ELECTRONIC SUPPORTING INFORMATION

Diglycolamide-Functionalized Task Specific Ionic Liquids for Nuclear Waste Remediation? Extraction, Luminescence, Theoretical and EPR Investigations

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ICP-AES Analysis (Instrumental specifications)

Table S-1: Specifications and operating conditions of ICP-AES

Instrumental specification	
Optical design	Paschen runge mounting, Circular design
Grating	Holographic
Groove density	1800 grooves/mm (1), 3600 grooves/mm (2)
Wave length range	130-800 nm
Entrance slit width	15 microns
Resolution (FWHM)	0.01 nm from 130-450 nm
	0.02 nm from 450-800 nm
Thermal regulation	Controlled to 30 ± 1 °C
Frequency	27.12 MHz
Pump	Dual channel peristaltic pump
Detector	Linear arrays of CCD (3648 pixels/array)
Nebulizer	Concentric nebulizer with cyclonic spray chamber
ICP-torch	Demountable, radial viewing
Operating condition	
Coolant flow	6 L/min
Auxiliary flow	0.6 L/mim
Total time of measurement	28 S
Pump speed	30 Rpm
RF power out put	0.8 – 1.5 kW
Input power	230 V AC

Luminescence studies

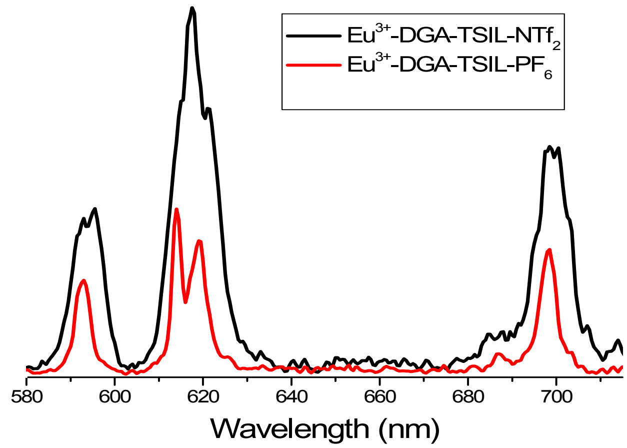

Fig. S-1. Emission profile of the Eu^{3+}-DGA-TSIL complexes.

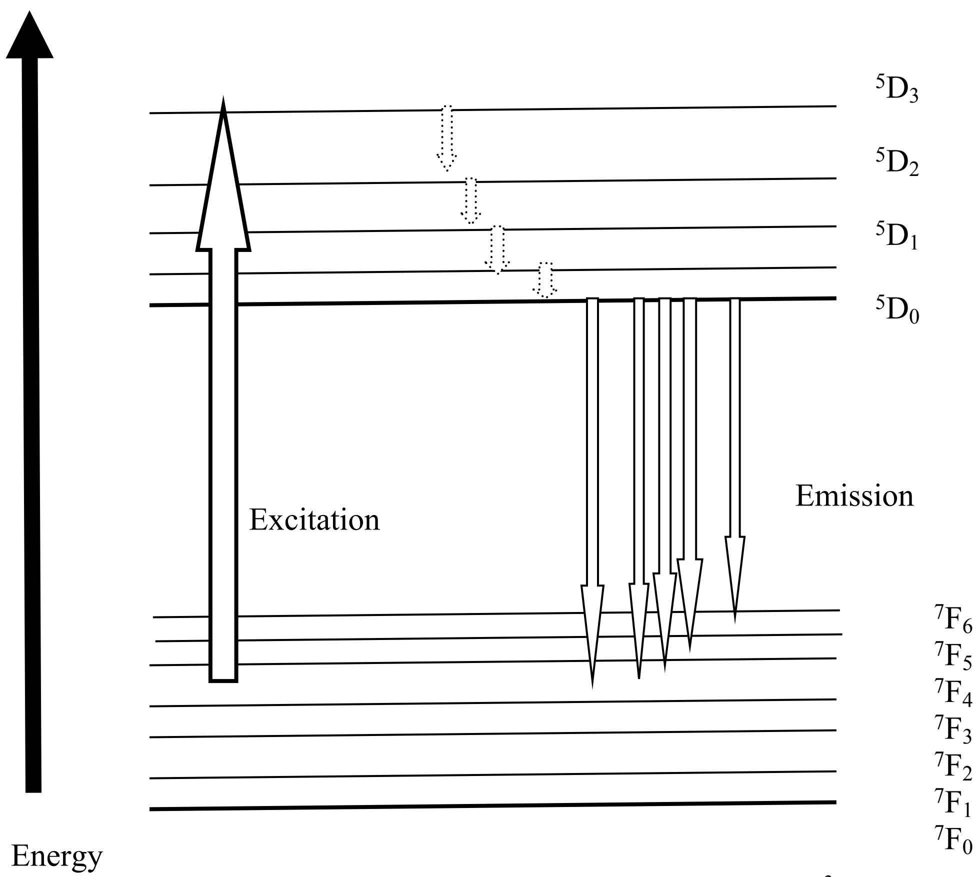

Fig. S-2. Schematic energy level diagram of Eu^{3+}.

