

Towards understanding the design of dual-modal MR/fluorescent probes to sense zinc ions

C. Rivas,^a G. J. Stasiuk,^{a, b} M. Sae-Heng,^a and N. J. Long^a

^a Department of Chemistry, Imperial College London, South Kensington Campus, London, SW7 2AZ, UK.

^b School of Biological, Biomedical and Environmental Sciences, University of Hull, Cottingham Road, Hull, HU6 7RX

Table of contents

Figure S1: ¹H NMR spectrum of **1**, CDCl₃, 298 K.

Figure S2: CIMS spectrum of **1**.

Figure S3: ¹H NMR spectrum of **2**, CDCl₃, 298 K.

Figure S4: ESMS spectrum of **2**.

Figure S5: ¹H NMR spectrum of **L1**, CDCl₃, 298 K.

Figure S6: ESMS spectrum of **L1**.

Figure S7. UV/vis. spectra of **Gd.L1** (100 μM) in HEPES buffer (0.1 M; pH = 7.4) in the presence of increasing concentrations (0 to 5 eq.) of respective metal ion.

Figure S8. Fluorescence emission spectra of **Gd.L1** (1 mM) in 50:50 MeOH:HEPES buffer (0.1 M; pH = 7.4) in the presence of increasing concentrations (0 to 5 eq.) of Ca²⁺.

Figure S9: ¹H NMR spectrum of **4**, CDCl₃, 298 K.

Figure S10: HR ESMS spectrum of **4**.

Figure S11: ¹H NMR spectrum of **5**, CDCl₃, 298 K.

Figure S12: HR ESMS spectrum of **5**.

Figure S13: ¹H NMR spectrum of **L²**, D₂O, 298 K.

Figure S14: HR ESMS spectrum of **L²**.

Figure S15: ESI MS spectrum of **GdL²**.

Figure S16: UV/vis. spectra of **GdL²** (100 μM) in HEPES buffer (0.1 M; pH = 7.4) in the presence of increasing concentrations (0 to 5 eq.) of Cu²⁺.

Figure S17. UV/vis. spectra of **GdL²** (100 μM) in HEPES buffer (0.1 M; pH = 7.4) in the presence of increasing concentrations (0 to 5 eq.) of Ca²⁺.

Figure S18. UV/vis. spectra of **GdL²** (100 μM) in HEPES buffer (0.1 M; pH = 7.4) in the presence of increasing concentrations (0 to 5 eq.) of Mg²⁺.

Figure S19: ¹H NMR spectrum of **6**, CDCl₃, 298 K.

Figure S20: HR ESMS spectrum of **6**.

Figure S21: ¹H NMR spectrum of **7**, CDCl₃, 298 K.

Figure S22: HR ESMS spectrum of **7**.

Figure S23: ¹H NMR spectrum of **L³**, CDCl₃, 298 K.

Figure S24: HR ESMS spectrum of **L³**.

Figure S25: HR ESMS spectrum of **GdL³**.

Figure S26: UV-vis spectrum of **GdL³** (100 μM) in 50:50 MeOH:HEPES buffer (0.1 M; pH = 7.4).

Figure S27: Fluorescence spectra of **GdL³** (100 μM) in 50:50 MeOH:HEPES buffer (0.1 M; pH = 7.4) in the presence of increasing concentrations (0 to 10 eq.) of Zn²⁺.

Figure S1: ^1H NMR spectrum of **1**, CDCl_3 , 298 K.

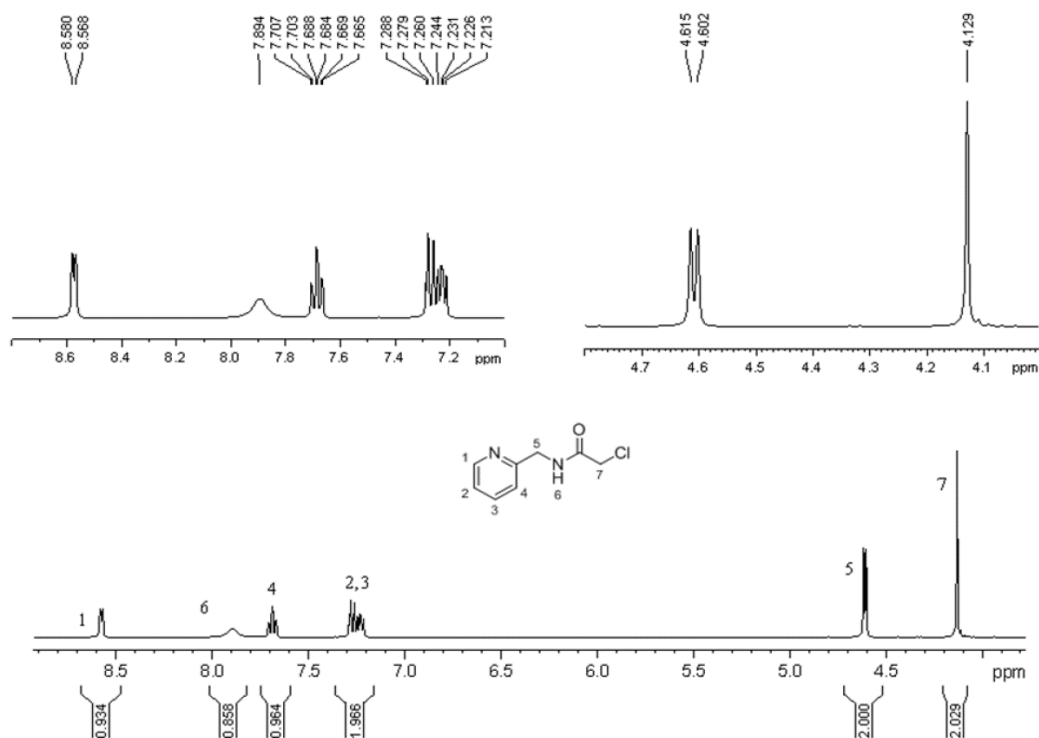


Figure S2: CIMS spectrum of **1**.

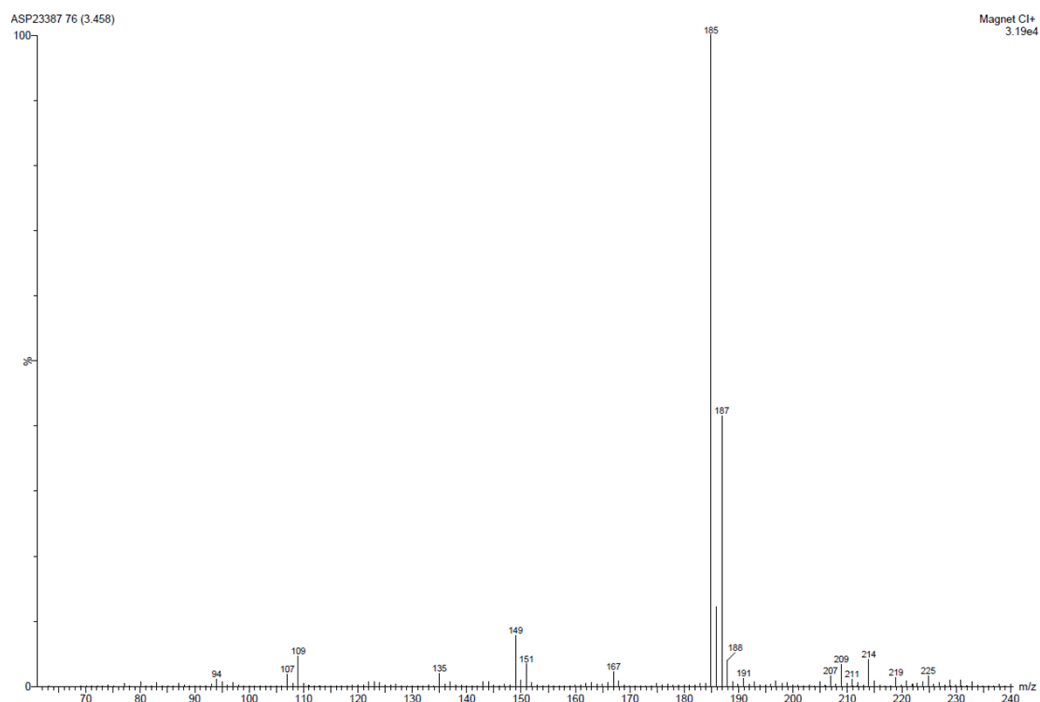


Figure S3: ^1H NMR spectrum of **2**, CDCl_3 , 298 K.

