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Extraction of lanthanum and gadolinium(III) at the cloud point using p-sulfonatocalyx[n]arenes as chelating agents

Zairov R., Elistratova Y., Mustafina A., Amirov R., Pilishkina L., Antipin I., Konovalov A.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

The extraction of gadolinium(III) and lanthanum(III) ions at the cloud point is studied in Triton X100 micellar solutions in a wide range of pH. In the absence of chelating agents, lanthanum(III) and gadolinium(III) ions are unselectively extracted at pH > 6. It is shown that the use of p-sulfonatothiacalix[6(8)]arenes as chelating agents noticeably enhances the degree of extraction at pH 2-6. The composition and stability of lanthanum-p-sulfonatothiacalix[n]arene complexes (n = 4, 6, 8) are estimated in a wide range of pH by pH-potentiometry. The degree of Gd³⁺ and La³⁺ ions extraction, which is performed at the cloud points employing calyxarene macrocycles of different sizes, is depended on the acidity of a medium. © 2009 Pleiades Publishing, Ltd.

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