Electronic Supplementary Material (ESI) for RSC Advances.

Coordination properties of *N,N'*-bis(5-methylsalicylidene)-2-hydroxy-1,3-propanediamine with *d*- and *f*-electron ions: crystal structure, stability in the solution, spectroscopic and spectroelectrochemical studies

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Supplementary information

Crystallographic data for the structural analysis has been deposited with the Cambridge Crystallographic Data Centre, Nos. CCDC – 1569983 (H_3L **A**), CCDC-1569984 (H_3L **B**), CCDC - 1569985 (**1**), and CCDC – 1569986 (**2**). Copies of this information may be obtained free of charge from: The Director, CCDC, 12 Union Road, Cambridge, CB2 1EZ, UK. Fax: +44(1223)336-033, e-mail:deposit@ccdc.cam.ac.uk, or www: www.ccdc.cam.ac.uk.

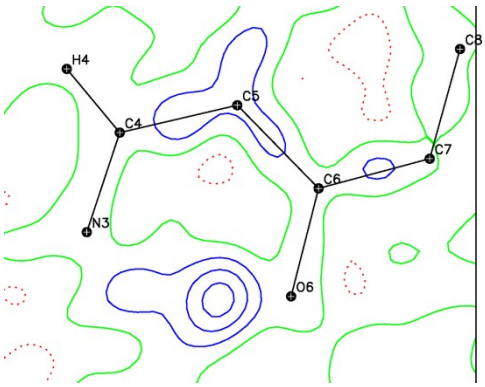

Fig. S1 The difference Fourier map of H_3L.

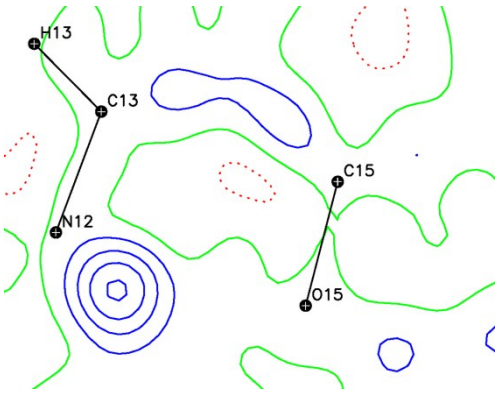

Fig. S2 The difference Fourier map of H_3L.

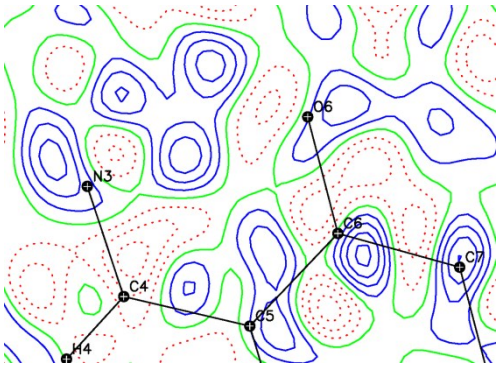

Fig. S3 The difference Fourier map of H_3L.

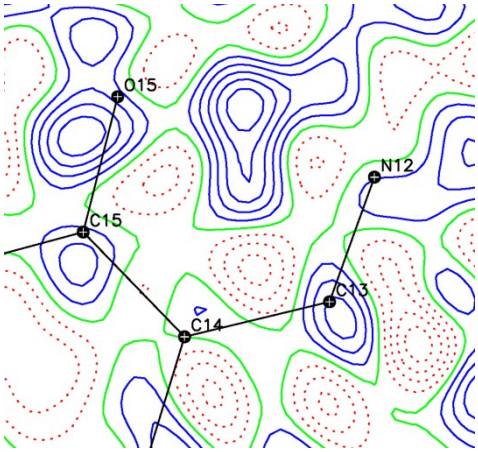

Fig. S4 The difference Fourier map of H_3L.