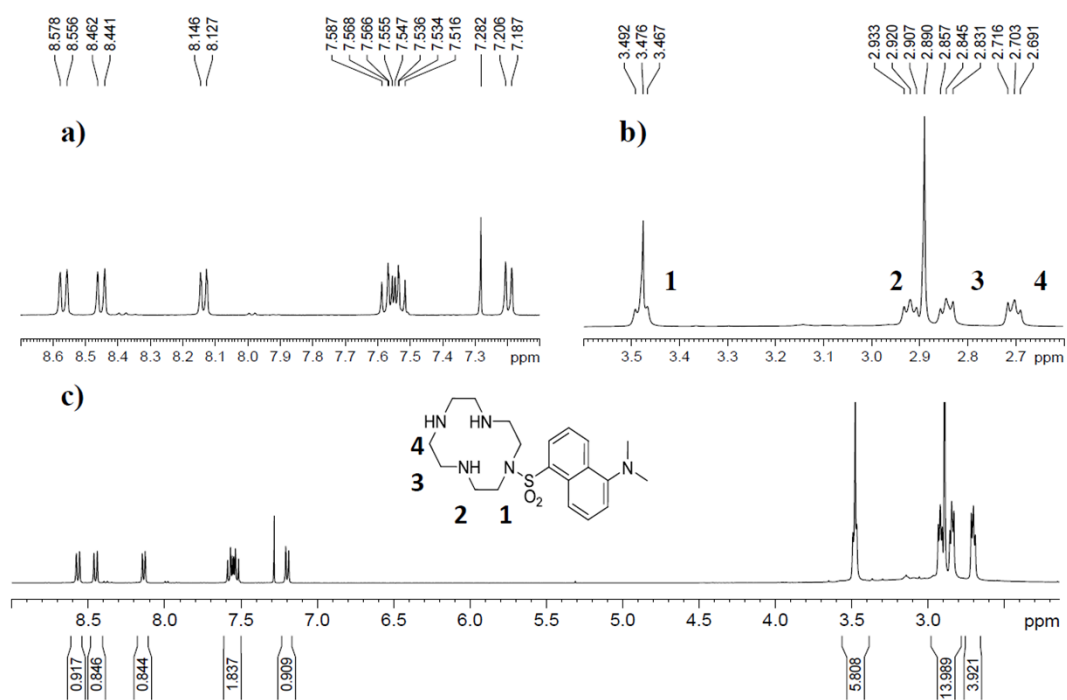


Figure S4: ESMS spectrum of **2**.

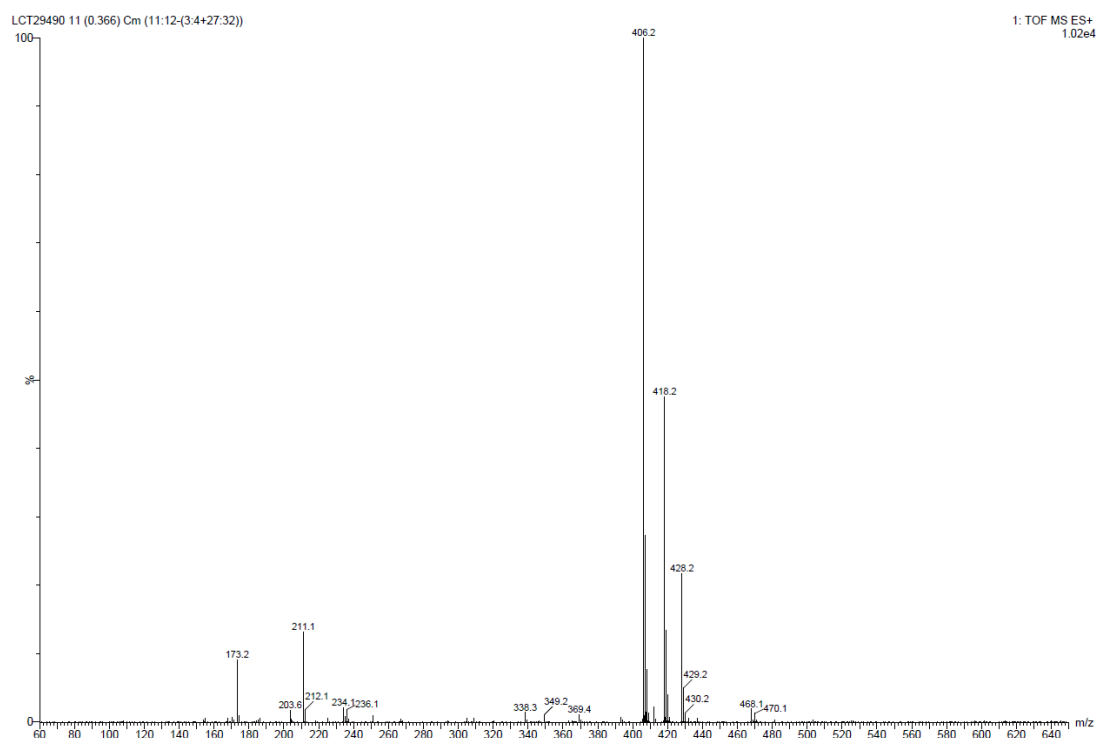


Figure S5: ^1H NMR spectrum of **L1**, CDCl_3 , 298 K.

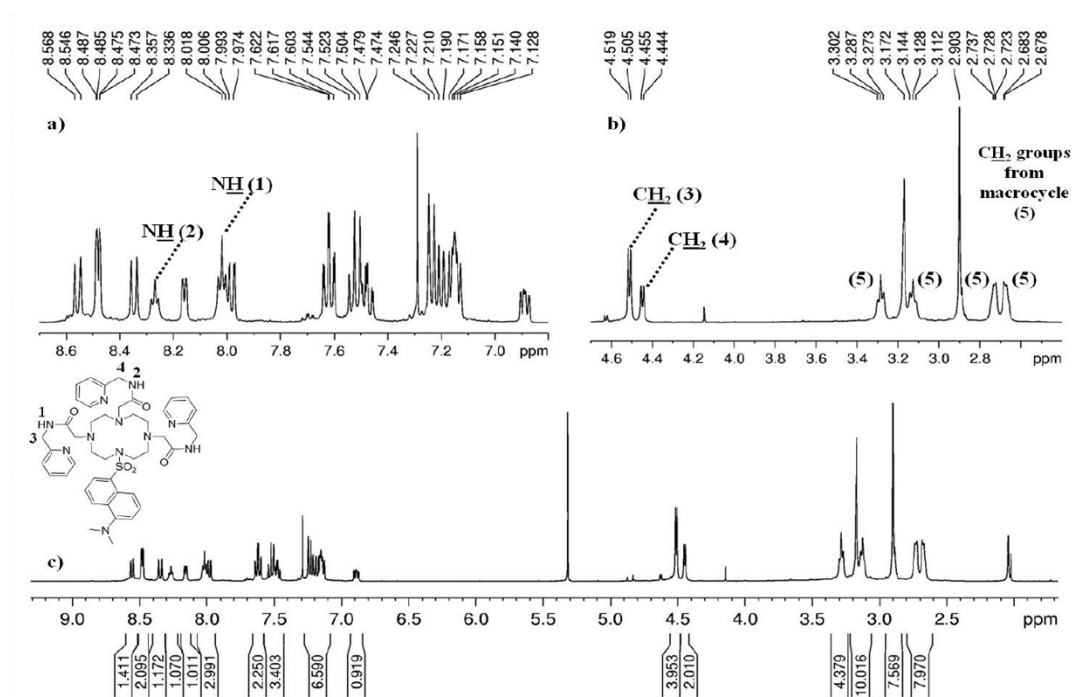


Figure S6: ESMS spectrum of **L1**.

