng Yao, Zhi-Gang Yu, Hong-Tao Chen, Peng-Xia Liu, Tie-Zhu Mi. Phosphorus transport and speciation in the Changjiang (Yangtze River) system. Applied Geochemistry, 2009, 24: 2186-2194
2. Qing-Zheng Yao, Zhang, J., Wu, Y.. Hydrochemical process controlling arsenic and selenium in the Changjiang River (Yangtze River) system. Science of Total Environment 2007, 377 (1): 93-104
3. Qing-Zheng Yao, Jing Zhang, Xiao-Guang Qin, Hui Xiong. The behavior of selenium and arsenic in the Zhujiang (Pearl River), South China Sea, Estuarine Coastal and Shelf Science, 2006, 67: 170-180



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M.S Ocean University of Qingdao (1999)
Associate Professor, Ocean University of China

研究方向/领域: 营养盐在河口及近岸的循环

Research Interest: Cycle of Nutrient in the Estuary and Coastal area

Selected Publications:

1. CHEN Hongtao, YU Zhigang, YAO Qingzheng, MI Tiezhu and LIU Pengxia, 2010. Nutrient concentrations and fluxes in the Changjiang Estuary during summer. Acta Oceanologica Sinica, 29(2):107-119
2. He Huijun, CHEN Hongtao, YAO Qingzheng, QIN Yanwen, MI Tiezhu and YU Zhigang, Behavior of different phosphorus species in suspended particulate matter in the Changjiang estuary. Chinese Journal of Oceanology and Limnology. 2009, 27(4):859-868
3. 魏俊峰, 陈洪涛, 刘鹏霞, 李荣华, 于志刚, 长江悬浮颗粒物中磷的赋存形态研究, 水科学进展, 2010, 21 (1): 131-136

方向三：海水综合利用技术**Scope 3: Seawater multipurpose utilization****高从堦院士****MCTL首席科学家**

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山东海洋学院学士（1965）
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Bachelor, Ocean College of Shandong (1965)
Academician of the Chinese Academy of Engineering (1995-)
Jointly appointed CAE Academician of Development Center of Water Treatment Technology, SOA, Hangzhou and OUC

研究方向/领域：海水淡化，海水化学资源综合利用，膜科学与水处理技术

Research Interest: Seawater desalination, Seawater multipurpose utilization of chemical resources, Membrane science and technology of water treatment

Selected Publications:

1. 高从堦主编.海水淡化及海水与苦咸水利用发展建议[M].高等教育出版社,北京,2007,314.
2. 高从堦,陈国华主编.海水淡化技术与工程手册[M],化学工业出版社,北京,2004.4.
3. 张玉忠,郑领英,高从堦编著,液体分离膜技术及应用,化学工业出版社,北京,2004.1.
4. 时钧,袁权,高从堦主编.膜分离技术手册[M],化学工业出版社,北京,2001.
5. Yan Sui, Xueli Gao, Zhining Wang, **Congjie Gao**.Antifouling and antibacterial improvement of surface-functionalized poly(vinylidene fluoride) membrane prepared via dihydroxyphenylalanine-initiated atom transfer radical graft polymerizations. Journal of Membrane Science, 2012,394-395:107-119.
6. Yuefei Song, Jia Xu, Yan Xu, Xueli Gao, **Congjie Gao**. Performance of UF-NF integrated membrane process for seawater softening. Desalination, 2011, 276(1-3): 109-116.
7. Jia Xu, Xianshe Feng, **Congjie Gao**. Surface modification of thin-film-composite polyamide membranes for improved reverse osmosis performance . Journal of Membrane Science, 2011,370(1-2):116-123.

