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# Graphene-based materials for photocatalysis and membrane filtration

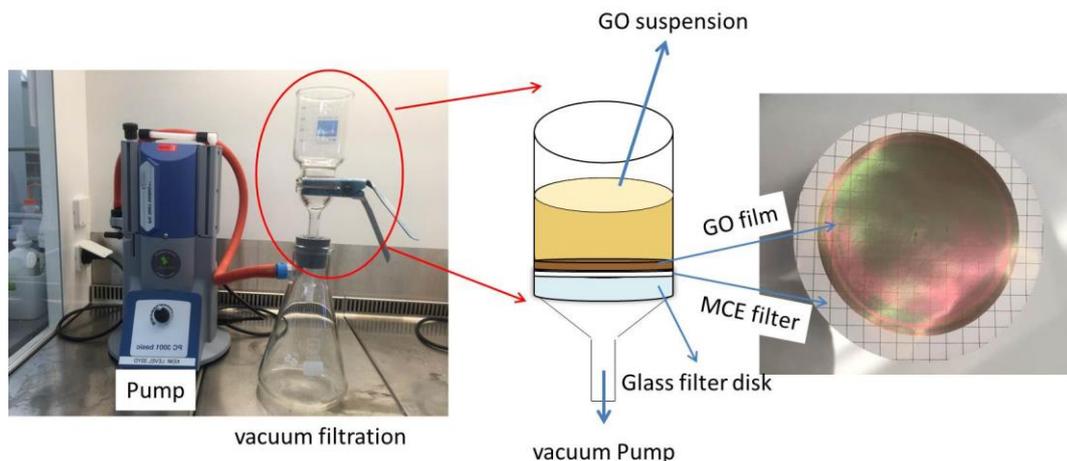
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## Abstract

Over the past years, membrane filtration has emerged as highly efficient water purification technology. However, the problems related to the fouling and the disposal of the toxic concentrate are still limiting factors for membrane application. Graphene oxide (GO) membranes show superior water permeability and good selectivity towards organic pollutants. Moreover, they can be easily fabricated in the nanometer thickness. In addition, the coupling of GO with titanium dioxide allows to fabricate photocatalysts which can adsorb visible light and that have outstanding photodegradation activity. In this study, we prepared GO photocatalytic membranes by vacuum filtration technique. GO and GO-titanium dioxide membranes were prepared by filtered GO suspension in different concentration through the 0.22  $\mu\text{m}$  pore size of mixed cellulose ester (MCE) filter and dry at room temperature. In addition, the layer by layer technique for membrane fabrication was used to compare with single step filtration membrane preparation. We characterized structure, filtration ability and photocatalytic performances of these new materials. Hence, we optimized their fabrication procedure.



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