Introduction

The role of membrane science and membrane engineering in facing some of the most crucial problems of our Society is becoming more and more visible. From Water stress, CO$_2$ capture and storage; from fuel cells to regenerative medicine; from the innovation in the petrochemical industry and various others industrial sectors to the design of the new packaging materials or controlled release systems, membrane engineering is offering important interesting possible solutions. European and Chinese researchers have been working together in the past years and this further collaboration might play a significant role for the future successes. A Sino-EU Membrane Science and Technology Research and Development Center has been recently created in Weihai. This bulletin will be published every six months for trying to inform all person interested, on the actions in progress in China and in Europe in Membrane Science and Membrane Engineering. We will be pleased in receiving comments and suggestions from all of you.

Prof. Enrico Drioli

Prof. Jun Ma
### Summary

#### News

… from European Colleagues
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… Announcements…

#### Events

Projects meetings and related activities
Membrane Conferences
Upcoming events
Events of particular relevance

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#### Scientific results of particular relevance

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#### Overview of books on Membrane Technology
There are two actions that I would like to mention:

1. The China Scholarship Council (CSC), [http://en.csc.edu.cn/](http://en.csc.edu.cn/) which supports exchanges between China and foreign partners. CSC is useful for non-Chinese who want to study in China, but also supports Chinese students who want to study abroad. This depends on specific agreements with institutes in Europe, which covers of course more than only membranes. A list of collaborations with European institutes can be seen at: [http://en.csc.edu.cn/Chuguo/0d531d0046e44b23816bb3fe1d89d2a4.shtml](http://en.csc.edu.cn/Chuguo/0d531d0046e44b23816bb3fe1d89d2a4.shtml)
   In this list there is also my own university (K.U.Leuven); I have a position launched for which Chinese candidates can apply through [http://phd.kuleuven.be/set/](http://phd.kuleuven.be/set/) through Department of Chemical Engineering (CIT). The deadline for this is however already in March 2010. Contact person in China is Zhu Zhilong of the CSC programme. Possibly also other openings in the membrane area can be found here.

2. K.U.Leuven has intense contacts with Tsinghua University, and has set up a joint programme already in 2007. This is described at: [http://www.kuleuven.be/tsinghua/Tsinghua%20university.html](http://www.kuleuven.be/tsinghua/Tsinghua%20university.html) - today this is still running and we had a call for proposals with a deadline in September.
   I applied for a collaborative project involving exchanges with prof. Wang from Tsinghua. It is expected that the call will be repeated in 2010.

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A French delegation of 8 Scientists visited The Hainan Island from 4 to 12 December 2009. The objective was double: First, participate to the 2nd International Symposium on Aqua Science, Water Resource and Low Carbon Energy (2nd ISASWR-LCE), during which some of the French scientists had been invited to deliver Plenary Lectures. The participants have decided to organise the next edition of this Conference in France, and the consortium "Agropolis International" in Montpellier is currently considering this possibility.

A second objective was to organise a progress meeting of the ARCUS project on Water Issues. During this meeting, the planning for 2010 has been set up, involving exchange of students and researchers and research projects on Membrane Processes applied to Water production and reclamation. It was decided that the final Seminar of this project would be organised on October 1st, 2010, at the French Pavilion of the Universal Exhibition to be organised in Shanghai next year.
... from European Commission

7th Framework Programme (FP7)

Some Projects related to MEMBRANE
(http://cordis.europa.eu/fp7/projects_en.html)

A significant number of research projects has been sponsored by European Union in the FP7. A list is enclosed.

ICAP
Title: Innovative CO2 capture
Research area: ENERGY.2009.5.1.1 Innovative capture techniques
Project start data: [2010-01-01]

CACHET II
Title: Carbon dioxide capture and hydrogen production with membranes
Research area: ENERGY.2009.5.1.1 Innovative capture techniques
Project start data: [2010-01-01]

NEXT-GTL
Title: Innovative catalytic technologies & materials for next gas to liquid processes
Research area: NMP-2008-4.0-2 Catalysts and sustainable processes to produce liquid fuels from coal and natural gas
Project start data: [2009-11-01]

ONLY WATER
Title: Autonomous and standardised container-based water treatment unit for production of potable water
Research area: SME-1 Research for SMEs
Project start data: [2009-06-16]

SUSHGEN
Title: Sustainable hydrogen generation
Research area: FP7-PEOPLE-ITN-2008 Marie Curie Action: "Networks for Initial Training"
Project start data: [2009-12-01]

SMALLINONE
Title: Smart membrane for hydrogen energy conversion: All fuel cell functionalities in one material
Research area: ENERGY.2008.10.1.2 Novel materials for energy applications (Joint Call NMP)
Project start data: [2009-04-01]

ZECELL
Title: Nanostructured Electrolyte Membranes Based On Polymer-Ionic Liquids-Zeolite Composites For High Temperature Pem Fuel Cell
Research area: ENERGY-2007-1.1-01 Basic research for materials and processes for Polymer Electrolyte Membrane Fuel Cells (PEMFC),ENERGY-2007-1.1-03 Innovative concepts for fuel cells
Project start data: [2008-01-01]
SELFMEM
Title: Self-assembled polymer membranes
Research area: NMP-2008-2.1-1 Nanostructured membrane materials
Project start data: [2009-09-01]

DMIOL
Title: Microencapsulation of Islets within Functionalized Peg Hydrogel
Research area: FP7-PEOPLE-2009-RG Marie Curie Action: "Reintegration Grants"
Project start data: [2009-05-31]

MULTIPLAT
Title: Biomimetic ultrathin structures as a multipurpose platform for nanotechnology-based products
Research area: NMP-2008-1.1-1 Converging sciences and technologies (nano, bio, info and/or cogni),NMP-2008-2.1-1 Nanostructured membrane materials
Project start data: [2009-12-01]

IDEAL-CELL
Title: Innovative dual membrane fuel cell
Research area: ENERGY-2007-1.1-03 Innovative concepts for fuel cells
Project start data: [2008-01-01]

NANOTUBEMEM
Title: Carbon nanotube membranes by templated growth in oriented molecular sieve films
Research area: PEOPLE-2007-4-3.IRG Marie Curie Action: "International Reintegration Grants"
Project start data: [2008-11-01]

DOUBLENANOMEM
Title: Nanocomposite and nanostructured polymeric membranes for gas and vapour separations
Project start data: [2009-06-01]

NASA-OTM
Title: NAnostructured Surface Activated ultra-thin Oxygen Transport Membrane
Research area: NMP-2008-2.1-1 Nanostructured membrane materials
Project start data: [2009-09-01]

MEMBRIDGE
Title: Bridge between environment and industry designed by membrane technology
Research area: NMP-2008-2.6-3 Coordinated actions with Materials researchers in major world regions
Project start data: [2009-05-01]

MEDIRAS
Title: Membrane distillation in remote areas
Research area: ENERGY-2007-4.1-03 Small distributed systems for seawater desalination
Project start data: [2008-09-01]

NEW ED
Title: Advanced bipolar membrane processes for remediation of highly saline waste water streams
Research area: ENV.2008.3.1.1.2. Nanotechnologies for water treatment
Project start data: [2009-06-01]

DECNAHED
Title: Development of composite nanomaterials for hydrogen energy devices
Research area: PEOPLE-2007-4-3.IRG Marie Curie Action: "International Reintegration Grants"
Project start data: [2008-10-01]
RSMBR
Title: Engineering aspects and mechanisms of redox-stratified membrane bioreactors for completely autotrophic nitrogen removal from wastewater
Research area: PEOPLE-2007-4-2.IIF Marie Curie Action: "International Incoming Fellowships"
Project start data: [2009-01-01]

