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Utilization of highly robust and selective crosslinked polymeric ionic liquid-based sorbent coatings in direct-immersion solid-phase microextraction and high-performance liquid chromatography for determining polar organic pollutants in waters

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Abstract

Several crosslinked polymeric ionic liquid (PIL)-based sorbent coatings of different nature were prepared by UV polymerization onto nitinol wires. They were evaluated in a direct-immersion solid-phase microextraction (DI-SPME) method in combination with high-performance liquid chromatography (HPLC) and diode array detection (DAD). The studied PIL coatings contained either vinyl alkyl or vinylbenzyl imidazolium-based (ViC_nIm- or ViBC_nIm-) IL monomers with different anions, as well as different dicationic IL crosslinkers. The analytical performance of these PIL-based SPME coatings was firstly evaluated for the extraction of a group of 10 different model analytes, including hydrocarbons and phenols, while exhaustively comparing the performance with commercial SPME fibers such as polydimethylsiloxane (PDMS), polyacrylate (PA) and polydimethylsiloxane/divinylbenzene (PDMS/DVB), and using all fibers under optimized conditions. Those fibers exhibiting a high selectivity for polar compounds were selected to carry out an analytical method for a group of 5

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