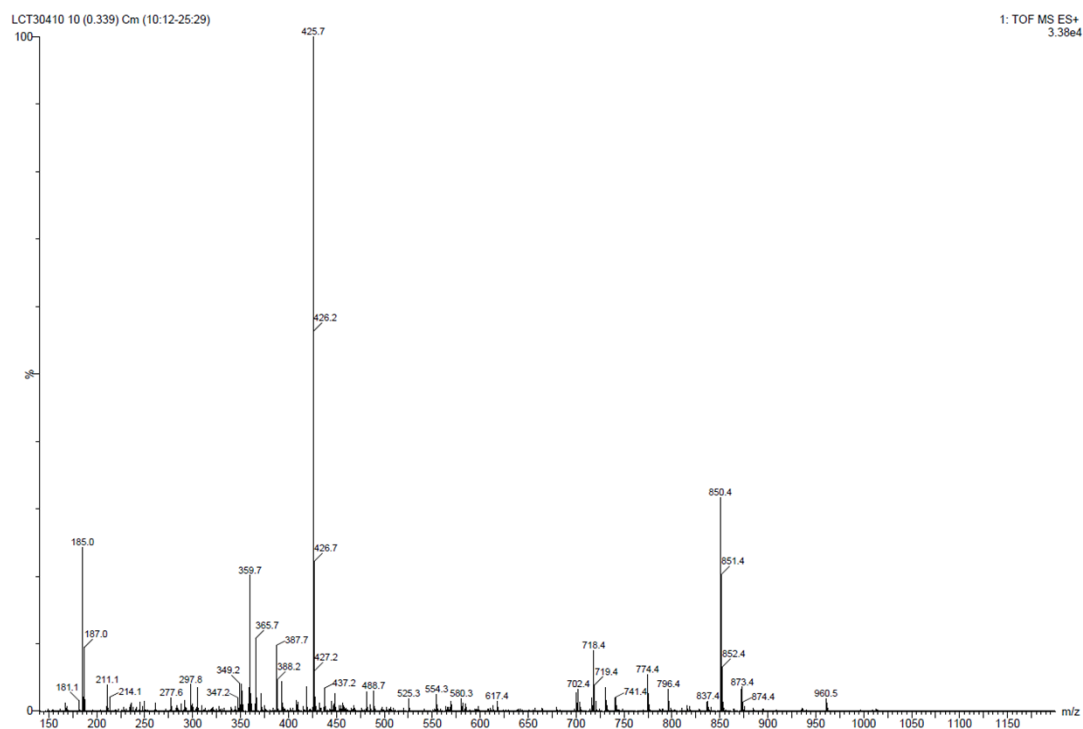


Figure S7. UV/vis. spectra of **GdL¹** (100 μ M) in HEPES buffer (0.1 M; pH = 7.4) in the presence of increasing concentrations (0 to 5 eq.) of respective metal ion.

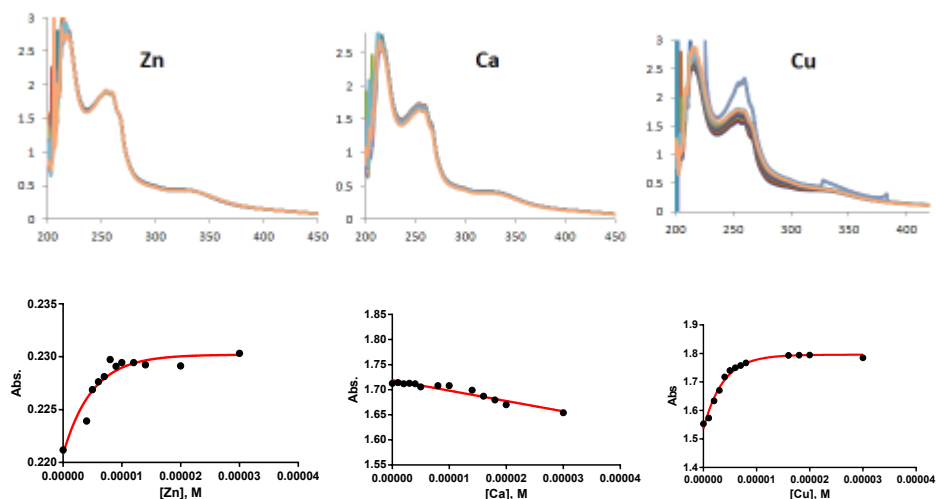


Figure S8. Fluorescence emission spectra of **GdL¹** (1 mM) in 50:50 MeOH:HEPES buffer (0.1 M; pH = 7.4) in the presence of increasing concentrations (0 to 5 eq.) of Ca^{2+} .

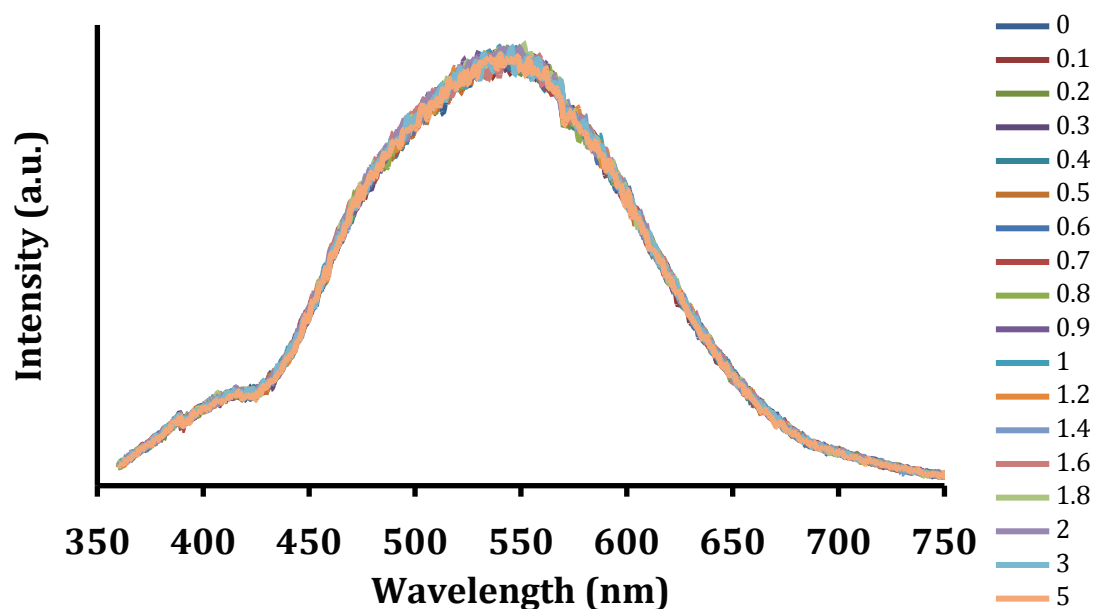


Figure S9: ^1H NMR spectrum of **4**, CDCl_3 , 298 K.

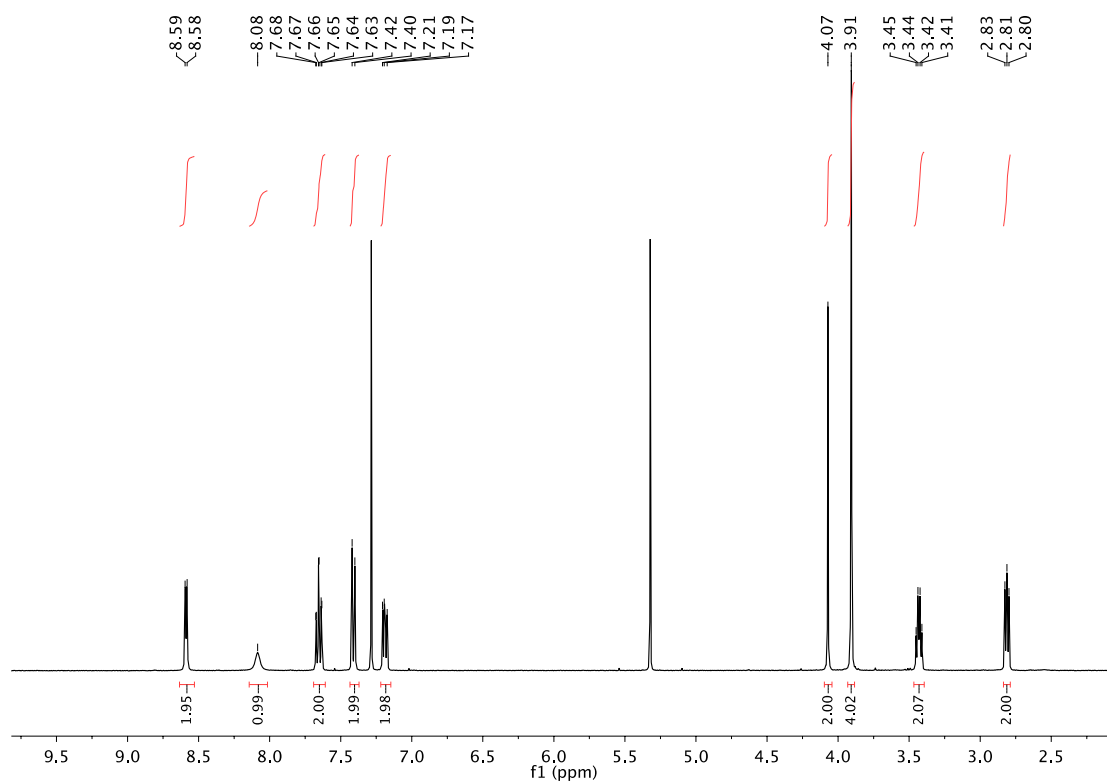


Figure S10: HR ESMS spectrum of **4**.

