Electronic Supplementary Material (ESI) for Dalton Transactions.

Fulvic acid complexation of Eu(III) and Cm(III) at elevated temperatures studied by time-resolved laser fluorescence spectroscopy

Supporting information

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Table S1. f_i factors of the different Eu(III)-FA complexes at T = 20 - 80 °C. The f_i factor of the Eu(III) aquo ion at each temperature is defined to be 1.

	20°C	40°C	60°C	80°C
Gohy-573	17.4	10.1	5.5	3.9
SR	5.0	2.8	2.1	1.9
NL	7.2	3.4	2.4	1.6

Table S2. Results of the slope analyses of the complexation of Eu(III) and Cm(III) with the different FAs (Gohy-573, SR, NL) in 0.1 m NaCl solution..

T / °C	Eu(III)			Cm(III)		
	Gohy-573	SR	NL	Gohy-573	SR	NL
20	0.95 ± 0.20	1.06 ± 0.14	1.00 ± 0.11	1.14 ± 0.07	1.07 ± 0.07	1.12 ± 0.06
40	0.94 ± 0.10	0.91 ± 0.06	1.14 ± 0.09	1.11 ± 0.07	1.28 ± 0.08	1.19 ± 0.07
60	0.96 ± 0.09	1.13 ± 0.07	1.14 ± 0.08	1.26 ± 0.08	1.27 ± 0.08	1.27 ± 0.08
80	1.08 ± 0.12	1.14 ± 0.14	0.85 ± 0.12	1.14 ± 0.07	1.18 ± 0.08	1.15 ± 0.08

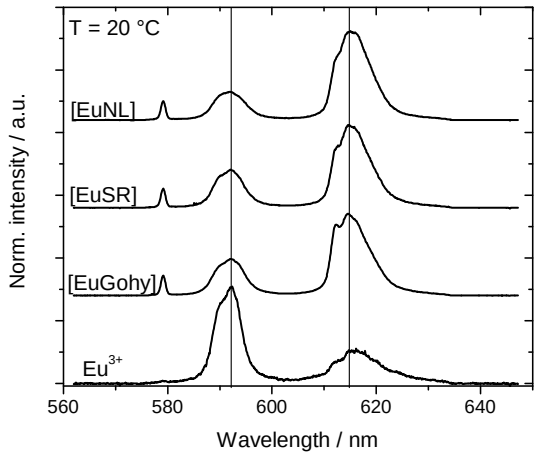

Figure S1. Single component spectra of $Eu(III)_{aq}$ and Eu(III)-FA complexes (FA = Gohy-573, SR, NL) at room temperature in 0.1 m NaCl solution ($[H^+] = 10^{-4}$ mol/kg) obtained by peak deconvolution.

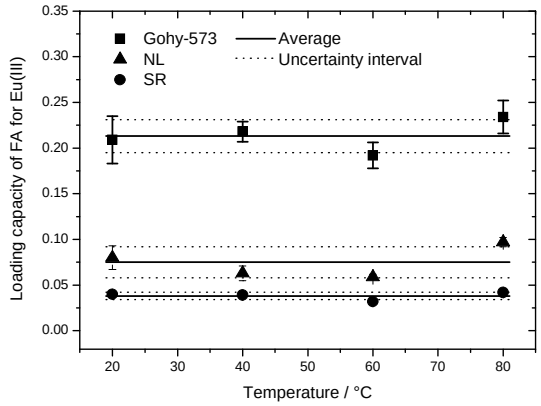

Figure S2. Loading capacities of different FAs for Eu(III) as a function of the temperature in 0.1 m NaCl solution (at $[H^+]_{total} = 10^{-4}$ mol/kg) together with the average values and uncertainty intervals.

