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Title:Preparation and spectroscopic characterization of two $HoCl_3$–galactitol complexes and one one $ErCl_3$–galactitol complex
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Abstract: The interactions between metal ions and hydroxyl groups of carbohydrates are important for their possible biological activities. Here two HoCl3–galactitol complexes ([Ho(galac)(H2O)3)]Cl3·0.5galac) (HoG(I)) and ([Ho2(galac)(H2O)12)]Cl6·2H2O) (HoG(II))) and one ErCl3–galactitol complex ([Er(galac)(H2O)3)]Cl3·0.5galac)(ErG)) were prepared and characterized. The possible structures of HoG(I) and ErG were deduced from FTIR, elemental analysis, ESI-MS, FIR, THz and TGA results. It is suggested that Ho3+ or Er3+ is 9-coordinated with six hydroxyl groups from two galactitol molecules and three water molecules, and another galactitol molecule is hydrogen-bonded in HoG(I) and ErG and the ratio of metal to ligand is 1:1.5. The structure of HoG(II) was determined by FTIR and X-ray diffraction analyses. The results demonstrate that lanthanide ions with galactitol may form two compounds in a system and different topological structures can be obtained.