

Nanocomposites and nanomaterials

Preparation of m-diazophenylarsonic acid functionalized silica for solid phasespectrophotometric determination of 1-naphthol

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The derivatives of naphthols and aminonaphthols are highly toxic and mutagenic compounds and constitute an important class of environmental pollutants [1, 2]. In analytical practices, naphthols are commonly analyzed by high-performance liquid chromatography, flow-injection analysis with further photometric detection, fluorimetry, phosphorimetry, and immunosensors [3,4]. Fluorimetric, phosphorimetric and immunosensor methods requires specific sample pre-treatment.

Therefore liquid-liquid or solid phase extraction (SPE) is often used in sample preparation for naphthol derivatives pre-concentration prior to their determination. The present work aimed to develop new solid-phase analytical reagent for selective pre-concentration of 1-naphthol traces from water samples.

Silica with covalently grafted quaternary ammonium anion was modified by m-aminophenylarsonic acid (m-APAA) via ion-exchange mechanism. m-APAA diazotization resulted a new solid phase spectrophotometric reagent for 1-naphthol determination. The detection limit of 1-naphthol was found to be $20\mu\text{ g}\cdot\text{L}^{-1}$ with 2000 concentration factor. Thirty fold excess of other phenolic compounds (phenol, resorcinol and catechol) and the presence of natural water components do not interfere in the determination of 1-naphthol.

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