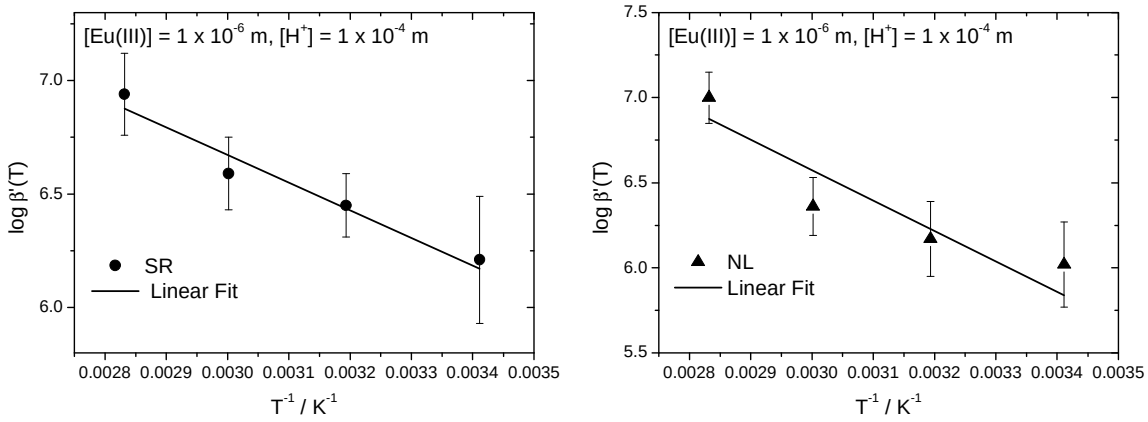

Figure S3. Arrhenius plot of $\log \beta'(T)$ (given in Table 1) of the complexation of Eu(III) with SR and NL FA in 0.1 m NaCl solution.

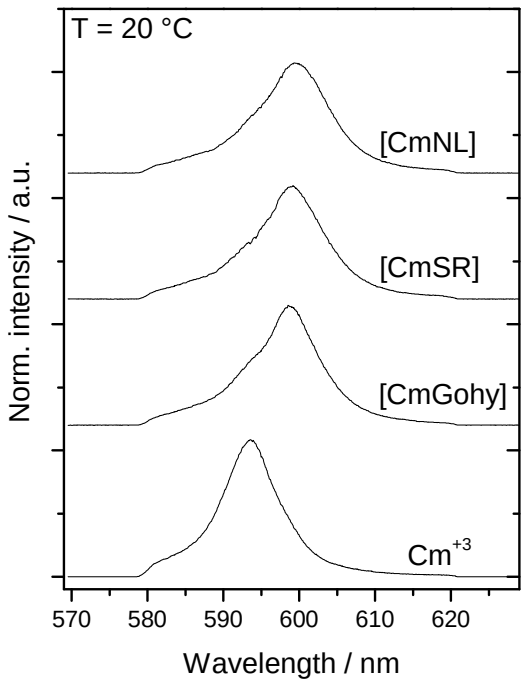

Figure S4. Single component spectra of $Cm(III)_{aq}$ and Cm(III) FA complexes (FA = Gohy-573, SR, NL) determined by peak deconvolution at room temperature in 0.1 m NaCl solution ($[H^+] = 10^{-4}$ mol/kg).