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中国海洋大学教授

PhD, Tianjin University (1995)

Assistant Professor, Tohoku University Japan (2005)

The talent of Qingdao (2004)

The innovation and outstanding achievement award of overseas professions in Shandong province (2011)

Associate editor of the journal of coal conversion

Professor, Ocean University of China

研究方向/领域: 烟气净化技术、海水利用 (脱硫) 技术、新型天然气脱硫技术、油品净化技术和海洋贝壳类智能材料开发等

Research Interest: Purification technology of flue gas, Seawater utilization (desulfurization) technology, Natural gas desulfurization technology, Oil desulfurization technology and marine shellfish smart material development

Selected Publications:

1. Qingya Liu, **Chunhu Li**, Li Yanxu. SO₂ removal from flue gas by activated semi-cokes I-The preparation of catalysts and determination of operating conditions, Carbon, 2003, 41, 2217-2231

2. Wang Linxue, **Li Chunhu**, Yin Haiyan. Sulfur Removal of FCC Gasoline by Selective Adsorption over Activated Semi-coke. Chemistry and technology of fuels and oils, 2009, 45(2): 20-23

3. Wentai Wang, **Chunhu Li**, Zifeng Yan. Study on molding semi-coke used for flue-gas desulphurization. Catalysis Today, 2010, (158):235-240



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PhD, Hong Kong University of Science & Technology (2010)

Visiting Scholar, Hong Kong University of Science & Technology (2010)

Associate Professor, Ocean University of China

研究方向/领域: 反渗透膜、正渗透膜的设计与制备, 磷脂仿生膜的研究, 膜法海水淡化及海水综合利用

Research Interest: Reverse osmosis, Forward osmosis, Design and manufacture of NF supported lipid bilayers, Seawater desalination and utilization of seawater.

Selected Publications:

1. **Zhining Wang**, Xiaofang Li and Shihe Yang, Studies of Dipalmitoylphosphatidylcholine (DPPC) Monolayers Embedded with Endohedral Metallofullerene (Dy@C82), *Langmuir*, 2009, 25, 12968-12973.
2. **Zhining Wang**, Shihe Yang, Effects of Fullerenes on Phospholipid Membranes: A Langmuir Monolayer Study, *ChemPhysChem*, 2009, 10, 2284-2289.
3. **Zhining Wang**, Shihe Yang, Adsorption Behaviors of DPPC/MO Aggregates on SiO₂ Surfaces, *Langmuir*, 2008, 24, 11616-11624.



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中国海洋大学副教授

PhD, Dalian Institute of Chemical Physics, Chinese Academy of Sciences (2007)

Associate Professor, Ocean University of China

研究方向/领域: 反渗透复合膜、介孔材料、海水中化学资源提取等

Research Interest: Composite reverse osmosis membrane, Mesoporous materials, Extract chemical resource from seawater.

Selected Publications:

1. **Guiru Zhu**, Qihua Yang, Dongmei Jiang, Jie Yang, Lei Zhang, Can Li, Synthesis of Bifunctionalized Mesoporous Organosilica Spheres for High-Performance Liquid Chromatography, *Journal of Chromatography A*, 2006, 1103: 257.
2. **Guiru Zhu**, Qihua Yang, Hua Zhong, Dongmei Jiang, Can Li, Phase Transformation of the Periodic Mesoporous Organosilicas Assisted by Organotrialkoxysilane, *Journal of Physical Chemistry B*, 2007, 111: 8027.
3. **Guiru Zhu**, Hua Zhong, Qihua Yang, Can Li, Chiral Mesoporous Organosilica Spheres: Synthesis and Chiral Separation Capacity, Microporous and Mesoporous. Materials, 2008, 116: 36.



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PhD, Tianjin University (2004)

Associate Professor, Ocean University of China

研究方向/领域: 海水淡化, 膜分离技术, 水处理技术

Research Interest: Seawater desalination, Membrane separation technology, Water treatment technology.

Selected Publications:

1. **苏保卫**, 王玉红, 李晓明, 王铎, 姚野, 高从堦. 胶州湾海水纳滤软化的研究[J]. 水处理技术, 2007, 33 (2): 64-66.
2. **苏保卫**, 段晓杰, 高学理, 高从堦. 荷电纳滤膜的切向流动电位测试技术研究[J]. 膜科学与技术, 2010, 30 (4): 19-23.
3. 王宗文, **苏保卫**, 高学理, 韩姗姗, 高从堦. 层层自组装PDADMAC/PSS纳滤膜的制备[J]. 膜科学与技术, 2012, 32 (1): 24-27.