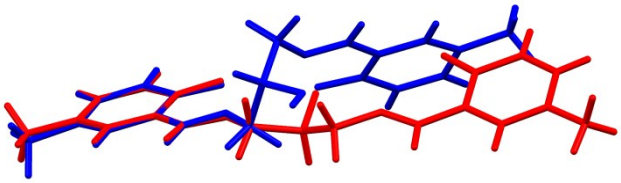

Fig. S5 A comparison of conformations of H_3L molecules from complexes **(1)** and **(2).**

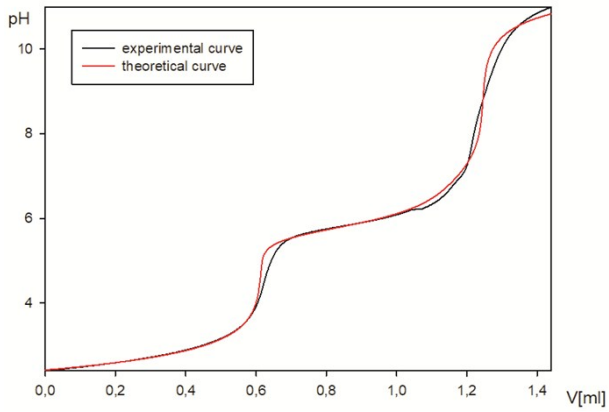

Fig .S6 A comparison of experimental and theoretical curves of selected Cu^{2+}/H_3L system (1:1).

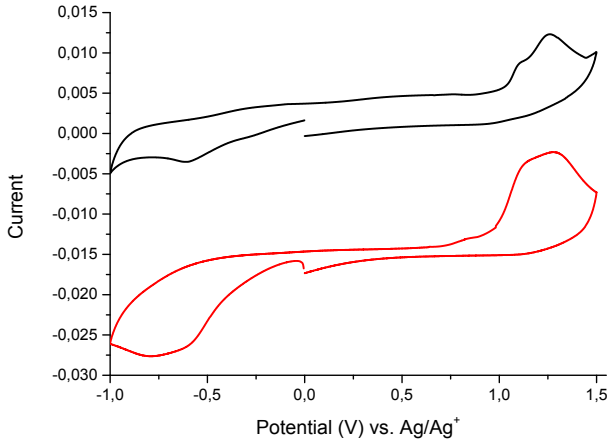

Fig. S7 The cyclic voltammogram of complexes (2) (from synthesis with Dy) (black) and [CuHL] (from synthesis with Tb) (red) measured in anhydrous and deaerated acetonitrile with 0.1 M $TBAPF_6$ as a supporting electrolyte at a scan rate 100 mV/s scanned in the negative direction.

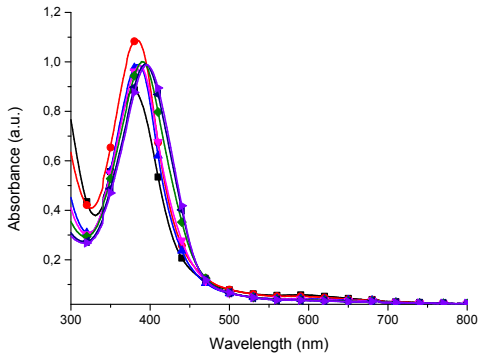

Fig. S8 Spectroelectrochemistry of complex (2) (from synthesis with Dy) in dehydrated and deaerated acetonitrile with 0.1 M $TBAPF_6$ as a supporting electrolyte by applying 0 (■), -100 (●), -200 (▲), -300 (▼), -400 (♦), -500 (◄), and -600 mV (►) potential versus Ag/AgCl gel reference electrode held for 30 s per potential.

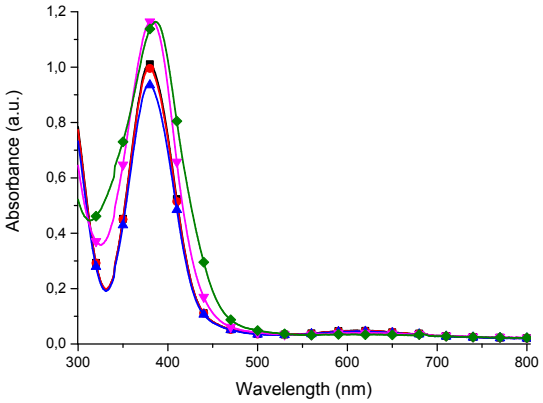

Fig. S9 Spectroelectrochemistry of complex (2) (from synthesis with Tb) in dehydrated and deaerated acetonitrile with 0.1 M $TBAPF_6$ as a supporting electrolyte by applying 0 (■), -300 (●), -400 (▲), -500 (▼), and -600 mV (♦) potential versus Ag/AgCl gel reference electrode held for 30 s per potential.