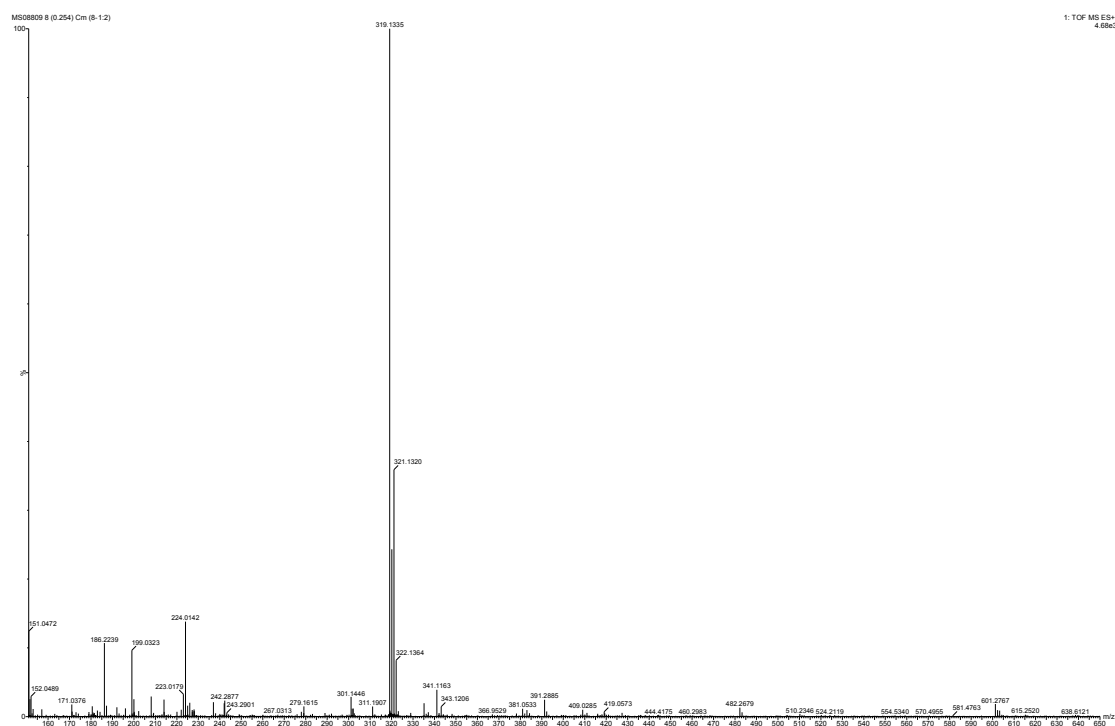


Figure S11: ^1H NMR spectrum of **5**, CDCl_3 , 298 K.

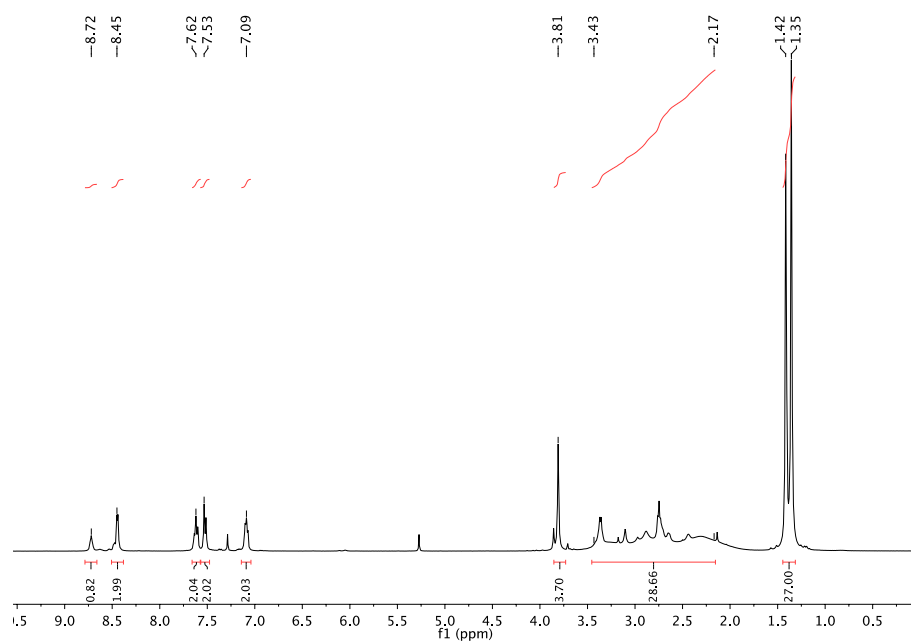


Figure S12: HR ESMS spectrum of **5**.

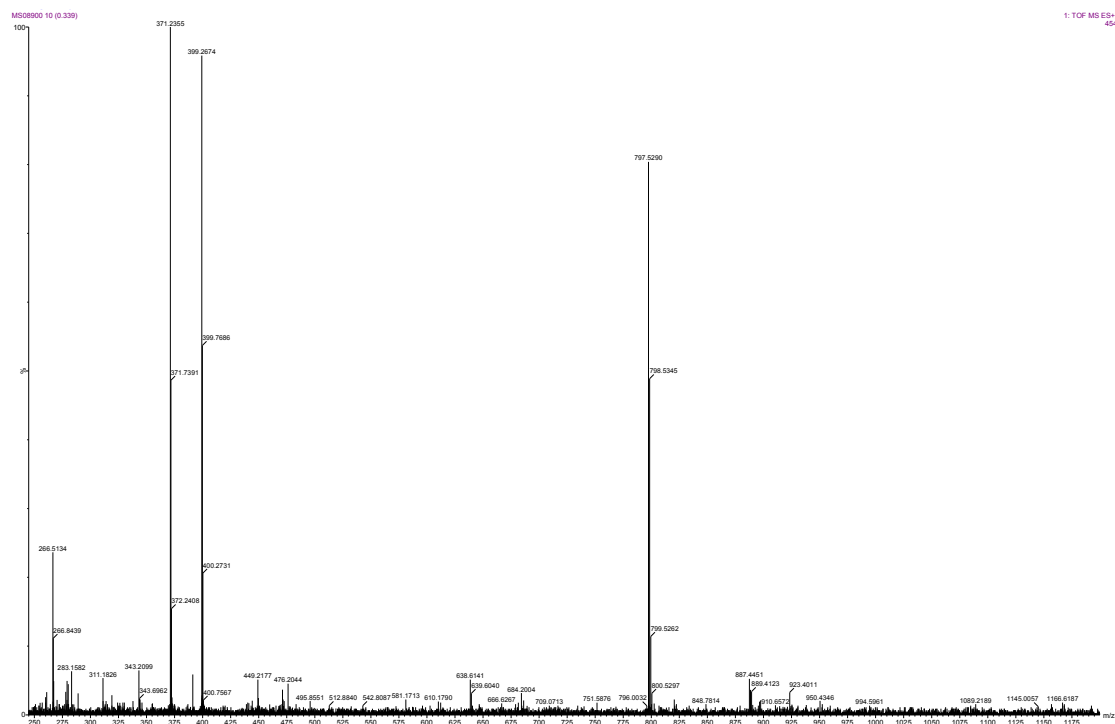


Figure S13: ^1H NMR spectrum of L^2 , D_2O , 298 K.

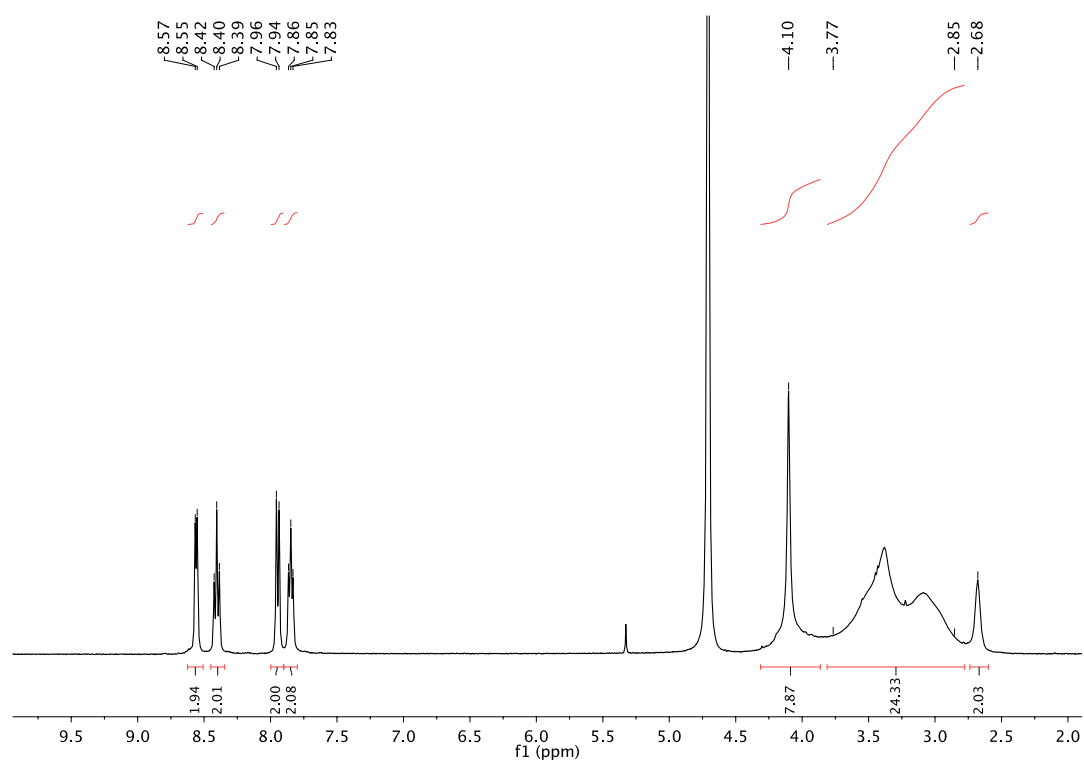


Figure S14: HR ESMS spectrum of L^2 .

