

عنوان مقاله:

Cerium Tendency to Phosphate: A Chance to Use Phosphate Modified Nano Titnia for Ce(III) Removal from Aqueous Solution

محل انتشار:

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تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

The surface of nano titania was modified with nitrile tris (methylenephosphonic acid) (NP) as a suitable tridentate ligand and characterized. The novel modified adsorbent was utilized for cerium removal. It was revealed that NP molecules are predominantly bonded to the surface through phosphate groups via covalent bonds. The result was forming phosphate modified nano titania with slightly more than 11.14 wt% capping agent. The surface modification led to the enhancement of Ce(III) removal from aqueous solutions. The adsorption capacity was increased from 12.55 mg g⁻¹ for pure nano titania to more than 55 mg g⁻¹ for the modified one. Adsorption of Ce(III) from aqueous solution by phosphate modified nano titania was investigated. Effects of pH (2-6) of solution, adsorbent dose (0.1-0.4 g), contact time (5, 10, 15, 20, 30, 45, 60, 90, 120 s), and initial Ce(III) concentration (10-400 mg L⁻¹) were examined. The best conditions for the highest amount of Ce(III) adsorption onto modified nano titania were found as follows: pH .value 6, adsorbent dose 0.2 g, and contact time 60 min

کلمات کلیدی:

cerium, heavy metal removal, adsorption, nano titania, phosphonate

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