

## PRECONCENTRATION OF MERCURY IN HUMAN HAIR BY MODIFIED SILICA AEROGEL NANOPARTICLES

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### ABSTRACT

*Pollution from heavy metals has increased in recent decades and has become an important concern for environmental agencies. Mercury is among the trace elements that have the greatest impact and carry the highest risk to human health. In the present work, a new adsorbent, silica aerogel modified with 4-amino-5-methyl-1, 2, 4-triazole-3(4H)-thion (AMTT) was applied to preconcentration of mercury in scalp hair samples prior to its determination. The adsorbent was characterized by Fourier Transform Infrared Spectra (FTIR), and Thermal Gravimetry (TG) and Scanning Electron Microscope (SEM). The optimum pH for the adsorption of mercury ion ranged from 5 to 6 and the minimum shaking contact time necessary for reaching the equilibrium was about 6h. The enrichment factor is 150 was obtained. The method successfully applied to the determination of trace Hg (II) in spiked hair samples, with recoveries ranging from 90% to 94%.*

**Keywords:** Hair Analysis; Mercury; Silica Aerogel; Preconcentration; Nanoparticles