



Nanotechnological Application in Water DESalination: NAWADES

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Nowadays, hundred thousands of people suffer due to limited access to clean and fresh water. It is widely recognized that membrane technologies represent a viable, competitive and sustainable choice, which can help to meet the pressing demand for fresh water in the world. In particular, reverse osmosis (RO) represents one of the most relevant technologies for desalination of sea and brackish water, which represent the 97.5% of total water present on Earth [1]. This technology is constantly spreading up; membrane scientists and engineers efforts are devoted at improving its efficiency and productivity and at reducing costs. This can be achieved by improving membrane performance, increasing its stability, flux and rejection and reducing its susceptibility to scaling, fouling and biofouling.

The **NAWADES** (Nanotechnological Application in WAter DESalination) EU project aims at improving the efficiency of the RO membrane process by developing a new integrated membrane system for seawater desalination that does not suffer from organic fouling and inorganic scaling. Long-life and antifouling hollow membranes will ensure higher efficiency, reduced energy consumption (lower pressure), and less maintenance (lower cost), thank to the reduction of concentration polarization and organic fouling. These goals will be achieved through the integration between RO and pressure-driven membrane pre-treatment step (UF). Membranes will be endowed with anti-fouling and/or self-cleaning properties by studying new coating treatments and exploiting the synergy between polymers and inorganic nanomaterials.



The research leading to these results has received funding from the European Union's Seventh Framework Programme (FP7/2007-2013) under grant agreement N°308439