NEMOPUR
Title: New molecular purification technology for pharmaceutical production
Research area: PEOPLE-2007-1-1-ITN Marie Curie Action: "Networks for Initial Training"
Project start data: [2008-09-01]

FLUPOL
Title: Fuel cell membranes based on functional fluoropolymers
Research area: PEOPLE-2007-2-1.IEF Marie Curie Action: "Intra-European Fellowships for Career Development"
Project start data: [2008-05-01]

IMETI
Title: Implementation of membrane technology to industry
Research area: PEOPLE-2007-3-1-IAPP Marie Curie Action: "Industry-Academia Partnerships and Pathways"
Project start data: [2008-06-01]

NAPOLYNET
Title: Setting up research intensive clusters across the EU on characterization of polymer nanostructures
Research area: NMP-2007-2.1-3 Characterisation of nanostructured materials,NMP-2007-1.3-5 Coordination in studying the environmental, safety and health impact of engineered nanoparticles and nanotechnology based materials and products
Project start date: [2008-04-01]
Overview on China and EU cooperation

Maria A. Liberti, Institute on Membrane Technology (ITM-CNR), m.liberti@itm.cnr.it

The relationship between China and Europe has been developing steadily since the establishing of diplomatic relations in 1975. The 1985 EC-China Trade and Co-operation Agreement (TECA) remains the main overall framework for relations with China, which was renegotiated in 2007 into a more comprehensive Partnership and Cooperation Agreement, based on political dialogue and economic, trade and social relations.

The European Commission has also adopted a new Country Strategy Paper (CSP) for China for the period 2007-2013 and a Multi-Annual Indicative Programme (MIP) for 2007-2010. These instruments aim at guiding, monitoring and reviewing EU assistance with an indicative budget of €224 million to support EU-China cooperation programmes over the seven-year period. Furthermore, other actions and support are to be provided through various thematic programmes and regional budget lines.

A new addition to the relationship framework consists of sector-specific exchanges designed to promote common understanding and intensify collaborative actions in a broad range of fields. At present sector dialogues are in progress on over thirty topics ranging from environmental protection to science and technology, and from industrial policy to education and culture.

China and EU Framework Programmes

Since 1998, China has been very much present in projects funded by the European Union’s framework research programmes. At the start of the Fourth Framework Programme Chinese researchers managed to participate in just two or three projects in the framework programme, while in the 6th Framework Programme China was the second best (after Russia) non-European country participating with 300 Chinese institutes in more than 200 research projects funded, for a total budget of more than 1.1 billion €, with two thirds financed by the EU.

The 7th Framework Programme on the EU side (2007-2013) and China’s 11th Five Year Plan (2006-2011) together with the 2007 EU-China “S&T Year” confirm the well established history of cooperation between the European Union and China. The 7th Framework Programme 2007-2013 is in fact further developing this successful cooperation, while the Chinese authorities show their will to open Chinese research programmes to European participation.

Research teams from China are always allowed to participate to the Framework Programme when their participation helps to upgrade the potential quality of the project. In addition, funding for international research activities is spread throughout FP7 in all Specific Programmes

Organisations or individuals from Countries (generally addressed as Thirds Countries) outside of the EU and Associated States can participate in FP7:
- in the Cooperation programme - as partners in collaborative projects;
- in the Ideas programme – as participants in European-led research teams;
- in the People programme – as beneficiaries of training and career development activities;
- in the Capacities programme - in international activities promoting strategic cooperation.

Cooperation Programme

The Cooperation Programme covers ten themes corresponding to major fields in the progress of knowledge and technology ranging from health to security. All ten themes have an important international dimension which is supported in two main ways:

- Through the opening of all themes to all Third Countries and dedicated actions and calls for Third Countries. In this case Third Countries play the role of ADDITIONAL partners. In some of the topics, the participation of some Countries is particularly welcomed.
- Through Specific International Cooperation Actions - SICA, which are projects dedicated to Third Countries, which act as COMPULSORY partners. Projects can be presented in every
theme where on the basis of the needs of the Third Countries. They have a special minimum consortium requirement of 4 participants independent of each other, 2 in the EU or Associated Countries (AC) and 2 in the Third Countries.

**IDEAS PROGRAMME**

The Ideas Programme provides financial support for individual teams rather than for multinational consortia. Individual international researchers will be encouraged to join with Europe-led teams, where they will bring specific expertise from outside Europe to enrich the research being undertaken.

**The ERC Starting Independent Researcher Grants (ERC Starting Grants)**

Grants are open to researchers of any nationality who would like to set their research activity up in Europe. The Principal Investigator can be of any age and nationality and he/she can reside in any country in the world at the time of the application. He/she must have been awarded his/her first PhD at least 3 and less than 8 years prior to the publication date of the call for proposals.

The institution hosting the Principal Investigator for at least the duration of the grant must be in the European Union Member, Associated or Candidates States, or from an International European Interest Organisation (such as CERN, EMBL, etc.) or the European Commission’s Joint Research Centre. The Country of primary residence of the Principal Investigator during the period of the grant must be in one of the eligible states.

The constitution of the individual research team is flexible. Commonly, it involves other researchers from the PI's research group or from the same organisation as "team members". However, depending on the nature of a project the research team may also involve team members from other research organisations situated in the same or a different country. Therefore, research teams can be of national or trans-national character.

**The ERC Advanced Investigator Grants (ERC Advanced Grants)**

The objective is to support excellent frontier research projects by leading, established, researchers across the EU member states and associated countries, whatever their nationality.

Applicants for the prestigious ERC Advanced Grant are expected to be active researchers and to have a track-record of significant research achievements in the last 10 years.

**PEOPLE PROGRAMME**

The international dimension of the People Programme reinforces international cooperation in FP7 by supporting researcher mobility and their career development. It is directed at increasing the quality of European research, both by supporting European researchers to undertake research abroad and by attracting research talent from outside Europe and fostering research collaborations. All activities are open to Third Countries.

**Marie Curies are host driven actions:** Applicants are institutions/organizations who apply for a particular research training project or research project and for a number of researcher-months. If it is approved, the Institute itself announces vacancies.

**PARTICIPATION OPPORTUNITIES FOR THIRD COUNTRIES**

**Marie Curie Initial Training Networks (ITN)**

- Third country organizations can participate once minimum requirement fulfilled (three participants from EU- or Assoc. countries)
- Third country researchers can apply for an appointment in a running ITN
- Third country researchers can be recruited as Visiting Scientists in a running ITN

**Marie Curie Intra-European Fellowships for Career Development (IEF) and European Reintegration Grants (ERG)**

- Third country researchers can participate if they have resided in a EU- or Associated country for at least 3 out of the last 4 years (at the proposal submission deadline)
Marie Curie Co-funding of Regional, National and International Programmes (COFUND)
- Incoming mobility based on opening up the national programme for fellowships/grants to non-nationals/non-residents from Member States, Associated or third countries, to enhance international competition

Marie Curie Industry-Academia Partnerships & Pathways (IAPP)
- Third country organisations can participate once minimum requirement fulfilled (two participants from EU- or Assoc. countries)
- Third country researchers can participate in the staff secondment if they have been employed in the organisation for at least one year
- Third country researchers can be recruited as experienced external researchers

Marie Curie International Outgoing Fellowships (IOF)
- The partner organisation (Outgoing Host) must be located in a third country (except those with which FP7 currently has no cooperation)!
- Researchers from Third countries are not eligible

Marie Curie International Incoming Fellowships (IIF)
- Researchers must be nationals of a third country and must not have resided in a EU- or Associated country for more than 3 in the last 4 years (at the proposal submission deadline).