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中石化胜利油田工程设计院特聘专家 (2009)

中国海洋大学化学工程硕士 (2010)

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Distinguished experts, Sinopec shengli oilfield engineering design institute (2009)

M.C.E. Ocean University of China (2010)

Senior engineer, Ocean University of China

研究方向/领域: 超滤膜、纳滤膜及海洋生物质正渗透膜制备; 膜法水处理及海水淡化; 特种分离技术应用研究等

Research Interest: Preparation of ultrafiltration membrane, nanofiltration membrane, forward osmosis membrane based on marine biomass; membrane technology for water treatment and seawater desalination; membrane technology and applications in food and bioprocessing.

Selected Publications:

1. Yan Sui, **Xueli Gao**, Zhining Wang, Congjie Gao. Antifouling and antibacterial improvement of surface-functionalized poly (vinylidene fluoride) membrane prepared via dihydroxy- phenylalanine-initiated atom transfer radical graft polymerizations[J]. Journal of Membrane Science, 2012, 394-395: 107-119.
2. Hanmin Wang, **Xueli Gao**, Baowei Su, Congjie Gao. Preparation and characterization of antimicrobial PES ultra-filtration membrane modified with capsaicin[J]. Advanced Materials Research, 2011, 361-363: 2338-2343.
3. Hui Yu, **Xueli Gao**, Baowei Su, Congjie Gao. A new method to remove the calcium and magnesium from the sea water with CO₂[J]. Advanced Materials Research, 2011, 361-363: 990-995.

方向四:环境友好型海洋功能材料与防护技术**Scope 4: Environmental-friendly marine functional materials and protection technology****于良民 教授****MCTL首席科学家**

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中国海洋大学教授

PhD, Ocean University of Qingdao
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Cheung Kong Chair Professor(2008)
Taishan Scholars(2011)
Professor, Ocean University of China

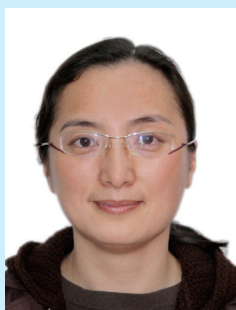
研究方向/领域: 环境友好型海洋防护材料、先进高分子复合材料、深海下潜浮力材料、能源材料及其应用技术

Research Interest: Environment-friendly marine functional materials, polymer based composite, deep-sea diving buoyant materials, energy materials and its application technology

Selected Publications:

1. Zhiming zhang, Qiong Li, **Liangmin Yu**, Zhijie Cui. Highly Conductive Polypyrrole/ γ - Fe₂O₃ Nanospheres with Good Magnetic Properties Obtained through an Improved Chemical One-Step Method. *Macromolecules*, 2011, 44, 4610-4615.
2. Cong Weiwei, **Yu Liangmin**, Zhao Haizhou, Li Xia, Yan Xuefeng. Synthesis and the Bacteriostatic Activity and Antifouling Capability of Benzamide containing Capsaicin Derivative. *高等学校化学研究*, 2011, 27, 803-807.
3. 夏树伟, 毛雅嫔, 薛倩倩, **于良民**. 取代喹啉类化合物抗菌活性的定量构效关系及分子设计. *高等学校化学学报*, 2011, 32(10), 2415-2420.

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Professor, Ocean University of China

研究方向/领域: 界面理论化学, 分子环境化学, 分子设计, 胶体催化等

Research Interest: Interfacial Theoretical Chemistry, Molecular Environmental Chemistry, Molecular Design, Colloidal Catalyst

Selected Publications:

1. Shuwei Xia, Gang Pan, Zheng-Li Cai, Yun Wang. The Manganite-Water Interface, J. Phys. Chem. C.; 2007, 111(28): 10427-10437
2. Shuwei Xia, Meng Qiu, Liangmin Yu, et al., Molecular dynamics and density functional theory study on relationship between structure of imidazoline derivatives and inhibition performance, Corrosion Science, 2008, 50: 2021-2029
3. 夏树伟, 毛雅婷, 薛倩倩, 于良民, 取代喹啉类化合物抗菌活性的定量构效关系及分子设计, 高等学校化学学报, 2011, 32(10): 2415-2420