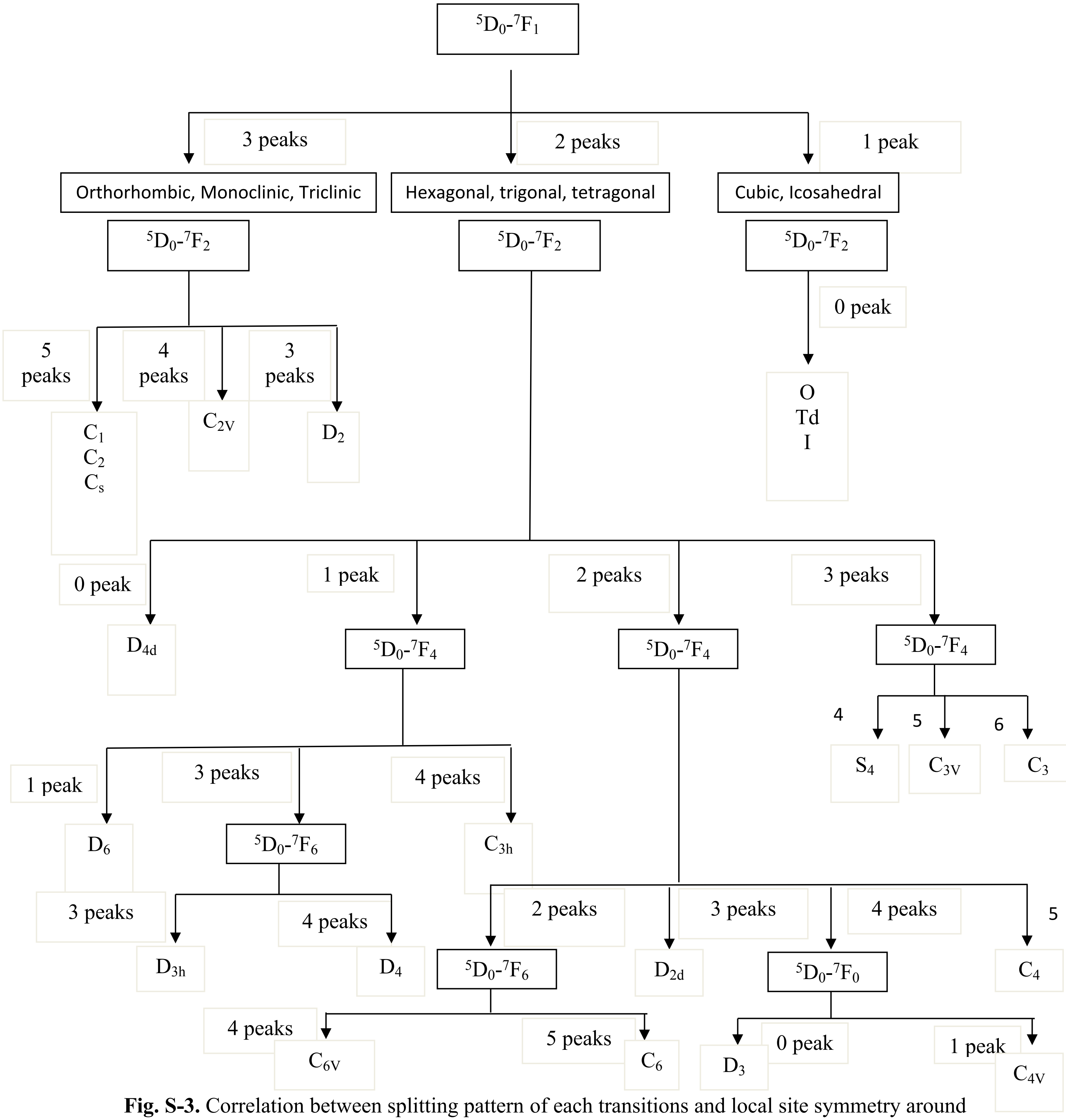

Fig. S-3. Correlation between splitting pattern of each transitions and local site symmetry around Eu^{3+}.