International Research Staff Exchange Scheme (IRSES)
- The Marie Curie International Staff Exchange Scheme is a new action aimed at strengthening research partnerships through staff exchanges and networking activities between European research organisations (at least two in two different EU Member States or Associated Countries) and organisations from third countries (one or more) with which the Community has an S&T agreement (or are in the process of negotiating one).

CAPACITIES PROGRAMME
The Capacities programme includes seven activities:
- Research infrastructures
- Research for the benefit of SMEs
- Regions of knowledge and support for regional research-driven clusters
- Research potential of Convergence Regions
- Science in society
- Support to the coherent development of research policies
- International cooperation

The latest is designed to support dialogues and information exchange activities with Third Countries.
Its main aims are:
- to identify specific areas of activities of mutual interest and mutual benefit
- to encourage the participation of Third Countries in FP7
- to develop Scientific and Technological Partnerships in defined priority areas
- to organize different national programmes which deal with cooperation with Third Countries

These objectives are intended to be supported through the following activities:
- INCO-NET activities for establishing a dialogue, promoting participation of Third Countries in FP7 and identifying topics for collaboration under FP7 thematic programmes
- BILAT activities for strengthening partnership with Countries which have an S&T cooperation agreement;
- ERA-NET activities to step up the cooperation and coordination of national or regional research programmes through networking, aiming at mutual opening and the development and implementation of joint activities.
ACCESS4EU activities for increasing the awareness and dissemination in the Member States and Associated Countries of access opportunities for European researchers and research organisations in national research and/or innovation programmes managed by third countries.

Participation is open to international organisations and legal entities established in third countries after the minimum conditions laid down in the ‘Rules for participation’ have been met, as well as any conditions specified in the specific programmes or relevant work programmes.

**FP7 CALLS**

The concrete plans for implementing the Specific Programmes are announced by the European Commission in annual 'Work Programmes'. These work programmes include the schedule of 'Calls for Proposals', commonly known just as 'Calls', to be published during the year. Each Call usually covers a specific research area. The annual work programmes and the full texts of the Calls are published on the FP7 section of CORDIS (http://cordis.europa.eu/fp7/home_en.html), the web site dedicated to EU-supported research. CORDIS is continually updated with the latest information on Calls for proposals, as well as other information and services related to Community research. Proposals may be submitted at any time after a Call opens for submissions, up until the deadline (which is strictly applied). The Guide for Applicants for the Call in question (also published on CORDIS) will guide through the process, and point towards other useful documents. A Web-based online tool called EPSS ('Electronic Proposal Submission Service') is the obligatory channel for the submission of proposals.

After the deadline for the Call, all the proposals submitted are evaluated by a panel of independent evaluators, who are recognized specialists in the relevant fields. The panel will check the proposals against a published set of criteria to see if the quality of research proposed is worthy of funding. The key criteria used for this evaluation are explained in the Guide for Applicants.

### OPEN CALLS

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**OTHER OPPORTUNITIES**

**ERASMUS MUNDUS**

The Erasmus Mundus supports European top-quality master’s courses and enhances the visibility and attractiveness of European higher education in third countries. It also provides EU-funded scholarships for third-country nationals participating in these master’s courses, as well as for EU-nationals studying at partner universities around the world.

The Erasmus Mundus programme comprises four concrete Actions:
**ACTION 1 - Erasmus Mundus Masters Courses**: They constitute the central component around which the Erasmus Mundus programme is built. The Erasmus Mundus Masters Courses are high-quality integrated study programmes at masters level offered by a consortium involving a minimum of three universities in at least three different European countries. Students have to study in at least two of the three universities and obtain a recognised double or joint degree upon graduation;

**ACTION 2 - Erasmus Mundus scholarships**: Give scholarships to highly qualified graduate students and scholars from third countries to follow or participate in the selected masters courses;

**ACTION 3 - Partnerships**: Erasmus Mundus Masters Courses have the possibility of establishing Partnerships with third-country higher education institutions. These Partnerships allow for outgoing mobility of graduate EU students and scholars involved in the Erasmus Mundus Masters Courses in order to study or work at a third-country partner university;

**ACTION 4 – Enhancing attractiveness**: Erasmus Mundus supports projects aimed at enhancing the attractiveness of European higher education around the world. It supports activities that will improve the profile, the visibility and the accessibility of European higher education.

**Who can apply for which Action**
The programme offers opportunities for the following beneficiaries:

- **European higher education institutions** (Actions 1, 2, 3, and 4)
- **Third-country higher education institutions** seeking European partners (Actions 3 and 4)
- **Third-country students** having obtained a first degree awarded by a higher education institution (Action 2)
- **European students** having obtained a first degree awarded by a higher education institution (Action 3)
- **Third-country scholars (academics or professionals)** who lecture or conduct research (Action 2)
- **European scholars (academics or professionals)** who lecture or conduct research (Action 3)
- **Other public or private bodies active in the field of higher education** (Action 4)

**How to apply?**
The programme is implemented via annual calls for proposals that are published on this website ([http://ec.europa.eu/education/programmes/mundus/call_en.html](http://ec.europa.eu/education/programmes/mundus/call_en.html)) every February.

**Higher education institutions and/or other institutions** wishing to take part in any of the programme's Actions should address their proposals to the Executive Agency. Proposals are assessed on the basis of quality criteria with the help of independent academic experts and an independent Selection Board. This ensures that only high-quality proposals are selected. The Selection Board is composed of twelve personalities of high standing from the academic world who are representative of the diversity of higher education in the European Union and with a longstanding experience of higher education policy.

**Students and scholars** that wish to participate in an Erasmus Mundus Masters Course (with or without a scholarship) must apply directly to the Erasmus Mundus Masters Course of their choice. Individual applications are assessed by the consortium offering the Masters Course in question, according to the consortium's pre-established rules based on merit.

The final selection decision for all actions is taken either by the Commission or the Executive Agency.

**National Programmes**
The Chinese national basic and high-tech research programmes are open to EU partners, as part of the EU-China S&T agreement.

The main programmes under this scheme are:

- the 973 national basic research programme which mobilises China’s scientific talents in conducting innovative research on major scientific issues in agriculture, energy, information, resources and environment, population and health, materials, and related areas.
• the 863 national high-tech research programme has as its mission to improve innovation capacity in high-tech sectors and achieve breakthroughs in key technical fields. The program includes 20 themes, such as biotech, space flight, information, laser, automation, energy, new material and marine. These programmes issue frequent calls for proposals, which are widely noted in the Chinese research communities.

Useful Links:
EU Relations with China: [http://ec.europa.eu/external_relations/china/index_en.htm](http://ec.europa.eu/external_relations/china/index_en.htm)
EU assistance to China: [http://ec.europa.eu/europeaid/where/asia/country-cooperation/china/china_en.htm](http://ec.europa.eu/europeaid/where/asia/country-cooperation/china/china_en.htm)
Euraxess - Researchers in Motion: [http://ec.europa.eu/euraxess/index_en.cfm](http://ec.europa.eu/euraxess/index_en.cfm)
European Commission: EuropeAid – Development through multi-stakeholder co-operation

EuropeAid is the Directorate-General of the European Commission that is responsible for implementing external aid programmes and projects across the world. EuropeAid does more than ‘deliver aid’. As both an active and proactive player in the development field, it also tackles universal issues, promotes good governance, human and social development, security and migration, natural resources, and more. It implements programmes and projects around the world, wherever assistance is needed. It delivers support through regional and country-specific approaches across a variety of sectors. EuropeAid draws on a range of EU financial instruments and programmes to collaborate with partners from the following regions:

- Africa, Caribbean and the Pacific
- Asia
- Gulf region
- Latin America
- European Union’s southern and eastern neighbours

Funding – Grants and Contracts
Grants are direct financial contributions from the EU budget or from the European Development Fund. They are awarded as donations to third parties that are engaged in external aid activities. The Contracting Authority awards grants that are used to implement projects or activities that relate to the EU’s external aid programmes. Those intending to apply for a grant should consult the calls for proposals (https://webgate.ec.europa.eu/europeaid/online-services/index.cfm?do=publi.welcome).

