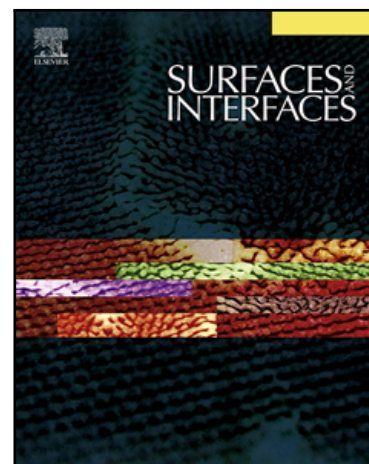


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# Apatitic Tricalcium Phosphate Powder: High Sorption Capacity of Hexavalent Chromium Removal

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## Abstract

Apatitic tricalcium phosphate powder (ATrPh-105) was synthesized and characterized using different characterization techniques (XRD, FTIR, N<sub>2</sub>-physisorption, Laser diffraction, SEM, TEM, and ICP analysis). The potentiality of ATrPh-105 was investigated to remove Cr(VI) from the environmentally relevant water. We performed sorption tests on solutions containing chromium ion (Cr(VI)) and studying different parameters (pH, temperature, and concentration). ATrPh-105 could effectively adsorb Cr(VI) through chemical sorption. The sorption of Cr(VI) on ATrPh-105 is strongly dependent on pH and sorption kinetics followed a pseudo-second-order model. The Langmuir isotherm describes well isotherm data with a maximum sorption capacity up to 527.19 mg/g at 60 °C and pH 3.0. These acquired outcomes suggested that ATrPh-105 had a great potential as an economic and efficient adsorbent of Cr(VI) from contaminated water, which has huge application potential.

**Key words:** Apatitic tricalcium phosphate; Chromium; Sorption; Langmuir; Freundlich

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