# Graphene-polysulfone sorbents for the removal of contaminants of emerging concern from drinking water

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The recently adopted European Drinking Water Directive EU 2020/2184 impose the monitoring and removal of new contaminants such as per- and polyfluoroalkyl substances (PFAS) from our drinking water and tighten the limits for already regulated substances. Such stringent requirements are pushing academic and industrial research to the development on new materials and strategies for efficient water treatment. Graphene based materials, due to their high surface area and multiple interactions pathways with organic molecules and metal ions allowed by the abundant surface chemical moieties, have shown great potential for water purification purposes [1]. Here, we present the preparation of a graphene oxide-polysulfone-composite (PSU-GO) [2] and its use as sorbent for the removal of contaminants of emerging concern from drinking water, including PFAS and lead. Polysulfone granules were obtained by processing of scraps of industrial production of hollow fiber membranes (Medica spa). PSU-GO (2.5% w/w in GO) was prepared by using a water based and microwave assisted process, requiring mild conditions. [3] The so obtained filters showed high versatility since they removed lead ions, antibiotics and a selection of PFAS of current concern from tap water. The performance and working mechanism of the new composite will be described.
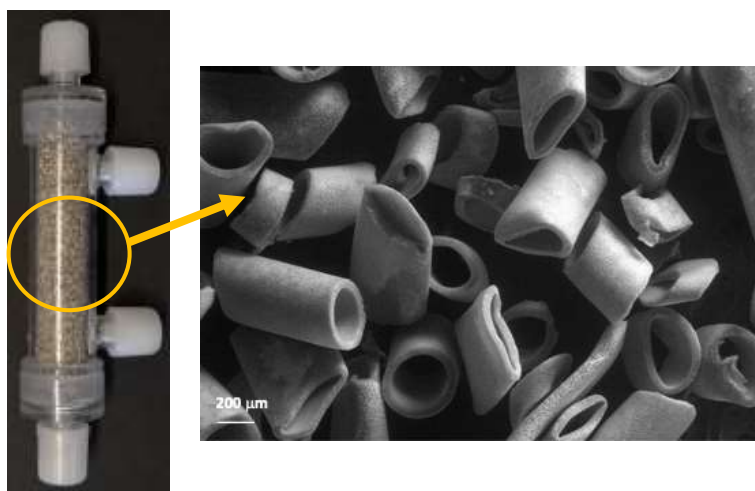
Figure 1: Image of PSU-GO cartridge and granules

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