Procurement procedures are launched when the Contracting Authority wants to purchase a service, goods or work in exchange for remuneration. A procurement procedure leads to the conclusion of a public contract. Those intending to apply for a contract should consult the procurement notices (https://webgate.ec.europa.eu/europeaid/online-services/index.cfm?do=publi.welcome).
Call for proposals & Procurement notices

INDIVIDUAL SERVICE CONTRACT FORECAST
EU – China Environmental Governance Programme
People's Republic of China

Publication reference
EuropeAid/129436/C/SER/CN

Procedure
Restricted

Programme
DCI

Financing
BGUE-B2010-19.100101-C1-AIDCO

Contracting Authority
The European Union, represented by the European Commission, on behalf and for the account of the People's Republic of China.

Nature of contract
Fee-based

Contract description
The overall design of the programme is intended to co-finance actions in the area of environmental governance supporting policy development and implementation and creating partnerships between EU and Chinese organisations. To do so two components will be established: one component will work at local level, by means of grant contracts, to examine and improve policy implementation; the second component, which is the object of this service forecast, will focus on policy and legislation at national level, by working with national-level environmental agencies.

Indicative budget
3,500,000 EUR

Intended timing of publication of the procurement notice
First quarter of 2010

Additional information
N/A

Legal basis
Support to China's Sustainable Trade and Investment System
Beijing - China

Publication reference
EuropeAid/129242/C/SER/CN

Procedure
Restricted

Programme
Development Cooperation Instrument (DCI)

Financing
Financing Agreement DCI-ASIE/2009/20127 under budget line 19.100101 of the general budget of the European Communities

Contracting Authority
European Union, represented by the European Commission on behalf of and for the account of the People’s Republic of China

CONTRACT SPECIFICATION

Nature of contract
Fee-based

Contract description
Provide support to the strengthening of the design, implementation and enforcement of trade and investment policy, legislation and regulation at central and provincial level in China along the five project components:

(i) Services industries, including financial services (banking, insurance, securities), telecoms, construction and energy saving renovations, health care and services for an ageing urban population, food safety and lab testing and environmental services;

(ii) Quality infrastructure/technical barriers to trade, including technical regulations, standards, conformity assessment, market surveillance, accreditation systems

(iii) Agriculture and agro-food/ sanitary and phytosanitary measures including agricultural and food production and processing practices; food safety and quality (incl. plant and animal health); GMOs, rural development, environmental issues

(iv) Customs and trade-related regulatory systems: Support to the customs reform in line with the European Commission customs blueprints. Activities including on customs procedures, administration, supervision and control; rules of origin and product classification; customs reform; customs and customs related trade facilitation issues

(v) Horizontal issues and ad-hoc requests including good governance and sustainable development related to trade and investment; fulfilling commitments under WTO; engagement in international fora on trade and investment, corporate social responsibility.

Support will take the form of long and short term on-demand expert advice, studies, development of information portals and databases, capacity building, training, conferences, workshops, study tours, internships and other forms of technical assistance.

Maximum budget
EUR 19,395,000 of which approximately EUR 14,000,000 are foreseen for the fees and the remaining amount for incidental and verification expenditure.

PROVISIONAL TIMETABLE

Provisional date of invitation to tender
February 2010

Provisional commencement date of the contract
May 2010

Initial period of implementation of tasks and possible extension of the contract
The contract duration will be 60 months from the commencement date.
Success stories in the materials field
A decade of EU-funded research

Research EU is a monthly magazine published by European Union which aims to inform with main developments (results, programmes, events, etc.) in Europe. It is available in English, French, German and Spanish. A free sample copy or free subscription can be obtained from:

European Commission
Directorate-General for Research
Communication Unit
B-1049 Brussels
Fax (32-2) 29-58220
Internet: http://ec.europa.eu/research/research-eu

One of the successful stories described is related to an interesting “membrane” project LIVEBIOMAT where ITM-CNR has been playing an active role.
As cited, project successes were reached in:

**Bioreactor construction.** A small-scale bioreactor for primary hepatocyte cultures has been developed and characterised, capable of high throughput for in vitro pharmacological screenings. This system is being used to test the effect of the new polymeric biomaterials (polymeric membranes and peptide scaffolds) on the parameters for functional and genomic levels in primary rat hepatocytes.

**Membrane trials.** Semi-permeable polymeric membranes were prepared from a blend of modified polyether ether ketone (PEEK-WC) and polyurethane (PU), with regularly distributed 0.1 µm surface pores. Primary hepatocytes cultured on this membrane surface exhibited higher metabolic rates than those in collagen cultures. The polymer is compatible with human hepatocytes, and is thus applicable as a substrate for the in vitro reconstruction of human liver tissue.

**Surface modification.** In order to optimise the membranes for biomolecule immobilisation, cell adhesion and expression of the hepatocytes’ metabolic functions, various glow discharge plasma modification processes (pdAA, plasma deposition from acrylic acid, grafting of nitrogen groups from NH3) were applied, followed by the immobilisation of biomolecules (RGD peptides, galactosamine). The pdAA-modified surfaces were also used as substrates to promote the self-assembly of a peptide coating (RAD16-I), without significant pore size alteration or structural change.

**New nanofibre self-assembling scaffolds prepared.** Scaffolds were modified with peptide cell-instructive motifs (peptides), and their capacity to maintain liverspecific activities was tested and compared with that of the classical collagen culture model using primary rat hepatocytes cultured in a sandwich configuration.


NMP3-CT-2005-013653 – LIVEBIOMAT
Development of new polymeric biomaterials for in vitro and in vivo liver reconstruction
Total cost: €3 023 922 | EC contribution: €2 299 906
Project duration: April 2005 – September 2008 (42 months)
Coordinator: Augustinus Bader – University of Leipzig,
Biomedizinisches-Biotechnologisches Zentrum, Leipzig, Germany
Norit & Greentech Consortium Wins China’s Largest Municipal Wastewater Reuse Project

On October 30, the Norit & GreenTech Engineering Consortium was officially awarded the contract for the design, procurement, installation, and start-up of the 180,000 m3/day Qinghe Municipal Wastewater Reuse Project in Beijing, Peoples Republic of China.

This project, which is the single largest water reuse project in China, is part of the Qinghe wastewater reuse plan developed by the Beijing Drainage Group (BDG). The Qinghe reuse project is the world’s largest water reuse plan and is part of the Beijing Government’s overall strategy to reuse all wastewater produced in the city.

The award of the project was the final result of a public tendering process in which the Norit & GreenTech Consortium competed with other world renowned companies including General Electric, Siemens and Asahi.

The winning solution is based on Norit X-Flow XIGAâ„¢ ultrafiltration membrane technology and Greentech’s CMS-Compact Modular Skids. The project value is approximately 75 million RMB (7.3 million Euro) and the project is expected to be delivered in 2010.

X-Flow BV, part of the Norit Group, develops and supplies membrane technology to global municipal and industrial markets. The product portfolio contains numerous standard membranes, modules and units for filtration and purification processes for various industries. Together with extensive application know-how for projects of all sizes, this guarantees the best available water purification solutions.