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Postdoctoral Researcher, Institute of Chemistry, Chinese Academy of Sciences (2000-2002)
New Century Excellent Talents in University (2006)
Visiting scholar, University of Auckland, New Zealand (2010-2011)
Professor, Ocean University of China

研究方向/领域: 海洋防护材料-导电聚合物微纳米结构及其功能化、海洋环境隐身材料、海洋监测电化学传感器等

Research Interests: Marine Protection Materials- conducting polymer micro/nanostructures, stealth materials, electrochemical sensors

Selected Publications:

1. Zhang Zhiming, Sui J, Zhang LJ, Wei Y, et al. Hollow polyaniline octahedron prepared by cuprous oxide as a template. ADVANCED MATERIALS 17: 2854-2857 2005 (SCI 9.107)
2. Zhang Zhiming, Wan MX, Wei Y, et al. Highly crystallized polyaniline nanostructures doped with dicarboxylic acid. ADVANCED FUNCTIONAL MATERIALS 16: 1100-1104 2006 (SCI 6.090)
3. Zhiming Zhang, Qiong Li, Liangmin Yu, Zhijie Cui, Lijuan Zhang, and Graham A. Bowmaker. Highly Conductive Polypyrrole/ γ -Fe₂O₃ Nanospheres with Good Magnetic Properties Obtained through an Improved Chemical One-Step Method. MACROMOLECULES 2011, 44, 4610-4615 (SCI 4.837)



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New Century Excellent Talents in University (2011)

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Visiting Professors of the Key Laboratory of Marine Spill Oil Identification and Damage Assessment Technology, North China Sea Environmental Monitoring Center of State Oceanic Administration

Professor, Ocean University of China

研究方向/领域: 环境微生物生物物理化学过程、海洋溢油生物修复、微生物驱油机理、含油含聚污水生化处理

Research Interest: Biological physical chemistry process of environmental microbiology, marine oil spill bioremediation, mechanism of microbial enhanced oil recovery, biochemical treatment of oily wastewater containing hydrolyzed polyacrylamide

Selected Publications:

1. **Mutai Bao**, Qingguo Chen, Yiming Li, Guancheng Jiang, 2010. Biodegradation of partially hydrolyzed polyacrylamide by bacteria isolated from production water after polymer flooding in an oil field. Journal of Hazardous Material, 184:105-110, doi:10.1016/j.jhazmat.2010.08.011
2. **Mu-tai Bao**, Li-na Wang, Pei-yan Sunb, Li-xin Cao, Jie Zou, Yi-ming Li, 2012. Biodegradation of crude oil using an efficient microbial consortium in a simulated marine environment. Marine Pollution Bulletin, doi:10.1016/j.marpolbul.2012.03.020
3. **Mutai Bao**, Xiangping Kong, Guancheng Jiang, Xiulin Wang, Ximing Li, 2009. Laboratory Study on Activating Indigenous Microorganisms to Enhance Oil Recovery in Shengli Oil Field. Journal of Petroleum Science & Engineering, 66: 42-46. doi:10.1016/j.petrol.2009.01.001



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Visiting scholar, University of Manchester, UK (2007-2008)

Professor, Ocean University of China

研究方向/领域: 海洋腐蚀与防护技术

Research Interest: Marine corrosion and protection technology

Selected Publications:

1. B. Wang, **M. Du**, J. Zhang, C.J. Gao, Electrochemical and surface analysis studies on corrosion inhibition of Q235 steel by imidazoline derivative against CO₂ corrosion, Corrosion Science, 53 (2011) 353-361
2. F.G. Liu, **M. Du**, J. Zhang, M. Qiu, Electrochemical behavior of Q235 steel in saltwater saturated with carbon dioxide based on new imidazoline derivative inhibitor, Corrosion Science, 2009, 51(1): 102-109
3. **Min DU**, Bin Jiang, Jing Zhang, Study on inhibition behavior of dissymmetric bis-quaternary ammonium with imidazoline ring, No. 10150, NACE 2010

