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Preparation of tetraoxocalix [2]arence[2]triazine coated Fe_3O_4 @SiO_2 magnetic nanoparticles and its application in determination of PAHs in smokers urine

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In the present paper, tetraazacalix[2]arene[2]triazine coated magnetic nanoparticles ($TCFe_3O_4$@SiO_2) was prepared and characterized. The performance using TCFe3O4@SiO2 as SPE sorbent was investigated using PAHs as probes. Under the optimized SFP condition for PAHs, the urine samples (300 mL) were directly extracted, eluted, evaporated and re-dissolved in 0.3 mL ACN, and then 20 uL was injected for HPLC separation and analysis. The recoveries were also tested and obtained for 85% for Phe, 88% for Ant, 92% for Pyr, 96% for Chr and 93% for Bap by spiking each PAH at 5pg/ml. The each PAH concentration level for the smokers was at 0.5-4.5 pg/ml, and the higher PAH concentration levels were found in the urines who smoke more cigarettes. The PAH concentration levels for the heavy smokers (40 cig/d) were doubled those for the non-smokers. The very low Bap concentration level at 0.4-0.9 pg/ml was also sensitively and accurately detected. The method showed good extraction efficiency for PAHs due to tetraoxocalix[2]arence[2]triazine having benzene rings, which interacted with PAHs based on π-π interaction. The SPE extraction is simple because of the use of the magnetic nanoparticles $TCFe_3O_4$@SiO_2. This SPE material can be widely used in the sample pretreatment.

Biography

Shusheng Zhang has completed his PhD from Zhengzhou University and Post-doctoral studies from Tasmania University of Australia. He is the Director of Center of Advanced Analysis & Computational Science of Zhengzhou University. He has published more than 180 papers in reputed journals.

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