

Title: Removal and determination of heavy metals in real samples and industrial wastewater with nanosorbent.

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In this research, the effect of adding modifiers such as nanoparticles and ligands for improving the performance of nanofiltration membrane made of polyether sulfone was investigated in laboratory conditions. At first, the production of the primary membrane started with the phase inversion method with a home made instrument. Dimethylacetamide has been used as a solvent, polyvinylpyrrolidone has been used to increase porosity and create holes, and graphene oxide synthesized from graphite in the laboratory has been used to increase the hydrophilicity of the membrane. The membrane was characterized with appropriate methods such as FTIR, XRD and SEM. The effective parameters for improving the rejection percentage such as amounts of modifier, pH and water flux was optimized. Composite membranes made of polyether sulfone, dimethylacetamide, polyvinylpyrrolidone and graphene oxide were investigated in terms of water flux and heavy metal absorption. The concentration of heavy metal ions was determined with differential pulse voltammetry (DPV). It was observed the amounts of metal ions such as chromium, mercury, lead, copper and silver have been significantly adsorbed by the modified membrane, but it also causes a decrease in the amount of passing water flux.

Keywords: Polymeric membrane, Nanofiltration, Heavy metals, Voltametry

References

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