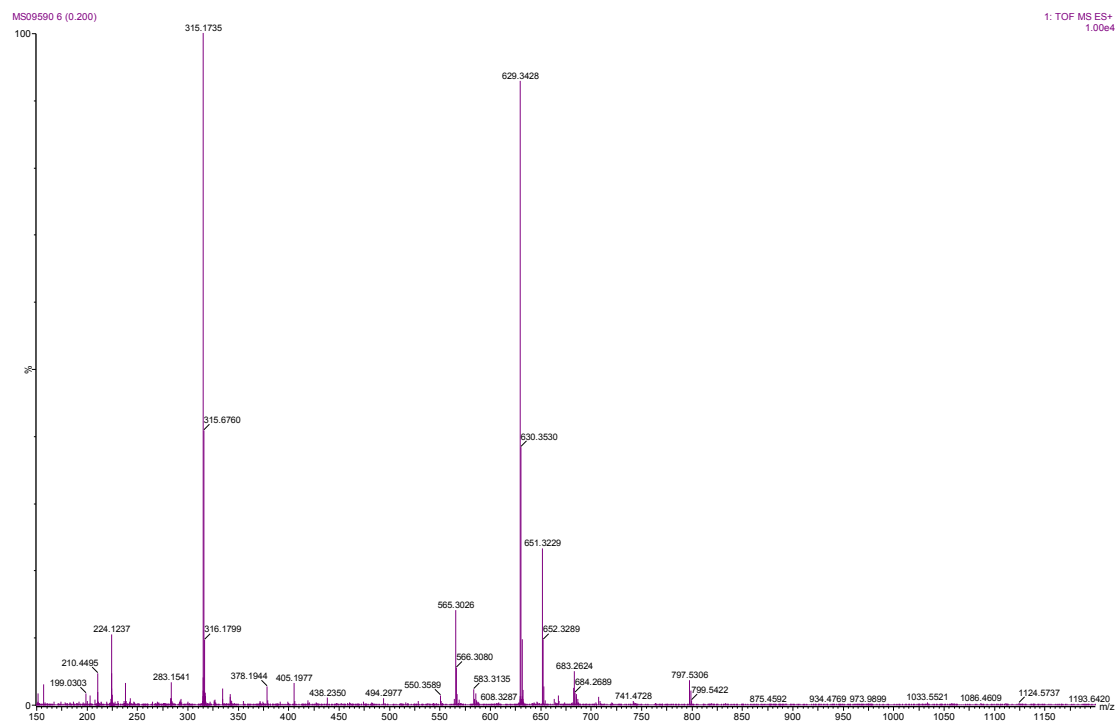


Figure S15: ESI MS spectrum of GdL^2 .

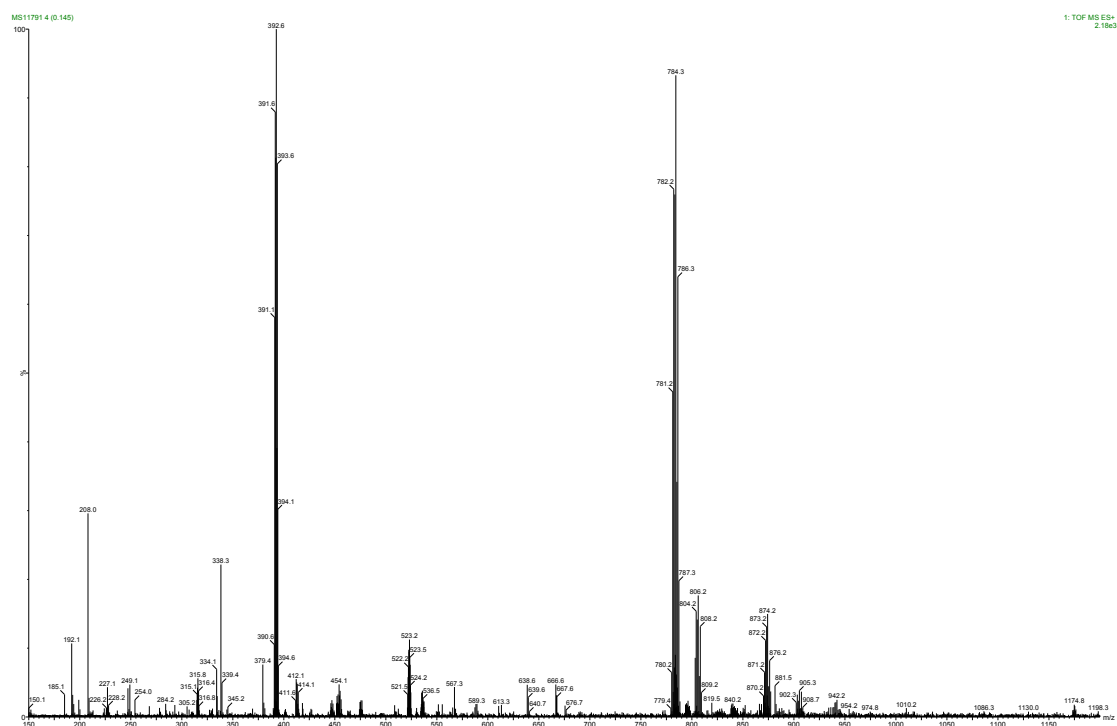


Figure S16: UV/vis. spectra of GdL^2 (100 μM) in HEPES buffer (0.1 M; pH = 7.4) in the presence of increasing concentrations (0 to 5 eq.) of Cu^{2+} .

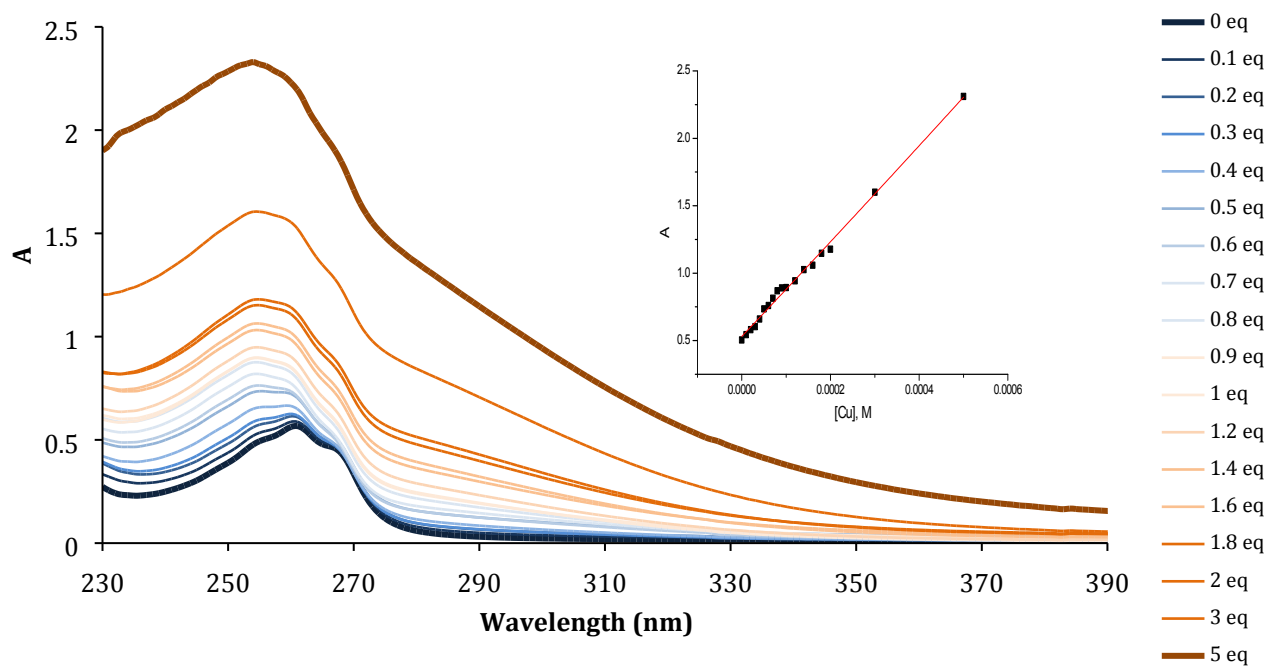


Figure S17. UV/vis. spectra of **GdL²** (100 μ M) in HEPES buffer (0.1 M; pH = 7.4) in the presence of increasing concentrations (0 to 5 eq.) of Ca^{2+} .