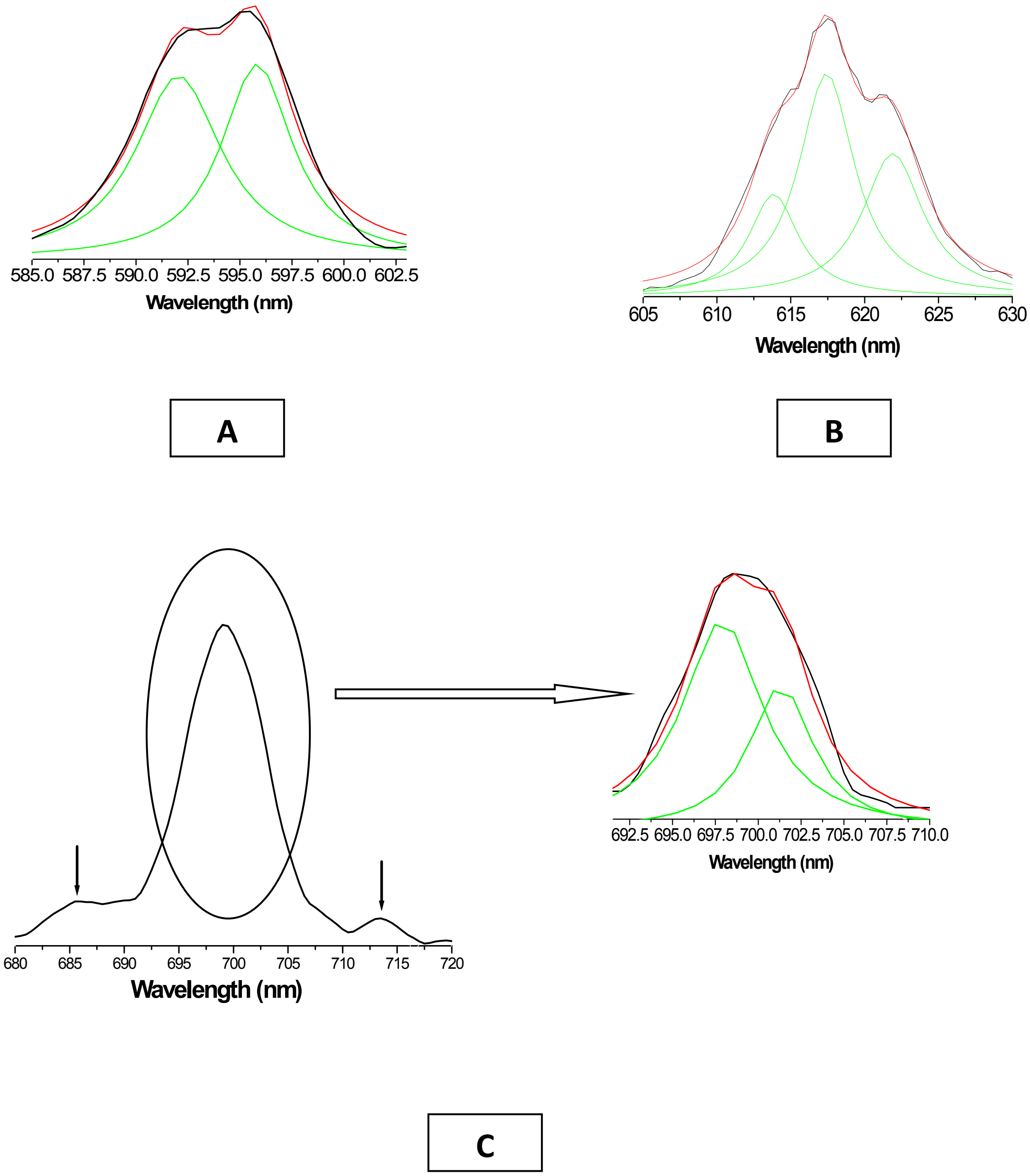

Fig. S-4. Splitting pattern of different transitions in the Eu^{3+}-DGA-TSIL- NTf_2 complex: A –$^5D_0$-$^7F_1$ transition – 2 peaks, B - $^5D_0$-$^7F_2$ transition – 3 peaks, C – $^5D_0$-$^7F_4$ transition – 4 peaks, S_4 symmetry.