研究队伍
Faculty



李一鸣 副教授 Assoc. Prof. Yiming Li
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山东大学博士(2007)
香港城市大学材料物理系研究助理(2007)
中国海洋大学副教授(2011)
PhD, Shandong University (2007)
Research Assistant, City University of Hong Kong (2007)
Associate professor, Ocean University of China (2011)

研究方向/领域: 表面活性剂有序聚集体结构与性能的实验和分子模拟研究; 分子模拟技术在海洋胶体和界面化学中的应用研究;

Research Interest: Experimental and molecular simulation studies on the aggregation behavior of surfactants; application of molecular simulation in marine colloids and interfacial chemistry;

Selected Publications:

1. Yiming Li, Yingyan Guo, Mutai Bao, Xueli Gao. Investigation of Interfacial and Structural Properties of CTAB at the Oil/Water Interface Using Dissipative Particle Dynamics Simulations, Journal of Colloid and Interface Science, 2011, 361, 573-580.
2. Yiming Li, Guiying Xu, Yanyan Zhu, Yajing Wang, Houjian Gong, Aggregation behavior of Pluronic copolymer in the presence of surfactant: mesoscopic simulation, Colloids and Surface A, 2009, 334, 124-130.
3. Yiming Li, Guiying Xu, Aimin Chen, Shiling Yuan, Xiaorong Cao, Aggregation between Xanthan and Nonyphenyloxypropyl-Hydroxyltrimethylammonium Bromide in Aqueous Solution: MesoDyn Simulation and Binding Isotherm Measurement, J. Phys. Chem. B 2005, 109, 22290-22295.



徐海波 高级工程师 Senior Engineer Haibo Xu
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中国海洋大学博士(2009)
中国化学会电化学专业委员会委员
中国海洋大学高级工程师
PhD, Ocean University of China (2009)
Member of Chinese Society of Electrochemistry
Senior Engineer, Ocean University of China

研究方向/领域: 新能源电化学、功能电极材料、电化学工程、水处理、燃料电池、电化学电容器、腐蚀与防护等

Research Interest: New energy and Electrochemistry; Function Electrode Materials; Electrochemical Engineering; Water Treatment; Fuel Cell; Electrochemical Capacitor; Corrosion and Protection.

Selected Publications:

1. Xinzhuang Fan, Yonghong Lu, Haibo Xu, Xiangfeng Kong and Jia Wang. Reversible redox reaction on the oxygen-containing functional groups of an electrochemically modified graphite electrode for the pseudo-capacitance, Journal of materials chemistry, 2011, 21, 18753-18760.
2. Xu Haibo, Fan Xinzhuang, Lu Yonghong, et al. Preparation of an electrochemically modified graphite electrode and its electrochemical performance for pseudo-capacitors in a sulfuric acid electrolyte. Carbon 2010; 48 (11): 3300-3303.
3. Hai-Bo Xu, Yong-Hong Lu, Chun-Hu Li and Jie-Zhen Hu. A novel IrO₂ electrode with iridium-titanium oxide interlayers from a mixture of TiN nanoparticle and H₂IrCl₆ solution. Journal of Applied Electrochemistry, 2010, 40(4): 719-727.

研究队伍
Faculty

近三年来,实验室成员承担或参与研究的项目包括国973项目/课题、863课题、国家杰出青年基金、国家自然科学基金重点项目、重大国际合作项目、面上项目及各类省部级项目70余项,总经费8000余万元。

In last three years, MCTL scientists have lead or participated in over 70 projects including “973” and “863” Programs, National Science Foundation for Distinguished Young Scholars, Natural Science Foundation of China(NSFC), Major International Joint Research Program of China, General Program and numbers of national and provincial programs with the total fund of more than 80 million Yuan.

