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Title:	Efficient synthetic route to heterobimetallic trinuclear complexes [Ln–Mn–Ln] and their single molecule magnetic properties
Authors:	Vignesh, Kuduva R. (/jspui/browse?type=author&value=Vignesh%2C+Kuduva+R.)
Keywords:	heterobimetallic trinuclear complexes single molecule magnetic properties
Issue Date:	2022
Publisher:	Royal Society of Chemistry
Citation:	Dalton Transactions, 51(48), 18502-18513.
Abstract:	A series of mononuclear lanthanoidate complexes isolated as [Bu ₄ N][Ln(QCl ₄)] 1Ln (QCl = 5-chloro-8-quinolinolate; Ln = Eu, Gd, Tb, Dy, Ho, and Er) have been prepared, characterised, and used as facile precursors to obtain a series of new heterobimetallic complexes as crystalline materials. Reaction of 1Ln with manganese nitrate forms [Ln ₂ Mn(QCl) ₈] (2Ln, where Ln = Tb, Dy, Er and Yb) which have been structurally characterised in the cases of 2Tb and 2Yb. The heteroleptic trinuclear complex [Dy ₃ (QCl) ₈ Cl(OH ₂)], 3, has also been obtained. Compounds 1Dy, 1Tb, and 1Er display slow relaxation of magnetisation below 10K, particularly for the prolate Er ³⁺ ion. These results also suggest that the positive effects of the change from mononuclear to trinuclear lanthanoid complexes enhance their single molecule magnetic (SMM) behaviour, as evidenced by the well resolved frequency dependent AC out-of-phase susceptibility maxima seen in the 2Ln systems, that have been analysed quantitatively. The synthesis used here provides a promising strategy in obtaining heterobimetallic complexes with quinolinolate ligands and also constructing efficient heterobimetallic SMMs.
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