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Laboratory on Membrane Contactors

Alessandra Criscuoli

Istituto per la Tecnologia delle Membrane (ITM-CNR), c/o Università della Calabria, Via Pietro Bucci Cubo 17/C, Rende (CS) 87030

Tel: 0984-492118

Email: a.criscuoli@itm.cnr.it

www.LiquiCel.com

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Definition of Membrane Contactors

- Membrane Contactors are membrane-based systems that use microporous hydrophobic/hydrophilic membranes to promote the mass transfer between phases.

- The interface between phases is immobilised at the pores by taking advantage of the hydrophobicity/hydrophilicity of the membrane and by properly acting on the phases pressure.

- Membrane Contactors can be used to create an interface between a liquid and a gas (gas-liquid operations), two liquids (liquid-liquid extractions), or to carry out distillation and vacuum-extraction processes.

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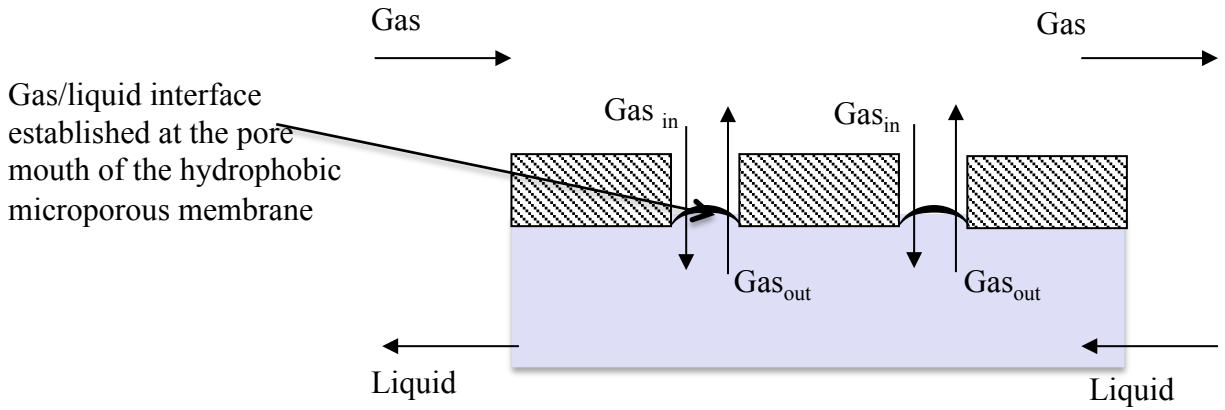
Main Activities - *Gas-liquid operations*

Main investigated applications:

- Sparkling water production;
- Oxidation of arsenic contained in contaminated waters;
- Oxygen and pH control in desalination.



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Main Activities – *Membrane Distillation* (1)

- Test of the performance of both commercial and lab-prepared membranes for distillation of aqueous feeds.
- Comparison of the efficiency of different module designs.
- Comparison of the efficiency of different membrane distillation configurations.
- Optimization of the energy requirements.

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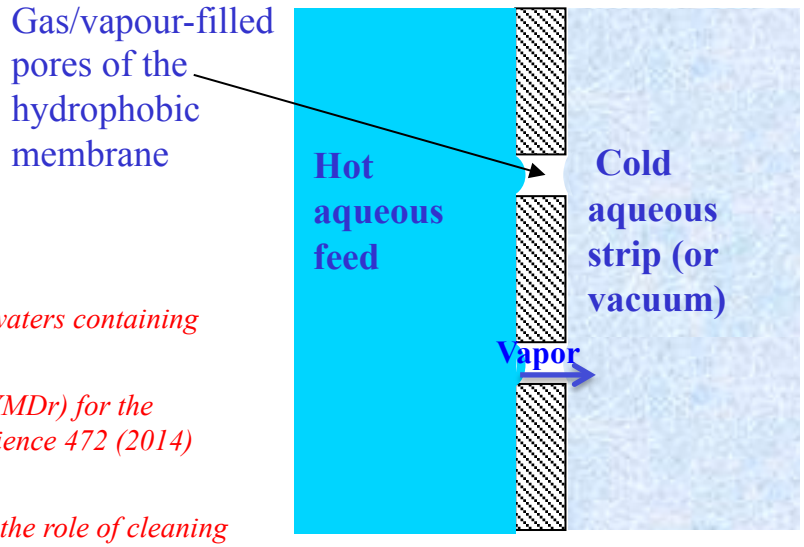
Main Activities - *Membrane Distillation* (2)

Main investigated applications:

- Desalination;
- Water and wastewater treatment (olive mill wastewater; arsenic-contaminated water, etc.);
- Drying of solid microparticles.



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