2D Graphene-Based Membranes for Wastewater Treatment

Marco Laurenti
Department of Applied Science and Technology, DISAT - Politecnico di Torino, C. so Duca degli Abruzzi 24, 10129 Torino (Italy) – E-mail: marco.laurenti@polito.it

With the alarming decrease in natural resources of clean water, the problem of wastewater treatment is capturing considerable attention even by the scientific community. Thanks to the reduced thickness, excellent mechanical properties and chemical stability, 2D graphene have found successful application as new generation membrane able to separate organic (salts, drugs, oils) and inorganic (heavy metals) compounds. This work deals with the fabrication of graphene membranes obtained by a direct transfer of single layer graphene having few nanometer-sized pores, on polymeric supports. The filtration properties of the as-prepared membranes have been examined in a side-by-side diffusion cell and the results showed a good rejection against several compounds, ex. oils, drugs, approaching 90% in the best scenario.