项目名称	项目类别	批准号	经费 (万元)	负责人	执行期限
我国陆架海生态环境演变过程、机制及未来变化趋势预测	科技部 973 项目	2010CB428900	3265	赵美训	2010-2014
海洋环境变化与水母暴发的相互作用	科技部 973 课题	2011CB403602	330	于志刚	2011-2015
营养元素循环的关键过程对多重压力的响应与反馈	科技部 973 课题	2011CB409802	300	刘素美	2011-2015
近海富营养化关键过程及其对藻华灾害驱动作用	科技部 973 课题	2010CB428701	330	石晓勇	2009-2014
长江口及邻近海域底边界层生物地球化学过程研究	国家自然科学基金重大国际合作项目	40920164004	150	于志刚	2009-2012
人类活动和气候变化对我国边缘海有机碳汇影响的有机分子记录	国家自然科学基金国际合作项目	41020164005	200	赵美训	2011-2013
水文生物地球化学过程及其对生态系统结构的影响	国家自然科学基金重大项目第二课题	30490232	140	于志刚	2004-2009
中国东海和黄海中生源硫的生产、分布、迁移转化与环境效应	国家自然科学基金重点项目	41030858	220	杨桂朋	2011-2014
南海冷泉区甲烷通量及其对海底环境与生态系统影响的生物地球化学研究	国家自然科学基金重点项目	40730844	175	赵美训	2008-2012
海洋化学	国家杰出青年基金	40525017	160	杨桂朋	2006-2009
海洋生物地球化学	国家杰出青年科学基金	4092517	200	刘素美	2010-2013
海洋界面化学	山东省“泰山学者”建设工程专项	JS200510016	200	杨桂朋	2006-2010
基于材料结构特性的新型海洋防污涂料开发与产品化	海洋公益	201005028-2	488	于良民	2010-2014
静态海洋装备用防污材料的研发	国家科技支撑计划	2012BAB15B02	340	于良民	2012-2014
深海环境通用自清洁防污涂层的研究(滚动)	863 项目	2010AA09Z203	224	于良民	2010-2011
深海环境通用自清洁防污涂层的研究	863 项目	2006AA09Z224	100	于良民	2006-2008
基于海上油田采油注水的水膜软化技术的研究开发	863 滚动	2010AA09Z301	240	苏保卫	2010-2012
船用防污漆中 DDT 替代品及替代技术开发	863 项目	2010AA065104	514	李昌诚	2010-2012
节能型高分子复合膜的结构调控与制备方法	科技部 973 课题	2009CB623402	570	高从堦	2008-2013
发酵液澄清分离膜筛选评价和配套工艺研究	横向	20110330	100	高学理	2011-2013

为了促进海洋化学理论与工程技术教育部重点实验室的学术交流，不断提高实验室的科研水平，实验室特设立开放交流基金，用于资助优秀的学者前来实验室开展合作研究。开放交流基金的研究期限为1-2年，支持力度为每个课题5-10万。

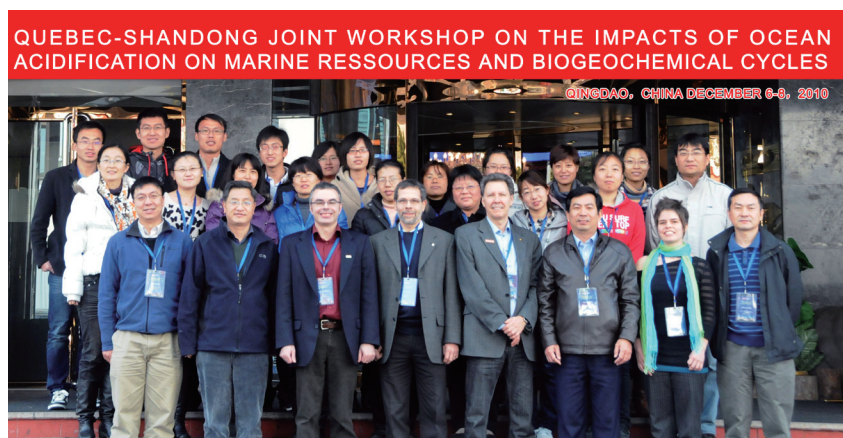
近三年来，实验室始终与国内外专家及研究机构保持着密切的合作关系。通过邀请多位国际知名学者前来开设讲座，促进海外专家与实验室科研人员的交流沟通；通过研究人员出访学习，加强自身队伍建设，提高研究水平。

MCTL has launched a “cooperating fellowship” for scholars from other institutions or universities in order to improve academic exchange and research level. One program of the fellowship can get financial support of 50,000 to 100,000 RMB from MCTL and be finished in 2 years.