For more information visit our website www.x-flow.com
On December 5th, the water qualities improving engineering at southern suburb water plant in Dongying (Shandong Province) was successfully put into production which was the first plant for applying the submerged ultrafiltration process in China till now. The water plant introduced the submerged PVC ultrafiltration membrane of Hainan Litree Co. Ltd., and the qualities of drinking water produced by this plant could meet the needs of the national Standards for drinking water quality (GB5749-2006).

The plant used the integrated process of Potassium permanganate preoxidation/Coagulation/PAC adsorption/Submerged ultrafiltration. The integrated process was a new kind of green, environmental friendly water purification process without any additional pollution and was known as the third generation of urban water purification process.

The team headed by Academician Guibai Li from Harbin institute of technology carried out lots of research on the application of ultrafiltration in drinking water purification, and the results provided great support for the program development and construction of the engineering. As the first domestic application of the ultrafiltration centered process with 100,000 m³/d scale, the plant was the demonstration project for the upgrading engineering of many old water plants. The integrated process using the submerged ultrafiltration as the core unit has provided a new way to meet the new water quality standards by upgrading the original water purification process.
Call for Nominations

EFCE Excellence Award in Membrane Engineering 2010

The European Federation of Chemical Engineering (EFCE) has pleasure in announcing the Excellence Award in Membrane Engineering 2010. The award, which is being launched by new EFCE Section on Membrane Engineering, intends to recognise a PhD thesis or paper(s) published in the preceding three-year period which represents an outstanding contribution to research and/or practice in membrane engineering in the process industries.

The award consists of a certificate, a cash prize of 1500 Euros, and a travel grant of up to 500 Euros. In addition, the award winner will be invited to ECCE-7 – CHISA 2010 which will take place from 29 August to 2 September 2010 in Prague, CZ, where the award will be presented during a special workshop on membrane engineering.

Nominations may be submitted by any PhD supervisor at a PhD-awarding institution in an EFCE member country or by a member of an EFCE member society. The PhD thesis or paper(s) nominated must address a topic relevant to the field of membrane engineering. Only PhD theses or paper(s) published between 1 January 2007 and 31 December 2009 are eligible for nomination.


For further information about the nomination procedure, eligibility, supporting documentation, etc., please refer to the EFCE website at http://www.efce.info/ExcellenceAwardMembraneEngineering.html.

What is the EFCE Section on Membrane Engineering?

The EFCE Section on Membrane Engineering, formerly the Working Party on Membranes, was founded in 2007. This re-organisation was approved by the EFCE General Assembly on 16 September 2007. The inaugural meeting of the Section on Membrane Engineering was held on 19 September 2007 during ECCE-6 in Copenhagen.

The motivation for the transformation of the Working Party on Membranes into the Section on Membrane Engineering is principally related to:

- the large spectrum of problems now covered by membrane operations, which make it imperative to involve non-membranologists, i.e. engineers and researchers engaged in various problems to which membrane engineers can make a contribution;
- the growth of membrane operations in a large variety of industrial areas and in the medical field, such as:
• desalination of sea/brackish waters, wastewater treatment and reuse.
• gas separation, agro-food, packaging.
• biochemical engineering, regenerative medicine.
• petrochemical industry.

The objectives of the Section on Membrane Engineering are as follows:

• to develop European cooperation and professional activity in the interdisciplinary areas of chemical engineering, membrane engineering and related fields;
• to develop collaboration in fields complementary and highly interactive with those covered by membranes;
• to promote active cooperation among experts from different EFCE Working Parties, for example with the WP on Process Intensification, in order to foster strategic collaboration in membrane engineering for the investigation of important problems, for initiating and organizing symposia and conferences and for addressing tasks complementary to those dealt with by the Working Parties;
• to attract to the Federation a large number of chemical engineers and specialists in related fields willing to actively contribute to the activities of the Federation and its Section on Membrane Engineering.

Chairperson:
Prof. Enrico Drioli, Department of Chemical Engineering and Materials, University of Calabria, Institute on Membrane Technology of the National Research Council (ITM-CNR) c/o University of Calabria, via P.Bucci cubo 17/C, 87030 Arcavacata di Rende (CS), Italy
E-mail: e.drioli@itm.cnr.it, e.drioli@unical.it

Further details and an application form for membership are available at the Section website at http://www.itm.cnr.it/section/
- **Desalination of sea/brackish waters and in wastewater treatment and reuse.** In the last decades membrane have been assigned a key role in water reclamation schemes that are aimed at higher water quality reuse applications. Typically, these applications include aquifer recharge, indirect potable reuse, dual water systems in households and industrial process water. The growth in membrane plant installations has been exponential, with the consequence that the cost of the reclaimed water from membrane facilities has also decreased.

- **Gas separation, agro-food and packaging.**
- **Biochemical engineering and regenerative medicine.**
- **Petrochemical industry,** where the integration of different membrane operations has promising applications, such as for the ethylene steam-cracking process.

Practically all typical unit operations of process engineering might be redesigned as **membrane unit operations** (Membrane Distillation, Membrane Crystallizer, Membrane Strippers, Membrane Scrubbers, etc.).

The objectives of the **Section on Membrane Engineering** are as follows:

- to develop European cooperation and professional activity in the interdisciplinary areas of chemical engineering and related fields;
- to develop collaboration in fields complementary and strongly interacting with those covered by **membranes**;
- to promote active cooperation of experts from different Working Parties, as for example with the WP on Process Intensification, in order to create strategic collaboration, for the investigation of important problems, suggesting and organizing symposia and conferences and addressing tasks complementary to those covered by the Working Parties. The members of a Section interact and collaborate closely with any other existing organization acting in membrane engineering (The European Membrane Society, Network of Excellence), with any national Working Parties in existence and also with other Working Parties and Sections of the European Federation of Chemical Engineering or International Working parties in spheres closely connected with their own.
- to attract to the Federation a large number of chemical engineers, or specialists in related fields, willing to actively contribute to the activities of the Federation.

Currently, Prof. Enrico Drioli (from Italy) is serving as Chairman of the Section on **Membrane Engineering.** The Section has **fifty-seven** representatives from **twenty** countries (14 European and 6 non-European countries).

Members of the Section (and members of the previous WP on Membranes) have been active in the years in the organization of various scientific events in which many researches in “membrane engineering” participated. The next Workshop on Membrane Engineering has been scheduled for August/September 2010 in Prague, during the joint events 7th Euro Congress of Chemical Engineering and CHISA Conference. At the workshop, whose title is **Membrane Engineering for a Sustainable Growth and Process Intensification,** formal presentations of the last results in the area will be presented. Moreover, the first **EFCE Excellence Award in Recognition of Outstanding PhD Thesis on Membrane Engineering** will be assigned.

In the last months some of the Section members, in collaboration with Prof. Xia Huang and Dr. Kang Xiao (from Tsinghua University), Prof. Gao Congjie and Ms. Jia Xu (from Ocean University of China), have been involved in the preparation of a report on **Membrane Research, Membrane Production and Membrane Application in China.**

The report can be downloaded from the Section on Membrane Engineering web-site: [http://www.itm.cnr.it/section/](http://www.itm.cnr.it/section/)
Introducing the Revised Chinese Patent Law
16 December 2009
Milano, Corso Magenta 59, Pirelli Hall

The EPO and the State Intellectual Property Office of China (SIPO) hosted a series of seminars on changes to the Chinese patent law in four European cities this past December. Taking place in Stockholm, The Hague, Milan and Munich, the seminars featured addresses by experts on Chinese patent law and workshops aimed at stakeholders and intellectual property rights professionals.

