Electronic Supplementary Material (ESI) for RSC Advances

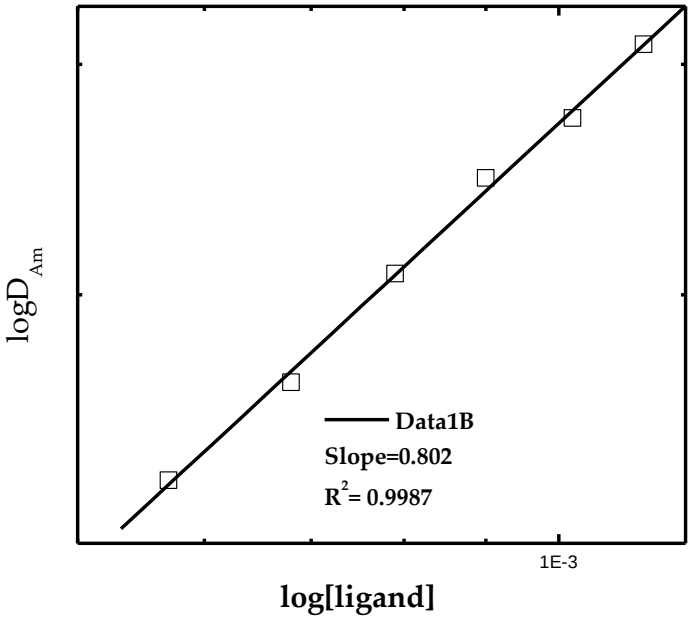
ELECTRONIC SUPPLIMENTARY MATERIAL

Complexation of trivalent lanthanides and actinides with several novel diglycolamide-functionalized calix[4]arenes: Solvent extraction, luminescence and theoretical studies

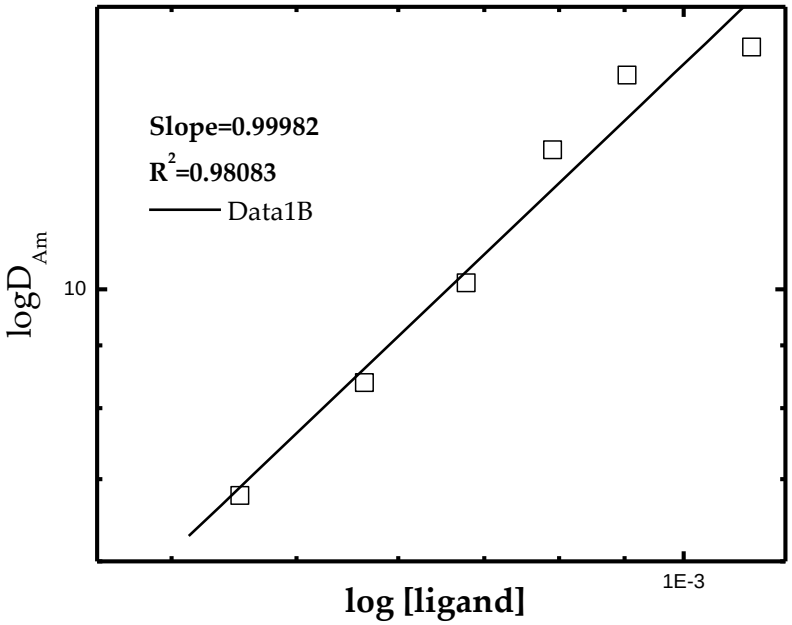
Dhaval R. Raut,[a] Prasanta K. Mohapatra,[a,*] Seraj A. Ansari,[a] Shrikant V. Godbole,[a] Mudassir Iqbal,[b] Debashree Manna,[c] Tapan K. Ghanty,[c] Jurrian Huskens[b] and Willem Verboom[b]