In these three years, MCTL kept collaborative relationship with many overseas institutions and experts. MCTL invited a number of overseas scholars to give lectures to improve the communication and exchange. MCTL also send technical and academic staff to get training in various international and regional institutions.



2009年9月青岛MEDINA膜法脱盐会议合影
Membrane-Based Desalination: An Integrated Approach (acronym MEDINA), Qingdao, 2009



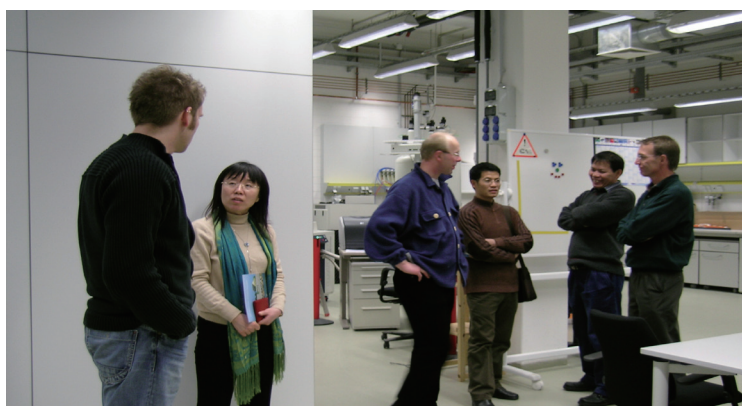
2010年10月中加海洋酸化研讨会
Quebec-Shandong Joint Workshop on the Impacts of Ocean Acidification on Marine Resources and Biogeochemical Cycles Qingdao, 2010



德克萨斯农工大学Thomas S. Bianchi 与实验室成员交流
Seminar given by Prof. Thomas S. Bianchi from Texas A&M University



日本富山大学张劲教授讲座
Lecture given by Prof. Jing Zhang from University of Toyama



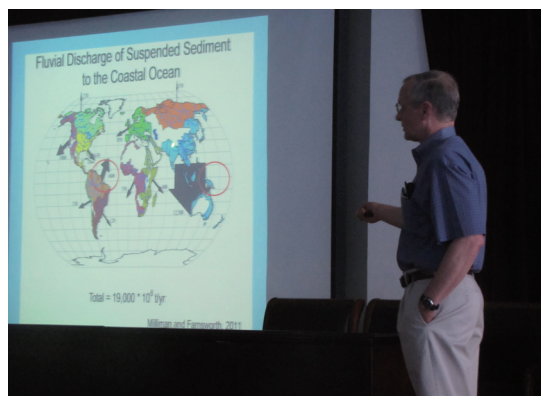
刘素美教授在德国Afred-Wegener-Institut Fur Polar-Und Meeresforschung实验室参观
Prof. Sumei Liu visited Afred-Wegener-Institut Fur Polar-Und Meeresforschung Lab in Germany



环境化学与生态毒理学国家重点实验室主任
江桂斌院士讲座
Lecture given by CAS Academician Guibin Jiang, director of State key Laboratory of Environmental Chemistry and Ecotoxicology



