# Elaboration and characterization of carbone-polymeric membranes. Application for pharmaceutical micropollutant removal from waters

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**Abstract.** . In this work, carbon-polymeric membranes were synthesized by an immersion-precipitation method using polysulfone (PSf) as membrane matrix, methylcellulose (MC) as pore forming agent and commercial powdered activated carbon (PAC) as adsorbent additive. All the components were dissolved in N-methylpyrrolidone (NMP) to prepare the casting solutions. The effect of PAC on the structure and the performance of the membranes were studied. The obtained membranes were characterized by Scanning Electron Microscopy (SEM). The efficiency of the carbon-polymeric membranes in the treatment of water was carried out by filtration tests of water containing model molecules of drugs representing the effluents of the pharmaceutical industry. The results of different analyses showed an improvement in membrane performance by the incorporation of MC and PAC into the membrane matrix. SEM analysis showed an asymmetric structure for all membranes, more porous with the presence of more regular finger-like pores compared to the pure PSf membrane. The removal of organic micropollutants has been proven by water filtration tests.

**Keywords:** Carbon-polymeric membrane, Ultrafiltration, Powdered activated carbon, Pharmaceuticals.