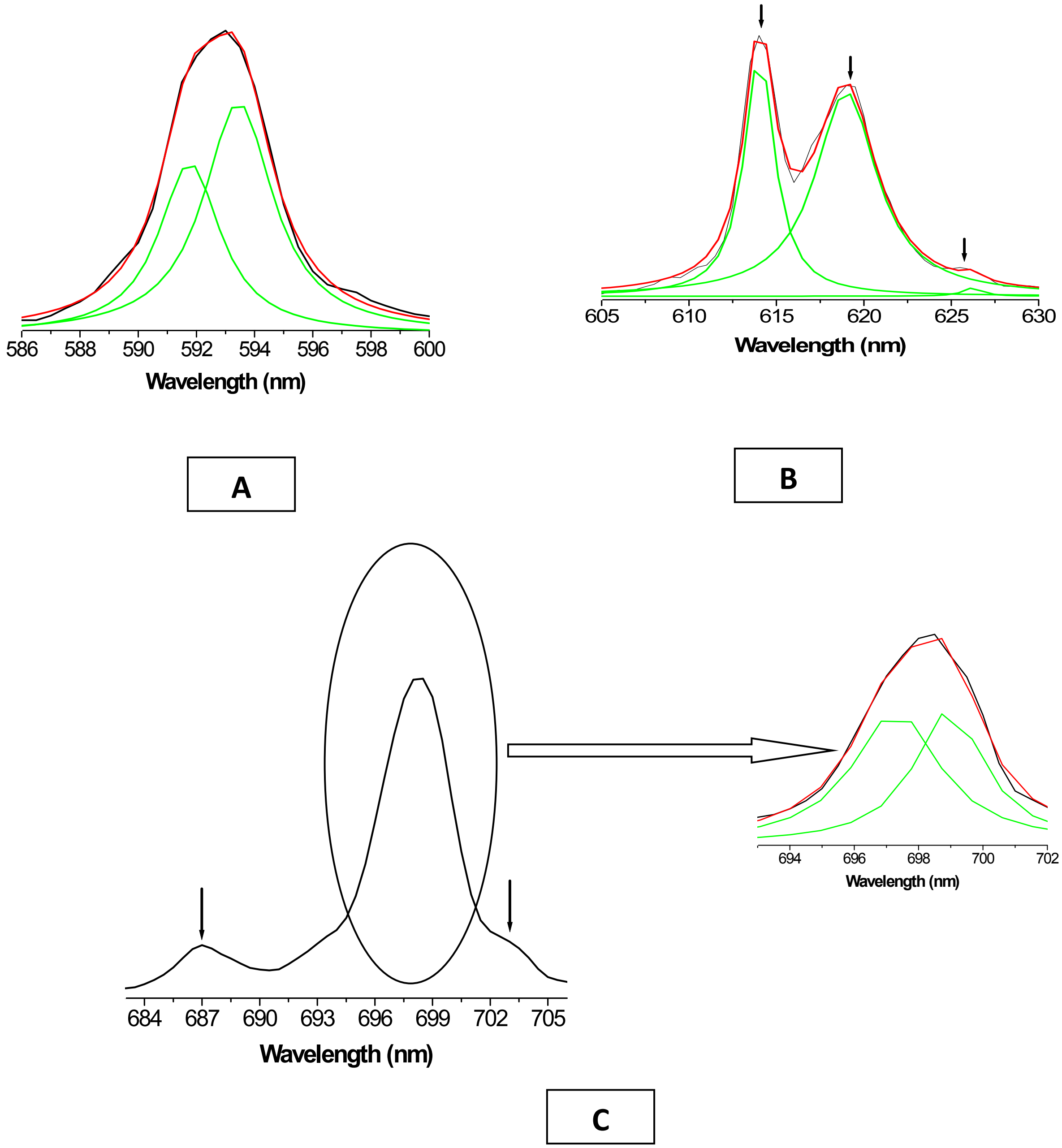

Fig. S-5. Splitting pattern of different transitions in the Eu^{3+}-DGA-TSIL- PF_6 complex: A –$^5D_0$-$^7F_1$ transition – 2 peaks, B - $^5D_0$-$^7F_2$ transition – 3 peaks, C – $^5D_0$-$^7F_4$ transition – 4 peaks, S_4 symmetry.

Radiolytic degradation studies:

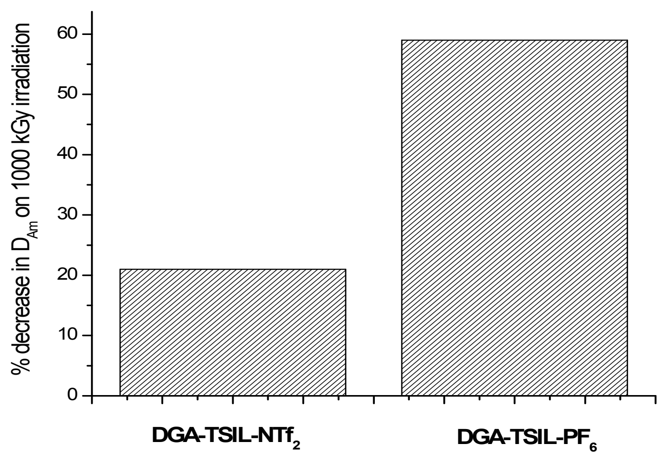

Fig. S-6. Effect of radiolytic degradation on the extraction of Am using the DGA-TSILs.

EPR studies

Table S-2: List of instrumental parameters of the EPR spectrometer.

No of scans	15
Receiver gain	1.00E+04
Modulation frequency	100 kHz
Modulation amplitude	1 G
Microwave power	7.908 mW
Microwave frequency	9.4396 GHz