

Syntisis of poly styrene-methacrylic acid combenatorial nanofiber via electrospinning method asadsorbant in solid phase extraction

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Abstract The main goal of this study was the using of electrospun polystyrene nanofibers loaded with methacrylic acid as adsorbent in the extraction and preconcentration of methyl green color water. To do this, polystyrene polymer solution was prepared and was combined with methacrylic acid with a ratio of 4 to 1(volum-volum) and their nanofibers were synthesized under suitable electrospinning conditions. The resulting nanofibers were identified by SEM and FT-IR and as adsorbent was used in solid phase the extraction to precntrate the methyl green color. In order to increase extraction efficiency, some variables in the process such as pH of solution, ionic strength, the weight of adsorbent, flow rate through the sample solution, the volume of the sample solution, the volume and type of elution solvents were studied. In optimal conditions, 40 mL of methyl green color solution contains 2% w/v sodium cholrid was passed on the cartridge contains 1.0 g of synthesis nanofibers made of polystyrene and methacrylic acid at a flow rate of 2 mL min⁻¹. The absorbent rinsed by 3 mL of methanol as a elution solvent. Using the calibration curve, using figures of merit were calculated. The enhancement factor and the limit of detection were obtained as 8.3 and 10 µg L⁻¹ respectively. The linear dynamic range was calculated as 25-1000 µg L⁻¹ . The relative standard deviation was obtained in the range of 3.32-4.28 and relative recovery was determined in the range of 102-118% for real samples. Key words: Electrospun, Nanofiber, Extraction, Methyl green

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