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Complex formation of 1-hydroxyethylidene-1-1-diphosphonic acid with gadolinium(III) and calcium(II) in the aqueous solutions

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Abstract

The complex formation constant have been determined for the reactions of 1-hydroxyethylidenediphosphonic acid (H4L) with Ca(II) and Gd(III). The solubility constant has been estimated for the products differing in the ligand deprotonation state. In the cases of both cations, four complex types are common: Me(H2L)2, MeH3L2, Me 2L, and Me2(HL)2. The Gd(H2L) 2 and GdH3L2 complexes are much more stable than the respective calcium complexes. It has been demonstrated that, on the contrary to the commonly accepted practice, gadolinium ion cannot model the behavior of calcium ions. © 2013 Pleiades Publishing, Ltd.

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