The close co-operation between the EPO and SIPO, and bilateral exchanges between Chinese and European law-makers, have encouraged forthright discussions on the scope of the amendments to the patent law. The EPO supplied comments and recommendations during the drafting process and co-ordinated other contributions from European experts.

The 'Third Revision of China's Patent Law: Legal texts and documents on the drafting process 2006-2008' has been published and is available to download. Forming part of IPR2’s work (www.ipr2.org) on supporting revision of the major IP laws under the implementation of China’s National IP Strategy, the publication compiles the most relevant documentation at each stage of the Patent Law revision, including the legal texts and supporting documents, such as explanatory notes from the Chinese authorities and comments submitted by institutional stakeholders and industry over the course of the revision. The compilation aims to be a valuable source of information for all stakeholders, in particular officials, academics, students and legal professionals, regarding the purpose and objectives behind the third revision of the Patent Law.

China’s National IP Strategy (NIPS), released in June 2008, sets mid term targets and overall objectives aimed at improving the creation, utilisation, protection and administration of intellectual property. One of the supporting pillars set in the NIPS is the revision of the framework of IP laws and regulations. The adoption in December 2008 of the new Patent Law by the Standing Committee of the National People’s Congress (NPC) - China’s highest legislative authority - is the first result in the revision plan set in the NIPS.

The Patent Law will take effect on 1 October 2009, as the third amendment since it was passed in March 1984 and modified for the first time in September 1992 and again in August 2000. The law involves a number of substantial changes aimed at providing more effective protection of patent rights, in line with international developments and Chinese specificities, and at encouraging innovation and utilisation of patent protection.

This publication includes the most relevant documentation that came out of the revision, including the legal texts and supporting documents. The explanatory notes issued by the authorities are complemented with the comments submitted by institutional stakeholders and industry. In doing so, the publication offers a comparative overview, neither comprehensive nor exhaustive, of the changes made at the subsequent stages of the drafting process.

This reform offers significant opportunities for improvement protection for Italian companies in China that is becoming the market dimensionally largest possible world.

Three years ago the European Commission decided to boost the sustainable development of desalination processes through the financing of *Membrane-Based Desalination: An Integrated Approach* project (acronym *MEDINA*) within the scope of its 6th Framework Program.

The main aim of the project was to improve the overall performance of membrane-based water desalination processes by applying an innovative approach based on the integration of different membrane operations in the reverse osmosis (RO) pre-treatment and post-treatment stages accordingly to the philosophy of Process Intensification.

Now the project is going to its end (foreseen for January 2010). Therefore, a concrete dissemination policy has been started for the diffusion and discussion of the results of potential interest for industrial exploitation.

The first dissemination activity concerned the organization of the EU-CHINA Workshop on MEDINA project in China. The event was co-organized by the MEDINA Consortium, the Ocean University of China, the China Desalination Association and Qingdao International Desalination Center. It was held at the Academic Exchange Centre of Ocean University of China (Qingdao, China) on September 4th-6th, 2009.

Participants of the EU-China Workshop on MEDINA project - Academic Exchange Centre of Ocean University of China, Qingdao, China, September 04 – 06, 2009
The goal of the workshop was to strengthen the exchanges and cooperation between China and Europe in seawater and salty water desalination, and to increase the communication between industry and academicians.

Representatives from Ocean University of China, Chia Nan University of Pharmacy and Science, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Nanjing University of Technology, Tianjin University, Tsinghua University, Harbin Institute of Technology, Nanyang Technological University (Singapore), Toray Industries, The Dow Chemical Company (China), and China Desalination Association have been present together with a very large number of MEDINA delegations which include representatives from Australia, Tunisia and Israel. Through Prof. Gary Amy, one of the MEDINA partner and today director of the new membrane centre at the King Abdullah University of Science & Technology, also Saudi Arabia was present. Moreover, representatives from other European projects (MEDESOL and ASDECO) also attended the workshop and had the possibility to participate to the discussion and to present their results. Interesting and fruitful speeches were made by experts and professionals focusing on the policy, the progresses and the results reached in the projects. The possibility of trans-nation research and cooperation between MEDINA and other countries, especially with China, was discussed.

Francesca Macedonio

Contact for further information:

✓ MEDINA website: [http://medina.unical.it](http://medina.unical.it)

✓ University of Calabria
   Department of Chemical Engineering and Materials, via P. Bucci cubo 17/C 87030 Rende (CS), ITALY
   Project Coordinator: Prof. Enrico Drioli
   e.drioli@itm.cnr.it, e.drioli@unical.it
   Tel: +39 0984 492039
   Fax: +39 0984 402103
The 5th IWA specialised membrane technology conference for water & wastewater treatment was jointly organized by IWA and Tsinghua University. It was held from September 1 to 3, 2009 in Beijing International Convention Center, an all-in-one convention service provider specializes in hosting high-profile nation and international events.

More than 600 papers were presented at the conference (eight of which from Italy), planned in four parallel oral sessions, with a keynote lecture during each parallel session, and three plenary lectures addressed by three leading experts (Prof. Menachem Elimelech from Yale University (USA), Prof. Yoshimasa Watanabe from Hokkaido University (Japan) and Prof. Gary Amy from KAUST (Saudi Arabia)).

The conference has been defined as “the meeting point of the membrane for water community”. It provided a forum for scientists and professionals working in the membrane sector of the water industry to present their work. The topics of the conference covered almost all the areas of membrane technology, such as novel membrane materials, microfiltration (MF), ultrafiltration (UF), nanofiltration (NF), reverse osmosis (RO) and electrodialysis membrane processes, hybrid membrane processes, fouling mechanisms and control, desalination, drinking water and wastewater treatment.
A general report on the event from Prof. Xia Huang
Director, Division of Water Environment
Department of Environmental Science and Engineering
Tsinghua University

Faced with our huge global population explosion and decades of largely uncontrolled socio-economic development, global concerns on the limited supply of fresh water are increasing exponentially, particularly in the arid and semi-arid regions. The need for solving these water problems has motivated research and development in the field of membrane technology. Over the past few decades many innovative membrane processes have been created that are now providing new methods for drinking water production, desalination, wastewater treatment and reuse, among others. Today membrane technology is well recognized as an alternative to conventional water treatment.

For advancing knowledge and experience in the utilization of membrane technology for water and wastewater treatment, IWA-Membrane Technology Conference & Exhibition 2009, which was jointly organized by IWA and Tsinghua University, has been successfully held in Beijing from Sep. 1 to 3, 2009. It provided an excellent forum for scientists and professionals working in the membrane sector of the water industry to present their work and enlighten the ways to thinking membrane from each other. The Exhibition was also performed for refreshing our mind in application of membrane technology. The topics of the conference covered almost all the areas of membrane technology, such as novel membrane materials, MF, UF, NF, RO and electro dialysis membrane processes, hybrid membrane processes, fouling mechanisms and control, desalination, drinking water and wastewater treatment, and some special case studies.

IWA-Membrane Technology Conference & Exhibition 2009 attracted around 350 delegates from 35 countries and religions from all over the world, we received 539 extended abstracts and selected 164 oral presentations and 253 poster presentations.

In this event, we invited three brilliant great masters in membrane field includes Prof. Menachem Elimelech (Yale University, USA), Prof. Yoshimasa Watanabe (Hokkaido University, Japan), Prof. Gary Amy (KAUST, Saudi Arabia) as Plenary Speakers, to give plenary lectures of Recent Advances in membrane technology after opening ceremony; and eighteen keynote speakers to give opening presentation in different parallel sessions. They refreshed our mind and presented us the development trend of membrane technology in following years.

