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**Determination of Manganese, Copper, Cadmium and Lead by FAAS after Solid-Phase Extraction of Their Phenylpiperazine Dithiocarbamate Complexes on Activated Carbon**

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**Abstract:** A solid-phase extraction method was developed for the pre-concentration of manganese, copper, cadmium and lead in water samples prior to their determination by flame atomic absorption spectrometry using phenylpiperazine dithiocarbamate as a new reagent. The optimum pre-concentration conditions have been investigated such as pH, volume of sample solution and the effects of some matrix elements. The obtained recovery was nearly 90 to 100, while the enrichment factor was 400 for metal spiked solutions.

**Key Words:** Solid-phase extraction, phenylpiperazine dithiocarbamate, manganese, copper, cadmium, lead, flame atomic absorption spectrometry, activated carbon

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