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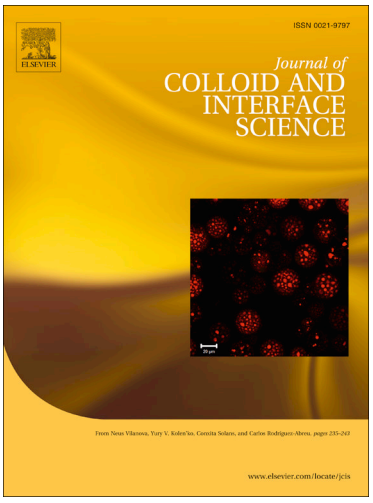

Regular Article

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Magnetic Based Nanocomposite Sorbent Combination with Ultrasound Assisted for Solid-Phase Microextraction of Azure II in Water Samples Prior to Its Determination Spectrophotometric

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Abstract

Present report designed for monitoring and recovery of Azure-II (Az-II) using ultrasound assisted- dispersive-magnetic nanocomposites-solid-phase microextraction (UA-DMNSPME) based on Zn@Cu-Fe_2O_4-NCs-CNT sorbent. The full contribution of conventional factors like pH, sorbent amount, eluent volume and sonication time on response were studied and optimized using response surface methodology (RSM) combined with central composite design (CCD). According best figures of merits were achieved at following conditions: pH of 8.0; 5.0 mg sorbent and 5 min sonication which all accumulation Az-II was efficiently eluted by 180 µL of dimethylformamide which consequently permit achievement recovery of 99.8±1.1%. Under specified best conditions using 10.0 mL of sample at various conditions lead to detection limit (based on $3S_b/m$), limit of quantification ($10S_b/m$) and the enrichment factor of 3.8, 12.6 ng mL^{-1} and 75.2, respectively. The while method has linear response over 30–4500 ng mL^{-1} of Az-II with acceptable correlation coefficient of $R^2 = 0.9996$. Inter- and Intra-day precision expressed as relative standard deviation (n = 3) and the preconcentration factor were 1.1-4.0%, 1.4-5.0% and 55.6, respectively. Good recoveries (95.2–103.3%) with low relative standard deviations (1.1–5.0%) strongly support successful applicability of present method for Az-II preconcentration and determination.

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