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RECOVERY OF Fe³⁺, Ti⁴⁺ AND Ni²⁺ IONS FROM SLUDGES RESULTED DURING URANIUM ORES PROCESSING BY IMMOBILIZATION ON ZEOLITES

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Abstract

The possible recovery of three microelements contained in the sludges resulted after chemical leaching of uranyl ions from uranium ores was investigated, using four types of zeolites as adsorbents. The variation of the retention degree in time of 3 cations: Fe³⁺, Ti⁴⁺ and Ni²⁺, adsorbed on: ETS-10, ETS-4, ZSM-5 and mordenite was followed. The characteristic adsorption parameters connected to Langmuir and Freundlich isotherms were also determined. For a given adsorbent, the rate of global retaining process depends on the zeolite type and the adsorbed metallic ion, being higher for Fe³⁺ than for Ti⁴⁺ or Ni²⁺ species. Each metallic ion is much more strongly linked to the ETS-10 and ETS-4 than to ZSM-5 and natural mordenite zeolite.

Key words: isotherms, metallic ions, recovery, uranium sludges, zeolites

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