Solvent extraction studies

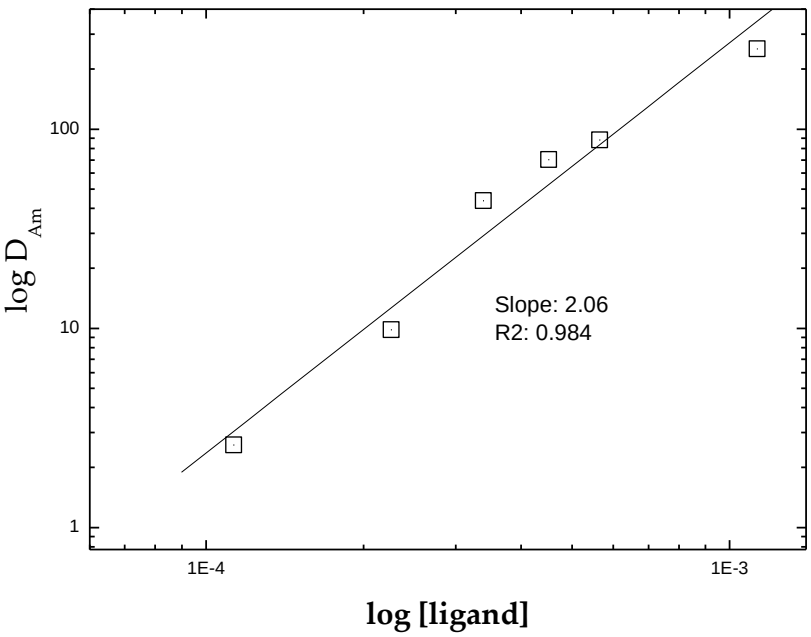
Fig. S-1: Dependence of of Am(III) extraction with C4DGA (L_I) concentration (a) NPOE; (b) Hexone; (c) Nitrobenzene; (d)Chloroform; (e) n-dodecane.



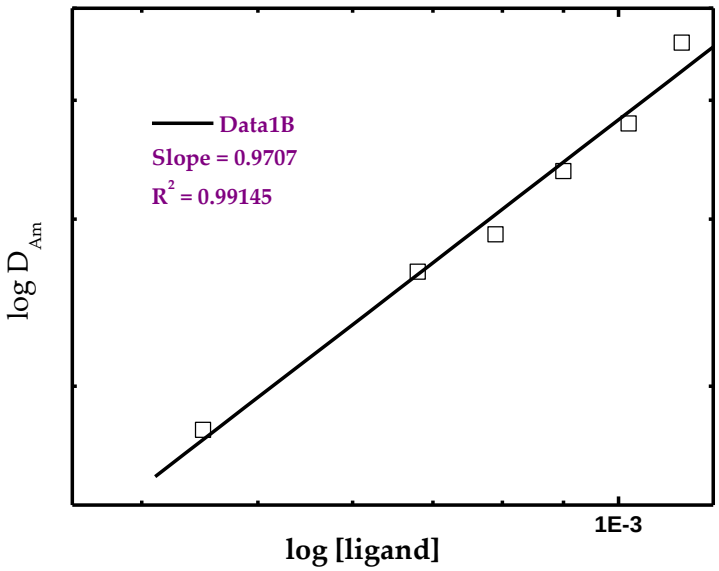
(a)



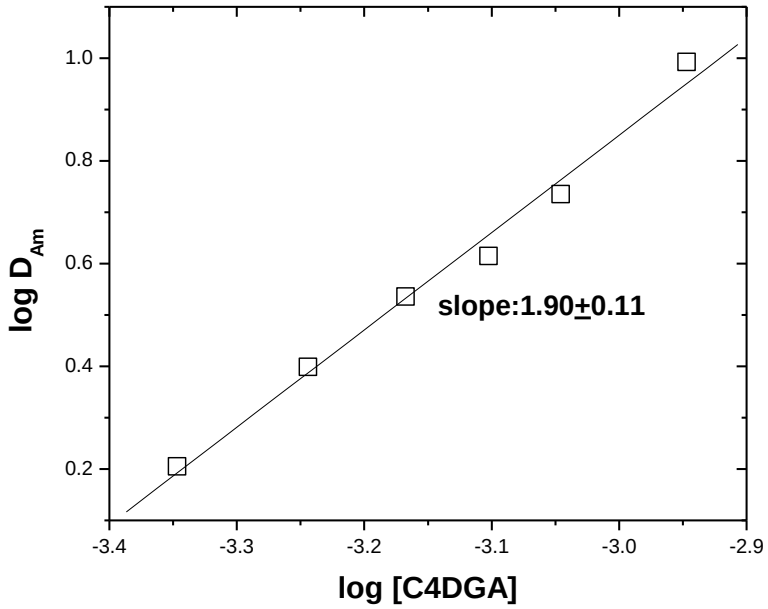
(b)



(c)