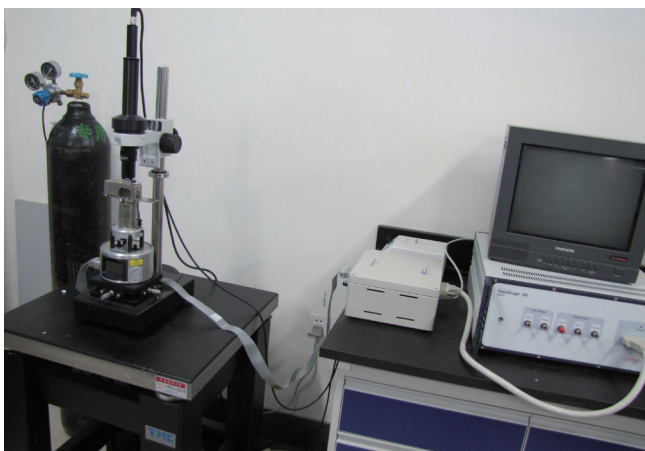
美国佛罗里达州立大学William C. Burnett教授学术报告会
Lecture given by Prof. William C. Burnett from Florida State University



美国纽约州立大学石溪分校Robert Aller教授讲座
Lecture given by Prof. Robert Aller from State University of New York

开放交流

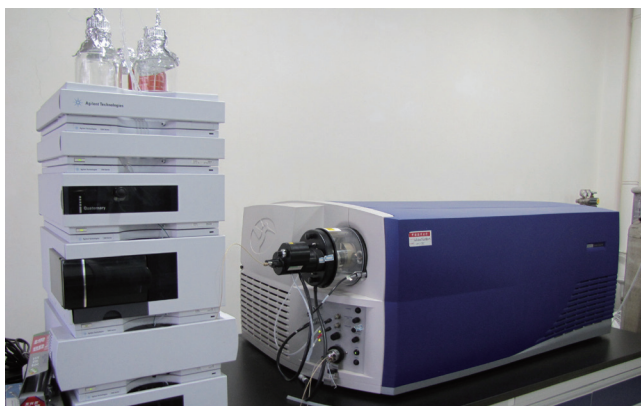
Exchange and Cooperation



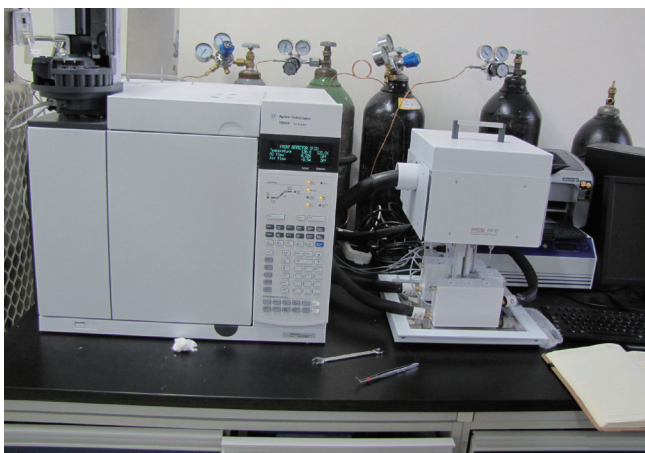
扫描探针显微镜
MultiMode SPM-Nano 3D



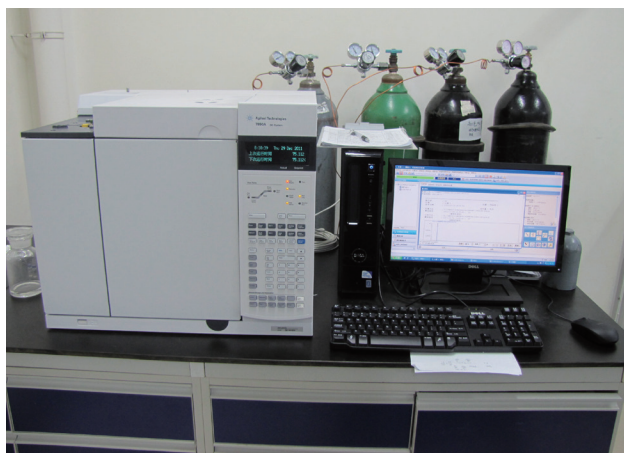
稳定同位素质谱仪
stable isotope ratio mass spectrometer-Delta v adv



高效液相色谱质谱联用仪
High performance liquid chromatography triple quadrupole mass spectrometer-Quattro ultima



制备气相色谱仪
preparative and detective capillary gas chromatography



气相色谱仪
Gas chromatography-7890A