

Closing session

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La Faculté des Sciences - Université Libanaise
La chaire UNESCO-SIMEV



vous invitent à la
conférence internationale



**NOUVELLES TECHNOLOGIES
DE TRAITEMENT DE L'EAU
ADAPTEES AUX
PAYS DU SUD**



Lundi 11 et mardi 12 décembre 2017
Amphithéâtre du Campus Pierre Gemayel
Fanar

Pour toute information
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Water quality session

Lebanon = **Chateau d'eau du Moyen Orient** (only **10%** is used)

Specific and complex context : history, geography, politic, economic and hydrogeological ...

Water issues in Lebanon : Quality of drinking water and WasteWater Treatment

- **Health** : Lot of people don't have proper access to safe drinking water in Lebanon + Water born diseases
- **Environment** : Only **8%** WW are treated + Industrial WW → Strong pollution of surface and ground water + seawater

→ Programs exist for developing safe domestic water supply and smart water resource management

Water quality session

Need of **INTEGRATED MANAGEMENT of WATER** : WWT and Drinking Water production have to be taken into account in a global vision (15% of the domestic budget for water)

→ Necessity to develop **simple, efficient technologies: low energy and low maintenance**

→ Need to go to **advanced WWT** (μ pollutants) and **water and nutrients reuse applications** (irrigation/fert-irrigation)

→ Difficulty to implement **complex technologies** : long term process (education/research + fundings)

Inaugural Session

Water issues are important in Lebanon

- Many ministries are concerned (Health, Enviro., Indust., Educ.&Research, Agri.)
- Many structures are involved (CNRS-L, Universities, AUF, NGO...)

The issues are well-known

Decision makers are aware of problems

Regulations exist

Solutions have to be proposed and applied

- Capacity Building
- Education/training of expert , technicians ... (Master, Specialized school)
- Research program

Wastewater Treatment Session

Impacts of treated and untreated W on marine environment :

- WWT works
- Eutrophication of coastal areas : Nitrogen pollution
- Contaminants : heavy metals (analytical issues in sea water)

Industrial liquid waste : Specific pollution = specific treatment needed

WWTP in Lebanon

- Coastal and inland
 - many are in progress
 - Population/community involvement and informations – Societal acceptance
 - Fundings : who pay ?
 - Centralised and decentralised solutions
 - Separated Network: pipes, pumps...
 - Smart solutions : innovation
 - Sludge management strategies
 - Reuse objectives
-

Innovation for WT Session

Schools of the Chaire UNESCO SIMEV :
share / exchange / collaborate !

IEM :

- Material and Process engineering
- Applications : Water, Food, Energy

Membrane processes :

- One membrane for one application
- Removal/separation of any kind of pollution: physical, chemical, biological : bact/virus; salts, μpol
- Fouling/ Energy/Sustainable (low chemical use, biosourced, renewable energy and material)

Membrane Technologies Session

Nanostructuring to modify/functionalize membranes and materials

- Size, porosity, organization, crystallography, chemical compositions
- Interface : surface properties, HPI/HPO
- Different techniques : ALD, Electrophoresis, Electrodeposition ...
- Applications: MFC, E-Fenton, μ pol, WWT

MBR :

- Water resource recovery facility : H₂O, Energy, Fertilizers
- Intensification and efficiency with MBR
- EcoMBR
- Fouling/Energy Nexus
- DOM fouling

Membrane Applications Session

Membrane processes in Maroc and Maghreb

- Water scarcity, Arid area
- Desalination : renewable energy (solar)
- Reuse strategies : Cyprus example (100%)

Desalination with RO/FO

- Sea water desalination energy demand : 3-4 *

Final remarks

Synergy exist !

Membranes application could help to overcome some water and WW issues

Lebanon offer many possibilities for drinking water and sanitation development projects

Chaire Unesco's goal is to promote new research and education collaborations

- Master and school on WWT in Lebanon
- Master and PhD exchanges Liban \leftrightarrow France
- EU call, PHC (Campus France)...

Choukran

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