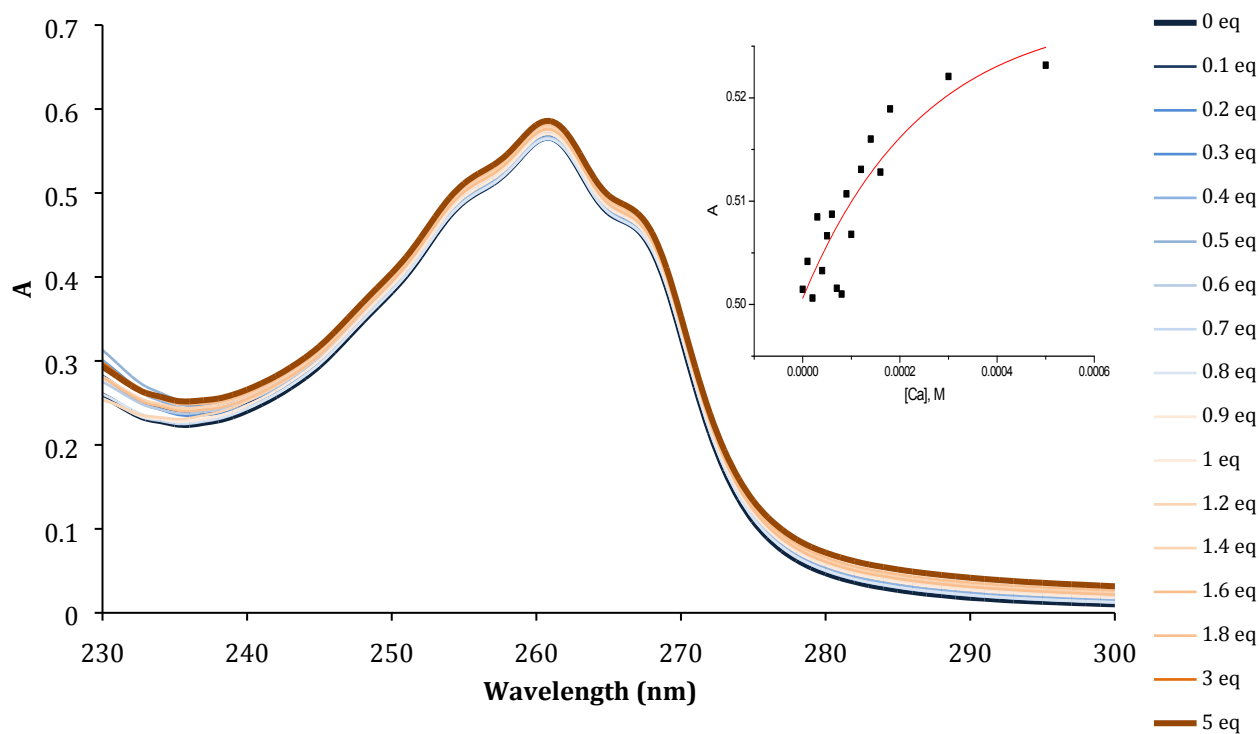


Figure S18. UV/vis. spectra of **GdL²** (100 μ M) in HEPES buffer (0.1 M; pH = 7.4) in the presence of increasing concentrations (0 to 5 eq.) of Mg^{2+} .

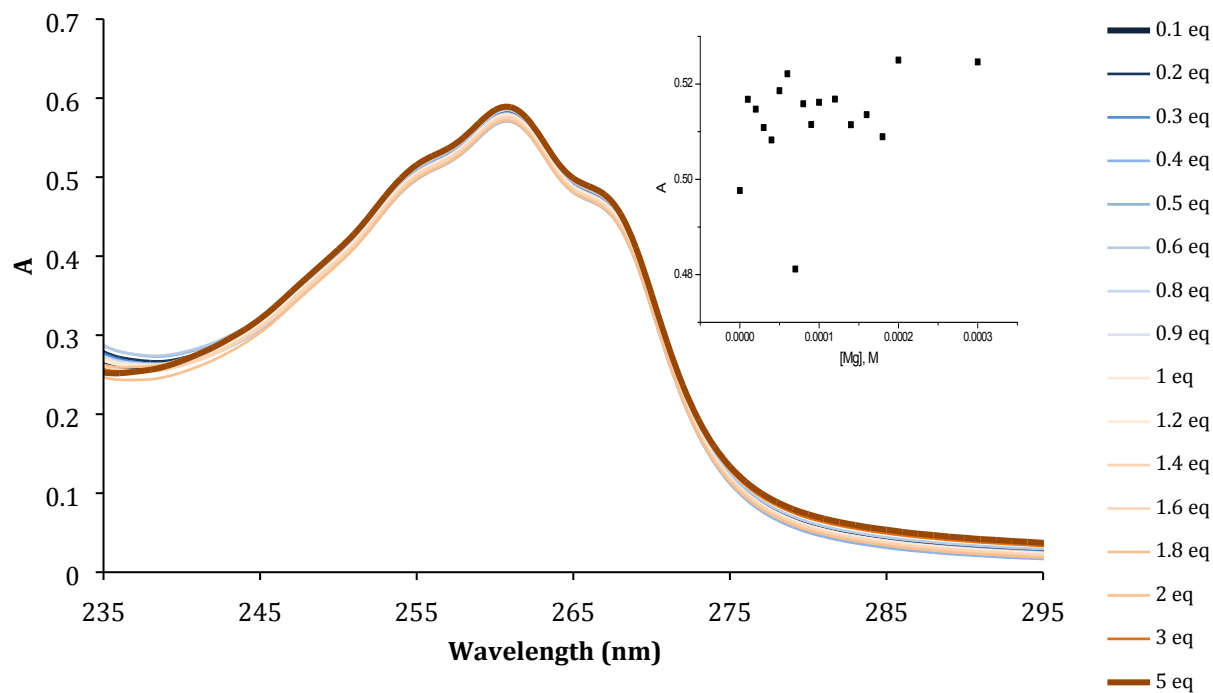


Figure S19: ^1H NMR spectrum of **6**, CDCl_3 , 298 K.

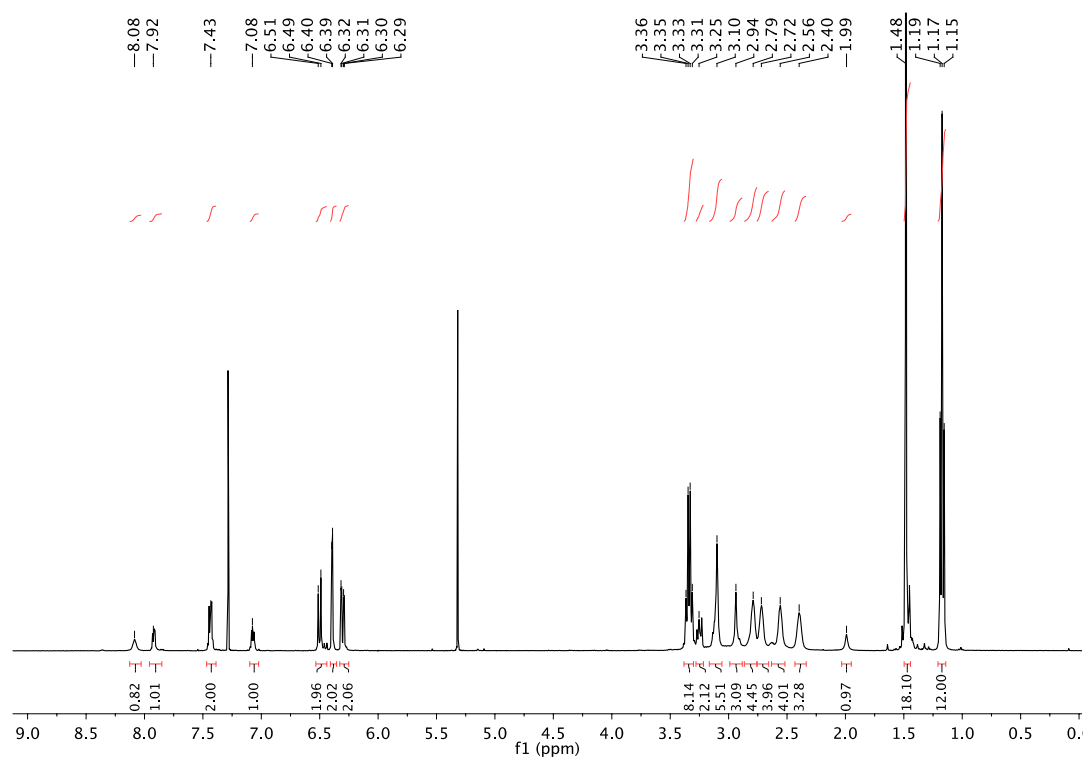


Figure S20: HR ESMS spectrum of **6**.