In the course of the conference, the organizing committee also arranged selection of "Best poster awards" and "Best student poster awards" for poster presenters and announced the winners in closing ceremony. And some technical tours visiting three full scale membrane plants were also conducted as following-up activities, including: A: Wenyu water purification treatment plant, MBR plant for river water purification (100,000 m3/d), B: Qinghe wastewater treatment plant, advanced membrane filtration plant (80,000 m3/d), and C: Beixiaohe wastewater treatment plant, MBR plant for removal of nitrogen and phosphorus from municipal wastewater (60,000 m3/d).
The China-EU Summit on Membrane Engineering in Water Treatments and Reuse that took place 1-3 November in Weihai, China was organized by Noppen (Shanghai) Co., Ltd, Harbin Institute of Technology, and National Engineering Research Center of Urban Water Resources; and co-organized by Weihai Foreign Exchange Center of Science and Technology, ITM-CNR, Membrane Industry Association of China, China Urban Water Association and China-EU Membrane Technology Research Institute. The aim of the conference was to promote a common platform for scientific exchanges between Chinese and European researchers on latest research works in the field of membrane engineering in water treatment and reuse. Members of the European Society contributed to the meeting.

The scientific program of the Conference included from the European side: Enrico Drioli, Lidietta Giorno and Alfredo Cassano from ITM (Italy); Kang Li, Imperial College of London, Department of Chemical Engineering (UK); Frank Lipnizki, AlfaLaval (Denmark); Immaculada Ortiz, Universidad de Santander (Spain); Dr. Suzana Pereira Nunes, King Abdullah University of Science and Technology (Saudi Arabia); Prof. Bart Van der Bruggen, Katholieke Universiteit Leuven (Belgium); Dr. Pierre Aimar, Université Paul Sabatier-Toulouse 3 (France).

Different topics in the area of membrane technology application in wastewater treatment, industrial application of membrane technology, nanofiltration and pervaporation in waste water treatment, polymeric membranes, and cooperation at the Sino-EU Membrane Technology Development and Research Center (Weihai) were covered.
2009 China-EU International Summit on Membrane Engineering in Water Treatment and Reuse

Know the Chinese Membrane Demand—Showcase Technologies, Find Business Opportunities and Share Achievements

Water & Membrane China

Venue: China International Exhibition Center (CIEC) Beijing
Country: Beijing, China
Start Date: 14-OCT-09  End Date: 16-OCT-09
The “Conference of Urban Drinking Water Security and Applications of Ultrafiltration Membranes Combined Processes”, which was jointly organized by the National Engineering Research Center of Urban Water Resources, Harbin Institute of Technology, Municipal Commission of Housing and Urban-Rural Development of Shandong, the Government of Dongying and China Urban Water Association, was held successfully in Shangdong, China from 23rd to 25th January 2010. The aim of the specialized conference is to promote the utilization and the cooperation of ultrafiltration (UF) membrane treatment technology and provide a forum for the exchange of the most recent ideas, technology and experience to ensure urban water security.

Membrane technology has become a separation technology receiving increasing attention over the past decades. UF technology has been considered as one of the most effective measures to improve the safety of drinking water, and is included in the “Eleventh Five-Year” National Water Pollution Control and Management Technology Major Projects – Drinking Water Security Project for Lower Reaches of Yellow River. Dongying (a city of Shandong Province) is well-placed to hold the conference as its southern suburbs water plant officially operated in 5th, December, 2009, which was improved by submerged UF technology and created the record of UF technology treatment capacity of 100 thousand tons per day in China. The conference presented an excellent opportunity for water experts and researchers to visit the project and discuss topics where developments in the urban water security technologies could be applied in the recent developments of domestic water plant.

Professor Li Guibai, the academician of the Academy of Engineering of China, and the advisor of the National Engineering Resarch Center of Urban Water Resources, Harbin Institute of Technology, as the conference chair, attended the opening ceremony and said that Dongying southern suburbs water plant would be the demonstration project of the upgrading of the conventional water treatment plant in China. The leaders from the Ministry of Construction of China and Shandong Province gave important speeches in this conference. Professor Qu Jiuhui, the academician of the Academy of Engineering of China, and the director of the Eco-environmental Research Center of the Academy of Science, China, gave a keynote presentation on drinking water quality and control. Professor Zhang Xiaojian, the vice director of China Water Industry Society, the professor of Tsinghua University gave a keynote presentation on the status of Chinese Drinking Water Quality. Professor Jun Ma, the National Engineering Research Center of Urban Water Resources, the Vice Dean of the Municipal and Environmental Engineering School in Harbin Institute of Technology, also make a keynote speech on the advances of urban water treatment technologies. Over 200 delegates from Chinese universities and water companies attended the conference.
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<td>Conference</td>
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<td>15th German Dam Symposium</td>
<td>Email: <a href="mailto:dtk2010@conventus.de">dtk2010@conventus.de</a> Website: <a href="http://www.conventus.de/dtk2010">http://www.conventus.de/dtk2010</a></td>
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<td>ECI Conference on Advances in Science and Engineering for Brackish Water and Seawater Desalination</td>
<td>Website: <a href="http://www.engconfintl.org/10ag.html">http://www.engconfintl.org/10ag.html</a></td>
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<td>Loutraki, Greece</td>
<td>5th International Zeolite Membrane Meeting (IZMM)</td>
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<td>Conference</td>
<td>Lyon, France</td>
<td>Novatech -7th International Conference on Sustainable Techniques and Strategies for Urban Water Management</td>
<td><a href="http://www.novatech.graie.org/">http://www.novatech.graie.org/</a></td>
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<td>5 - 7 July 2010</td>
<td>Conference</td>
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<td>5th IWA International Young Water Professionals Conference</td>
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<td>28 August - 1 September 2010</td>
<td>Meeting</td>
<td>Prague</td>
<td>Meeting on Membrane Engineering at CHISA 2010 – ECCE-7</td>
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<td>15 - 24 September 2010</td>
<td>Course</td>
<td>(Italy), Mont Sainte-Anne, Quebec, Canada</td>
<td>Advanced course on Food Application of Nanostructure Materials, Nanomemcourse</td>
<td><a href="http://www.nanomemcourse.eu/new/site/index.htm">http://www.nanomemcourse.eu/new/site/index.htm</a> Email: <a href="mailto:l.giorno@itm.cnr.it">l.giorno@itm.cnr.it</a></td>
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<td>4 - 9 October 2010</td>
<td>Conference</td>
<td>Venice (Italy)</td>
<td>12th International Conference on Wetland Systems for Water Pollution Control</td>
<td><a href="http://www.wetland2010.org">www.wetland2010.org</a></td>
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<tr>
<td>24-30 July 2011</td>
<td>Conference</td>
<td>Amsterdam, The Netherlands</td>
<td>ICOM’2011</td>
<td>Email: <a href="http://www.icom2011.org/m.wessling@tnw.utwente.nl">www.icom2011.org/m.wessling@tnw.utwente.nl</a></td>
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Events of particular relevance

AMS6/IMSTEC10
The 6th conference of the Asian Membrane Society
In conjunction with the 7th International Membrane Science and Technology Conference
SYDNEY · AUSTRALIA
November 22-26, 2010

Euromembrane 2012 in London

Imperial College London
London, UK
September, 2012

EMS Summmerschool - Membranes: Processes and Materials,
Buccharest (Romania), from 14 Jun 2010 to 18 Jun 2010
The organizing committee of ICOM 2011 has the pleasure to invite you for ICOM 2011. ICOM, International Congress on Membranes and Membrane Processes, is the world’s largest conference on fundamental and applied membrane science, engineering and technology. It offers a platform for extensive exchange of ideas, thoughts and discussions on membranes and membrane processes.

