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Elaboration of new superhydrophilic polymeric membranes in order to perform water / oil separation in effluents

The oily wastes are constantly generated by numerous industries, which do not propose any up-to-date efficient process to treat them, owing to extra-cost generated from potential treatment or recovery process. The general objective of the study is to develop a novel generation of superhydrophilic/superoleophobic polymeric membranes able to break-up oil-in-water emulsions from block copolymers. Indeed, inorganic membranes are very expensive and have serious problems of fouling from organic phase.

Thus, the first objective was the synthesis of di-block tri-block additives, which allowed providing PVDF matrices with superhydrophilicity/superoleophobicity properties along with the ability to efficiently resist fouling by oily liquids. The increase of membrane hydrophilicity is expected to reduce the fouling since most of interactions between the membrane surface and the organic compounds such as oil are hydrophobic.