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POLYANILINE-DICATIONIC IONIC LIQUID COATED WITH MAGNETIC NANOPARTICLES COMPOSITE FOR MAGNETIC SOLID PHASE EXTRACTION OF POLYCYCLIC AROMATIC HYDROCARBONS IN ENVIRONMENTAL SAMPLES

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In this present study, magnetic nanoparticles (MNPs) nanocomposites modified with polyaniline (PANI) coated newly synthesised dicationic ionic liquid (DICAT) forming MNP-PANI-DICAT were successfully synthesised as new generation materials for magnetic solid phase extraction (MSPE). MNP-PANI-DICAT was characterised by FT-IR NMR, CHN, BET, SEM, TEM, and VSM techniques and the results were compared with MNP-PANI and native MNP. This new material was applied as a magnetic adsorbent for the pre-concentration of polycyclic aromatic hydrocarbons (PAHs). Under the optimal conditions, the proposed method was evaluated and applied for the analysis of PAHs in environmental samples using gas chromatography-mass spectrometry (GC-MS). The validation method showed good

linearity (0.005–500 $\mu\text{g L}^{-1}$) with the coefficient of determination (R^2)>0.999. The limits of detection (LOD) and quantification (LOQ) of the developed method (MNP-PANI-DICAT-MSPE) were in the range of 0.0008–0.2086 $\mu\text{g L}^{-1}$ and 0.0024–0.6320 $\mu\text{g L}^{-1}$, respectively. The enrichment factor (EF) of PAHs on MNP-PANI-DICAT-MSPE were in the range of 7.546–29.632. The extraction recoveries of natural water, sludge, and soil samples were ranged from 80.2% to 111.9% with relative standard deviation (RSD) less than 5.6%. The newly synthesised MNP-PANI-DICAT possess good sensitivity, reusability, and fast extraction of PAHs under the MSPE procedure in various environmental samples.

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