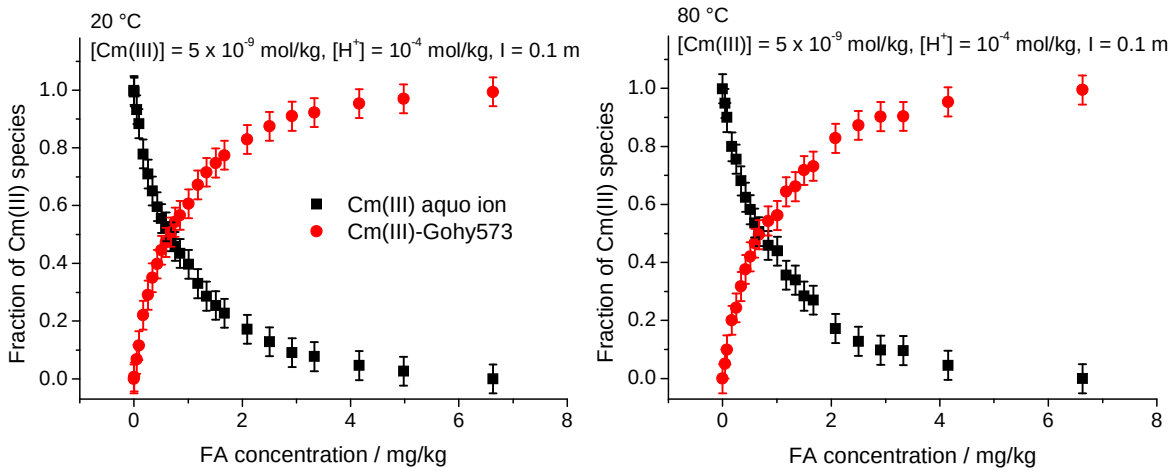

Figure S5. Cm(III) speciation in the presence of Gohy-573 FA as a function of ligand concentration at T = 20 and 80 °C in 0.1 m NaCl solution ($[H^+] = 10^{-4}$ mol/kg).

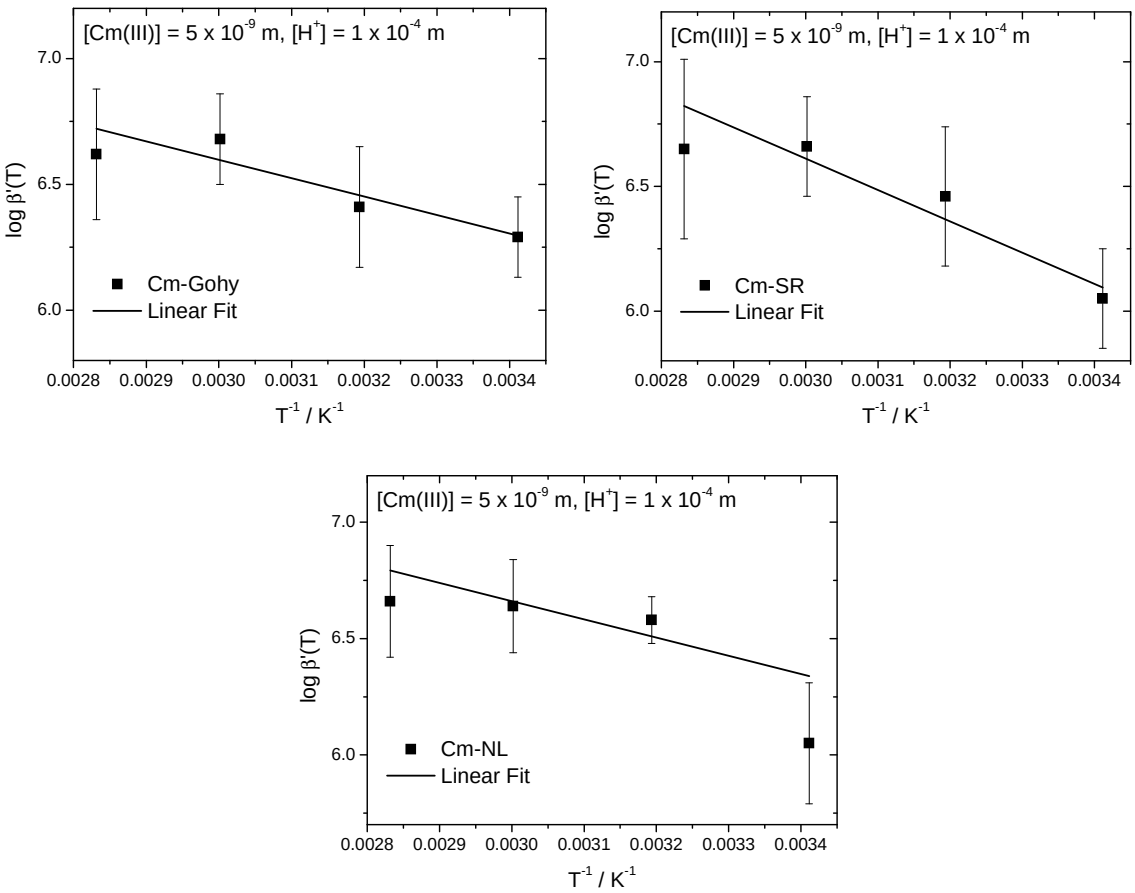

Figure S6. Arrhenius plot of $\log \beta^{'}(T)$ (given in Table 3) for the interaction of Cm(III) with Gohy-573, SR and NL FA in 0.1 m NaCl solution.