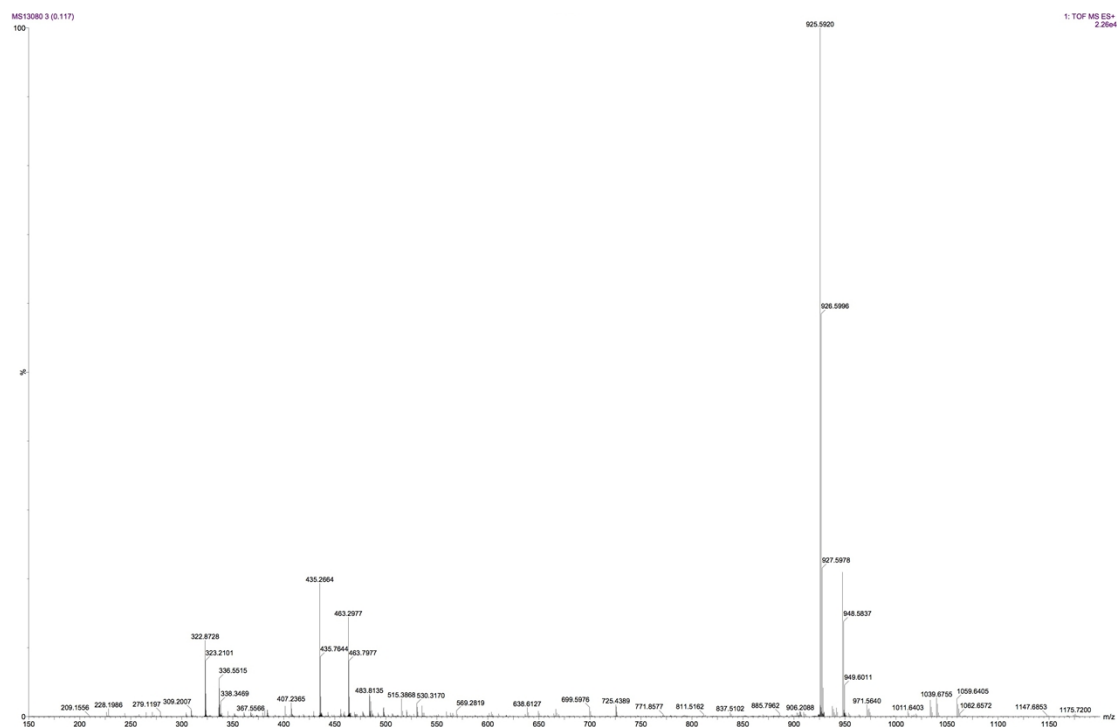


Figure S21: ^1H NMR spectrum of **7**, CDCl_3 , 298 K.

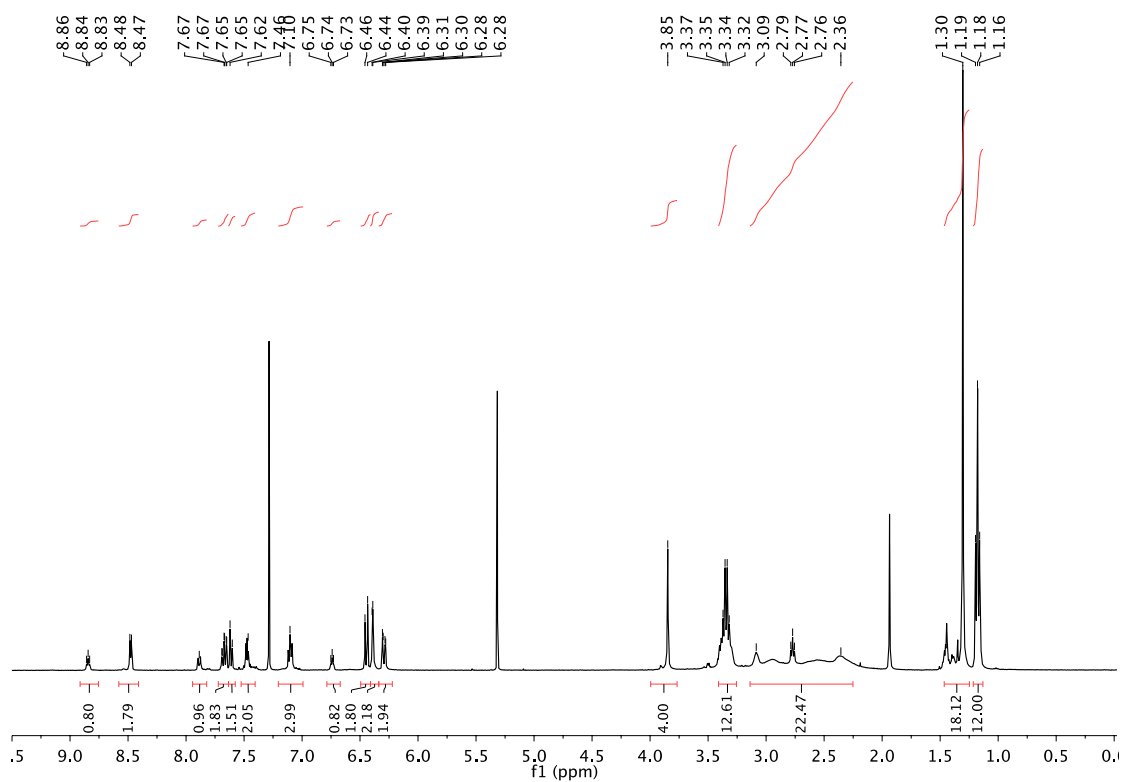


Figure S22: HR ESMS spectrum of **7**.

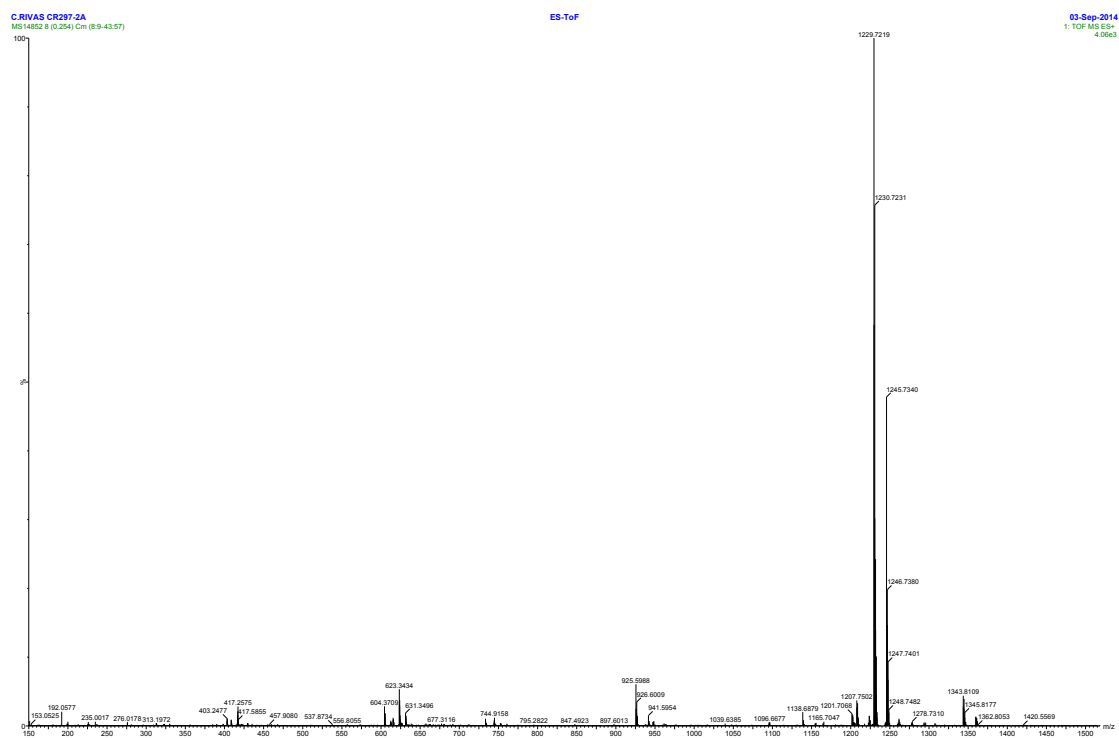


Figure S23: ^1H NMR spectrum of L^3 , CDCl_3 , 298 K.

