

# Recovery of Lanthanide Ions on Silica Adsorbent with Covalently Immobilized Derivative of 2,6-Pyridinedicarboxylic acid

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*Adsorption conditions of 14 lanthanide ions (Ln) on silica-based adsorbent with immobilized derivative of 2,6-pyridinedicarboxylic acid (SiO<sub>2</sub>-PdCA) were studied. It has been demonstrated that SiO<sub>2</sub>-PdCA quantitatively removes all lanthanides from their multi-element aqueous solution at pH ≥ 2.5. Solutions of strong mineral acids and several complexing agents, such as EDTA, 5-sulfosalicylic, citric, α-hydroxyisobutyric, and ascorbic acids were investigated as eluents. It was demonstrated that complete (90-100%) elution of lanthanides from SiO<sub>2</sub>-PdCA can only be achieved with 2 mol L<sup>-1</sup> HNO<sub>3</sub> acid, while 0.01 mol L<sup>-1</sup> EDTA solution elutes up to 90% of light and 100% of heavy Ln<sup>3+</sup>. Reusability tests demonstrate that SiO<sub>2</sub>-PdCA reversibly adsorbs Ln ions, and after five successive adsorption/desorption cycles no decrease in the adsorption capacity of SiO<sub>2</sub>-PdCA was detected.*

**Keywords:** complexing adsorbents, pre-concentration, lanthanides, desorption

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