ICOM 2011 will be hosted by the Membrane Technology Group of the University of Twente, The Netherlands. It will be organized in Amsterdam, The Netherlands from July 23 till July 29, 2011. More information on important deadlines, abstract submission, preliminary program, registration etc. will be posted on this website very soon.

We are looking forward to a fruitful and inspiring ICOM 2011.

Kindest regards,

Kitty Nijmeijer
Antoine Kemperman
Matthias Wessling
The 11th International Forum on Marine & Technology and Economic Development

2010 Asia--Pacific Conference on Desalination and Water Reuse
Guarantee of Economic and Social Sustainable Development--- Desalination
Time: June 22-25, 2010 Venue: Qingdao, China

The event will be organized by:
China Desalination Association
Qingdao Science and technology Association
Qingdao International Desalination Center
ITM-CNR Italy

co-organized by:
European Membrane Society
European Desalination Society

supported by:
Ministry of Science and Technology
International Desalination Association

Contact details:
China Desalination Association
Qingdao International Desalination Center
Beijing Office
Contact person: Yang Yan, Zhao Wenping
Tel: 86- 10-64661601
Fax: 86- 10-64661601
Email: yang_yan90@126.com, cdazwp@126.com

Qingdao Office
Contact person: Gong Haichen, Yuan Ping
Tel: 86- 532- 86679768
Fax: 86- 532- 86679769
Email: cdaghc@163.com, lyndayuan@vip.163.com

2010 China-EU Workshop on Membrane Systems in Medicine,
Artificial Organs and Regenerative Medicine
Time: 15-18 November 2010, Venue: Golden Bay Hotel, Weihai, China

In order to strengthen the cooperation on membrane technology between China and European Countries and promote the application and development of membrane in biology and medicine fields, China- EU Workshop on Membrane Systems in Medicine, Artificial Organs and Regenerative Medicine is to be held at Weihai, China in November 2010.

The event will be organized by:
Weihai Science and Technology Bureau
Harbin Insititute at Weihai
ITM-CNR Italy

Weihai Science and Technology Exchange center with Foreign Counries
Sino-EU Membrane Technology Research & Development Centre at Weihai

Contact details:
Jenny Zhang
Weihai Science & Technology Exchange center with Foreign Countries
Tel: 86- 631- 5814699
Fax: 86- 631- 5892828
Email: zij0631@126.com, whws9988@sina.com
Overview of books on Membrane Technology

Advanced Membrane Technology and Applications
Norman N Li, Anthony G. Fane, W. S. Winston Ho, and Takeshi Matsuura
2008

Ion Exchange Membranes, Volume 12: Fundamentals and Applications (Membrane Science and Technology)
Yoshinobu Tanaka
2007

Membrane Contactors: Fundamentals, Applications and Potentialities, Volume 11 (Membrane Science and Technology)
Enrico Drioli, A. Criscuoli, E. Curcio
2006

Surface Engineering of Polymer Membranes (Advanced Topics in Science and Technology in China)
Zhi-Kang Xu, Xiao-Jun Huang, and Ling-Shu Wan
2009

Inorganic Membranes: Synthesis, Characterization and Applications, Volume 13 (Membrane Science and Technology)
Reyes Mallada and Miguel Menedez
2008
Ion-Exchange Membrane Separation Processes, Volume 9 (Membrane Science and Technology)
H. Strathmann
2004

Handbook of Membrane Separations: Chemical, Pharmaceutical, Food, and Biotechnological Applications
Anil K. Pabby, Syed S.H. Rizvi, Ana Maria Sastre
2008

Membrane Bioreactors: Operation and Results of an MBR Wastewater Treatment Plant
A. G.N. van Bentem, C. P. Petri, and P. F.T. Schyns
2007

Membrane Systems for Wastewater Treatment
Water Environment Federation
2005

The Guidebook to Membrane Desalination Technology: Reverse Osmosis, Nanofiltration and Hybrid Systems Process, Design, Applications and Economics
Mark Wilf; Leon Awerbuch; Craig Bartels; Mike Mickley; Graeme Pearce; Nikolay Voutchkov
2007
Membrane Technology: Volume 2: Membranes for Energy Conversion
Klaus-Viktor Peinemann and Suzana Pereira Nunes
2008

Ceramic Membranes for Separation and Reaction
Kang Li
2007

Membrane Technology: A Practical Guide to Membrane Technology and Applications in Food and Bioprocessing
Z F Cui and H S
2010

Membrane Operations: Innovative Separations and Transformations
Enrico Drioli and Lidietta Giorno
2009

Membrane Technology: Volume 1: Membranes for Life Sciences
Klaus-Viktor Peinemann and Suzana Pereira Nunes
2007

Membrane Technology: Volume 3: Membranes for Food Applications
Klaus-Viktor Peinemann
2009
Scientific results of particular relevance

In this section short notes on interesting research project in progress in China and in Europe carried out by young researchers will be presented.

Study on the treatment of rare-earth solution and wastewater by membrane distillation

Na Li*, Yanyue Wen, Anjun Liu
Chemical Engineering Department, School of Energy and Power Engineering, Xi’an Jiaotong University, Xi’an 710049, China

In rare-earth metallurgy industry, large amount of acid and alkaline are involved in the dissolution, multistage extraction, and precipitation steps for the production of rare earth. The treatment work of large amount of rare-earth solution and wastewater are heavy. Membrane distillation is a new separation technique which retains non-volatile salts in the feed side and allows volatile components such as water to pass through membrane pores in form of vapor to the permeate side of membrane. Membrane distillation process is expected to be competitive with traditional evaporation methods or other membrane processes such as reverse osmosis by taking advantage of large amount of waste heat caused from rare-earth production process. Experimental study on direct-contact membrane distillation of rare-earth solution and wastewater was carried out aiming at the concentration and separation of rare-earth elements, hydrochloride and sulfate from their dilute solution. PVDF hollow fiber membrane with 0.16µm of average pore size and 85% of porosity is employed which has shown less fouling trend in a kind of modified membrane module during the experiment. The solutions from a rare-earth factory studied in this work included chloride solutions of lanthanum, yttrium, magnesium and ammonium as well as mother solutions from the precipitation process of zirconium, yttrium and magnesium salts, etc. The performance of membrane distillation for these solutions has been investigated mainly in terms of transmembrane fluxes and rejection rates. Experimental results have shown that stable transmembrane fluxes were obtained with average value ranging from 15 to 26 Kg/m².h depending on different contents of salts during several hours of processes under conditions of 60°C feed temperature and 25°C permeate temperature. The treatment by membrane distillation leads to increased salt concentrations by 2 to 5 times and further concentration degree is expected in the next work. The rejection rates for rare-earth elements and salts reaches to above 95%. As to the solution containing hydrochloric acid, pure hydrochloric solution was obtained from permeate side since considerable amount of hydrochloric acid passed through the membrane in form of vapor along with water vapor. A significant increase of transmembrane flux of hydrochloric acid was observed along with the increase of salt concentration in feed solution. Thus, hydrochloric acid was feasibly recovered and meanwhile reduced acid content from rare-earth wastewater which is favorable to make downstream treatment easier. The recovered pure hydrochloric solution can be reused back to the dissolving and washing processes of rare earth without discharging into the environment. The PVDF membrane has shown good stability in properties during several months of manipulation, and initial transmembrane flux of membrane was always 100% restored by a heat-treatment regeneration method after each experiment. In all, membrane distillation has shown a potential application prospect in rare-earth metallurgy industry.

* Corresponding author. lina@mail.xjtu.edu.cn