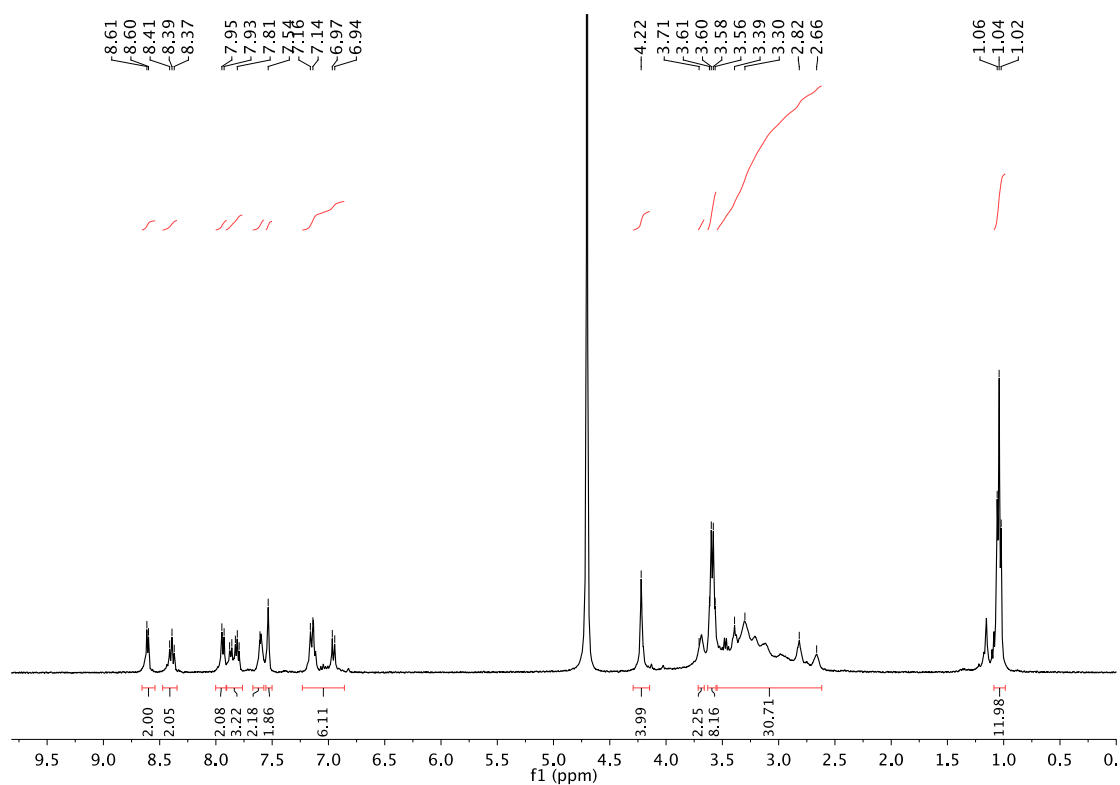


Figure S24: HR ESMS spectrum of L^3 .

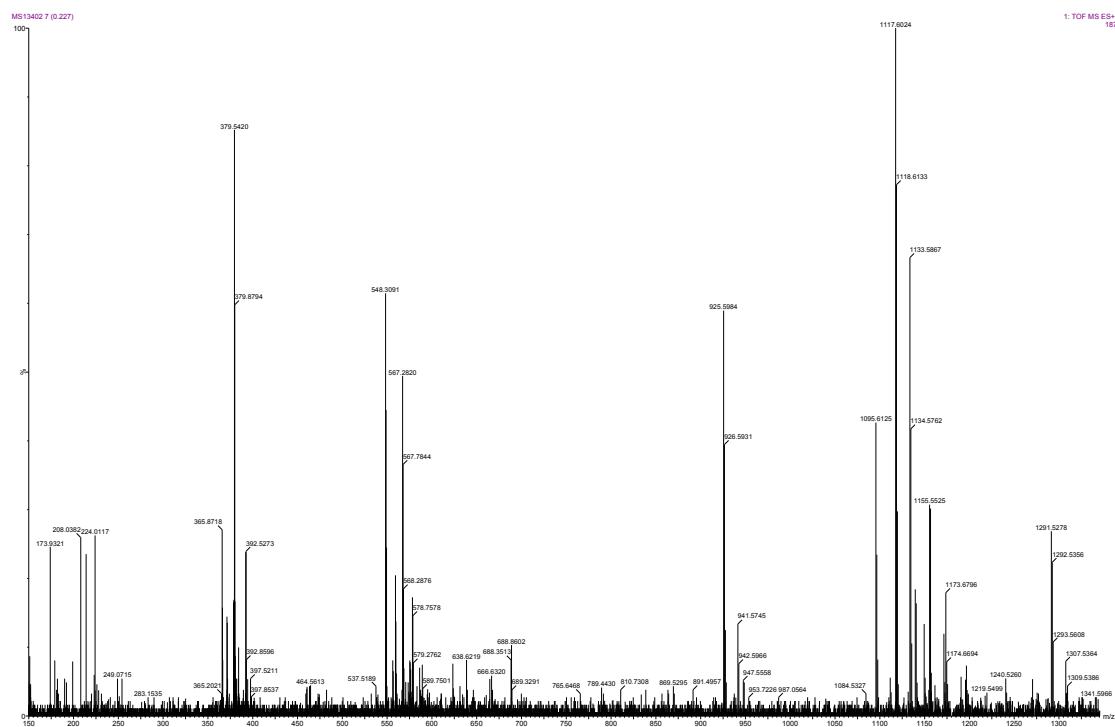


Figure S25: HR ESMS spectrum of GdL^3 .

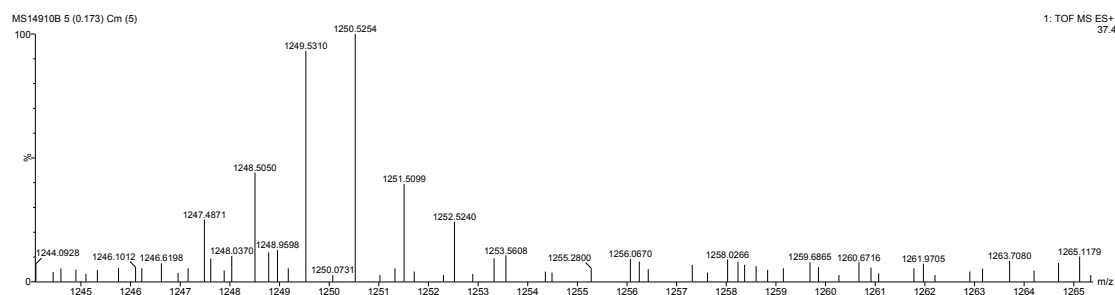


Figure S26: UV-vis spectrum of GdL^3 (100 μM) in 50:50 MeOH:HEPES buffer (0.1 M; pH = 7.4).

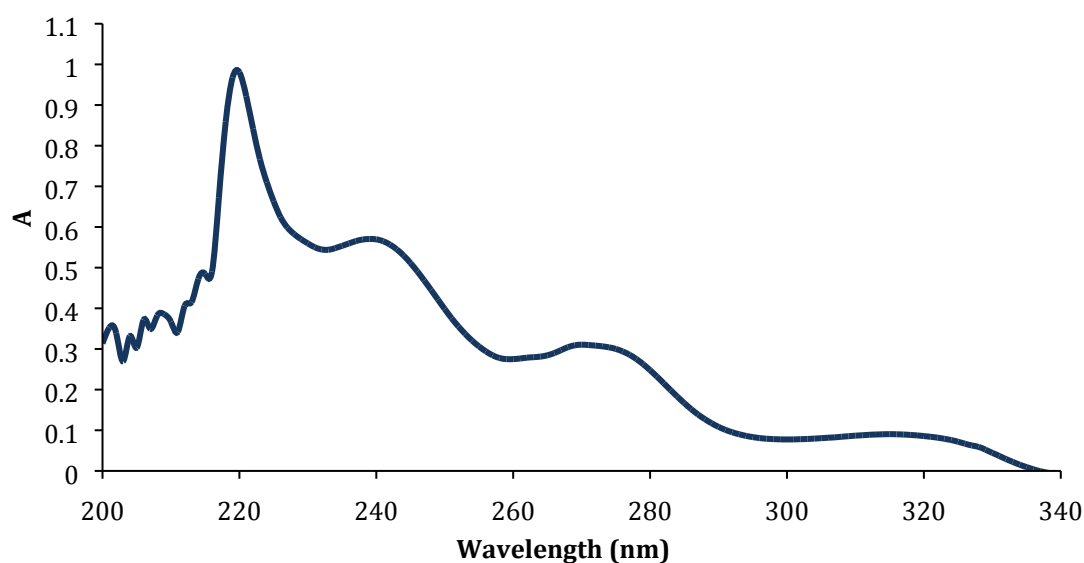


Figure S27: Fluorescence spectra of GdL^3 (100 μM) in 50:50 MeOH:HEPES buffer (0.1 M; pH = 7.4) in the presence of increasing concentrations (0 to 10 eq.) of Zn^{2+} .

