2nd School on Membrane Technology in Vietnam

Following the success of the 1st Vietnam – France training course on Membrane Technology organized in Hanoi in May 2011, the Institute of Environmental Technology (IET) of the Vietnam Academy of Science and Technology (IET/VAST) and the UNESCO Chair SIMEV (Membrane Science applied to the Environment)[1] have organized the 2nd course on "***Membrane Technology for Wastewater Treatment in Agriculture and Food Industry***" in Ho Chi Minh city. The course was held from 24 to 28 March 2014 at the Representative Office of Vietnam Academy of Science and Technology in Ho Chi Minh city. It was the fourteenth of the Schools –STM14 -organized by the Chair UNESCO SIMEV since its inception.

Lecturers of the course were French, other EU and Vietnamese senior membrane experts, working at Universities, Research Institutes and/or with industrial companies active in the field of membrane research and development. The course aimed to develop the researches and applications of membrane technology for environment protection.

	Morning			*Afternoon*	
Day 1 Problems	Opening	Wastewater in agriculture and food industry: why and where membranes? *Prof. G.Rios (ENSCM MPT)*		Water issues and challenges in sustainable management of water resources in Mekong Delta and Ho Chi Minh City *As.Prof. Nguyen Phuoc Dan (HCM Univ.)*	Round table 1: What is the current situation of membranes today? What specificities in Asia? What expectations in Vietnam?
Day 2 Technology	Membranes materials and equipment – Nano materials *Dr. A.Deratani (CNRS MPT)*	MBR technology for effluents treatment *Prof. A.Grasmick (Univ. MPT)*		Integrated membrane processes for the treatment of waste waters and the recovery of valuable co-products *Dr .L.Giorno (Univ. Calabria)*	Electro- and photo-catalytic processes : principles et applications to effluent treatment *Prof. M. Cretin (Univ. MPT)*
Day 3 Practical approach	Membranes desalination of effluents *Dr. A.Deratani (CNRS MPT)*	Micro-pollutants: a huge societal challenge. What membranes can do? *Prof. A.Grasmick (Univ. MPT)*		Electro-membrane processes: principles. Presentation of case studies *Dr L.Novak and L.Nejedly (MEGA company)*	Membrane activities in Europe: how does it work? *Dr. L. Giorno, Prof. G.M.Rios*
Day 4 RT & case studies	MBR for decentralized WWT *MSc. Vu Pha Hai (Greentech Env. JSC)*	How to build a low-cost rustic equipment? A personal experience... *Dr. Vu Can*	MBR: Performance, fouling control and current application in Vietnam *As.Prof. Bui Xuan Thanh (HCM Univ.)*	Round table 2: What actions for education and training of membrane experts in Indo-China countries?	Round table 3: What actions for approaching in an optimal way the hot spots which pave societal issues in Indo-China countries?
Day 5	Technical visit		Certificate awarding and Closing		City Tour for Foreign lecturers

Perfectly prepared by the Director of the EIT / VAST, Dr. Chau, with a local Organization Committee composed of different personalities from the centers of Hanoi and Ho Chi Min[2], this school has been a great success with more than 80 participants. The opening welcome was

[1] The Institution with Regulatory Authority for SIMEV is the ENSCM and its hosting laboratory is the IEM UMR 5635

[2] Local Organisation Committee : Dr. Dang Thanh Tu , Dr Trinh Van Tuyen, Dr NguyenTran Dien, Dr Than Son Le and Dr Bui Quang Minh

given by the Prof. Nguyen Van Hieu, former President of VAST, academician and presently chairman of the Scientific Council of Material Sciences.

After the 1st Membrane School in Hanoi in May 2011, the visit of a high-level delegation of VAST in Montpellier one year later, the visit of the Director of SIMEV in Hanoi and Ho Chi Min in November 2013, this new event testifies of the regular and fruitful development of the collaboration started 4 years ago between the IET/VAST and the UNESCO/SIMEV. IET/VAST has emerged as a key partner for the development of membrane technologies in this region. A special congratulation must be addressed to the Director of IET/VAST, Dr Chau, and with him to all his colleagues for this result.

The extension of the collaboration to a new kind of partnership with another key operation of the French Government in this region -the creation of the new University of Sciences and Technology of Hanoi (USTH)- in order to create a proper interface and find the right synergy is also a hot point. The CNRS has always supported the structuring idea that membranes are transversal technologies, which can deserve to be regarded as the right solution for different application areas at the same time and required a very holistic approach integrating a lot of different scientific competences, notably through the creation of our laboratory. Following different contacts with the Rector of USTH, with our colleagues of VAST, with the French Ministry of Foreign Affairs, with the CNRS …the idea of creating a strong bridge between several Institutes of VAST and departments of USTH to support these breakthrough technologies as solutions to environmental questions (air and gas) to which the country is faced…. has emerged. Different projects aim today at putting the idea into practice…

The fact that this 2nd School has been held in another city, which has a very strong economic activity and also a strategic position in the South of Peninsula, is also a strong indicator of the extension of our action. A special thank must be addressed also for that to the director of this antenna, Dr Minh, who has prepared his PhD thesis in France (Poitiers). I shall not forget (this is something discovered during my last visit in November) that other departments of the VAST campus in HCM (notably "materials"), and may be other universities are also interested by this thematic. The presence of colleagues issued from them bears testimony of these interesting developments.

Thanks also to the mind-openness of our Vietnamese colleagues who have accepted to welcome in this School participants from another neighbor country: Cambodia. Thanks also to the European Membrane Society (EMS), here represented by our colleague Dr Lidietta Giorno, and the the European Membrane House , here represented by Prof. Gilbert Rios, which has provided an appreciated financial support to allow 4 participants from the Institute of Chemical Technology of Phnom Penh to be here with us. This Institute is educating students with a high-level quality . Some of these students are already preparing Master and PhD thesis on membranes in Europe. Having with us today two lecturers from ITC with us testifies of the interest of Cambodia for these technologies and represents a guarantee for the development of education in this field in the future. The pressure of issues related to the fast development of cities and economic activities in this region (particularly for environment: water and air) is very high and calls for increased cooperation between regional stakeholders to unable the fast emergence of technological solutions required by urgent situations!

The strong presence during these Schools of European colleagues from University, Industry and the involvement of Associations is also something which is great! It is the natural

consequence of the irreversible process of integration in which our continent is involved. I am myself strongly involved in my every-day activity in this context; in the future more and more funding will come from the EU; Europe is launching new projects in direction of South Asia… For all these reasons we endeavored to give a "European dimension" to this seminary. For this 2nd School, a special acknowledgement must be addressed to Lubos Novak and his colleagues from MEGA company (CZ Republic) which is today the world-leader for equipment in the field of electro-membrane processes, with strong partnerships all over the world, a lot of activities at the interface between Western Europe and Russia and a remarkable mixing of culture and scientific know-how issued from the 2 worlds.

In a part of the world which is very fast growing, just between India and China –the so-called Indo-China peninsula - there is undoubtedly a real interest to develop the "technologies of tomorrow" of which membranes are an essential part. Let us not forget also that a technology, whatever it is, cannot be considered as the "cream of the crop" if it is not a real tool for improvement of well-being of population and support to sustainable development : this is the message and mission that UNESCO has given to our Chair SIMEV as regards Membrane Technology

"The future is not a gift: it is an achievement". We wish a very great success for the amplification of these collaborative activities in the field of Education, Research and Technological Development between Europe and the Indo-China, starting from the strong partnership established between the EIT / VAST and SIMEV / UNESCO, and a happy birth to the 3rd Schhol on Membrane already programmed in Danang in 2016.