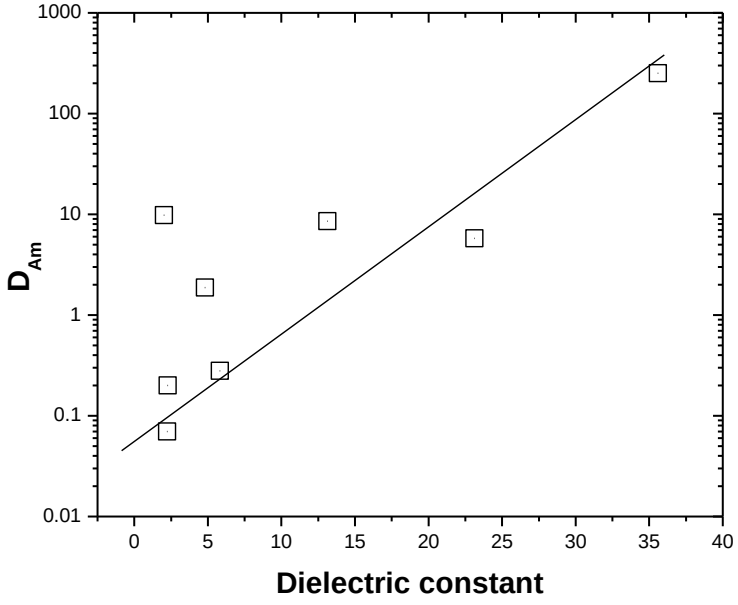


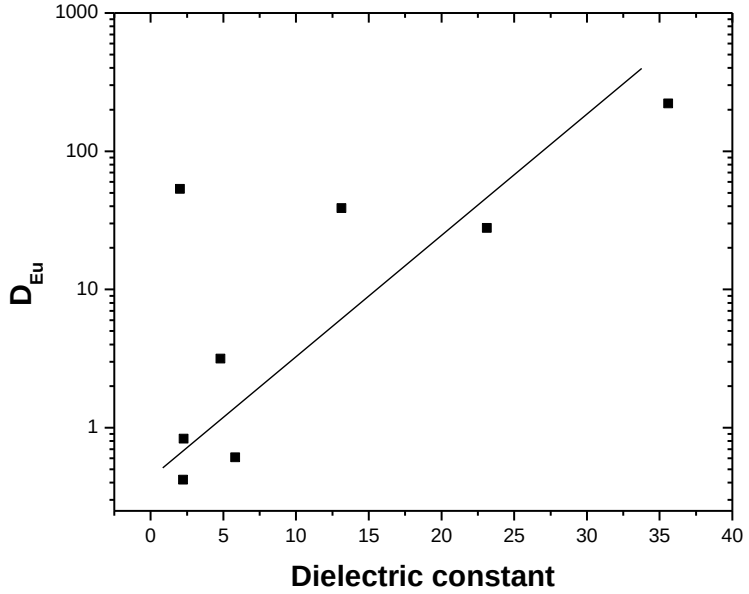
(d)



(e)

Fig. S-2: Dependence of D_{Am} and D_{Eu} on dielectric constant





Fluorescence spectroscopy studies

Table S-1: Different luminescence spectral peaks for Eu^{3+} ions. [Eu^{3+}]: 10^{-5} mol/L; Diluent: Ethanol / water (5:1) in aqueous nitrate medium at pH 3; Excitation wavelength: 535 nm

Peaks (nm)	**Transition**	**Life time (μs)**
591	$^5D_0 \rightarrow {}^7F_1$	143
617	$^5D_0 \rightarrow {}^7F_2$	158
692	$^5D_0 \rightarrow {}^7F_4$	147

Table S-2: Peak intensity ratio of $^5D_0 \rightarrow {}^7F_2$ and $^5D_0 \rightarrow {}^7F_1$ transition in luminescence spectra of Eu^{3+} solution containing 10^{-5} mol/L $Eu(NO_3)_3$ and increasing amount of ligand. Diluent: Ethanol / water (5:1) in aqueous nitrate medium at pH 3; Excitation wavelength: 535 nm.

[Ligand] / [Metal]	**I_{617} / I_{591}**
0.0	1.02
0.05	1.21
0.10	1.40
0.20	1.45
0.30	1.61
0.40	1.62
0.60	1.49
0.80	1.59
1.0	1.64
1.5	1.70
2.0	1.65
5.0	1.66