Supporting info

Structural and optical properties of Vernier phase lutetium oxyfluorides doped with lanthanide ions: interesting candidates for scintillator and X-Ray phosphors

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Table ST1. Infrared (IR) and Raman energies for the lutetium oxyfluoride.

IR (cm^{-1})	**Raman (cm^{-1})**
	66
77	
93	
	~120 (sh)
122	
	130
	140
146	
157	
	~175 (w, sh)
180	
	~200 (sh)
	204
	215 (broad)
218	
	225
	260
264	
287	
	292 (w)
	~324 (sh)
	~340 (sh)
	365

407	
	439
457	
	524
544	
	568
	639
642	
	656

Table ST2. Effective decay times for the Pr^{3+} doped lutetium oxyfluoride sample measured at different temperatures (λ_{exc}=470 nm, λ_{em}=653 nm)

T (K)	τ_{eff} (μs)
10	16.8 ± 0.3
50	17.4 ± 0.3
100	16.7 ± 0.3
150	16.8 ± 0.3
200	17.1 ± 0.3
250	16.9 ± 0.3
300	17.3 ± 0.3

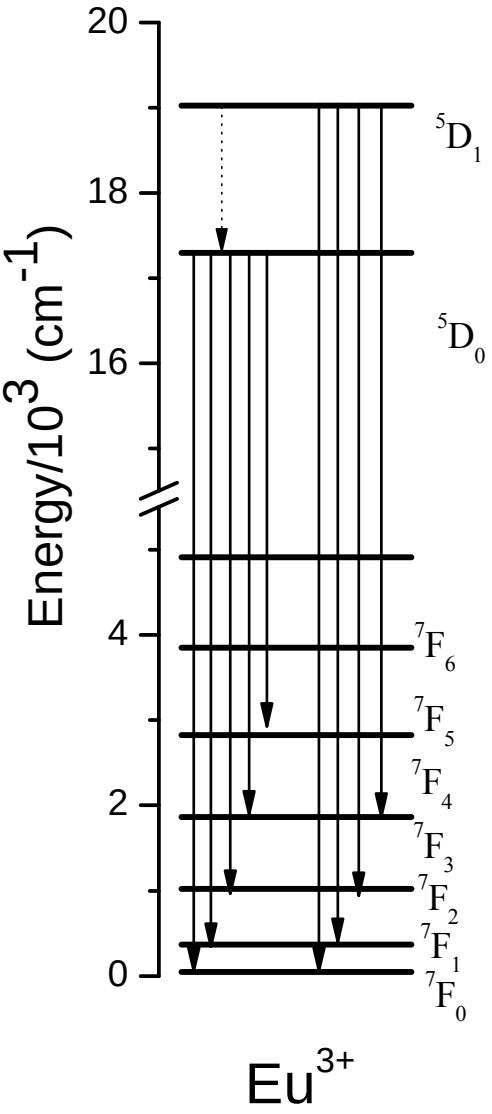

Figure SF1. Energy levels, radiative (solid lines) and non-radiative (dotted line) transitions for the Eu^{3+} ion.

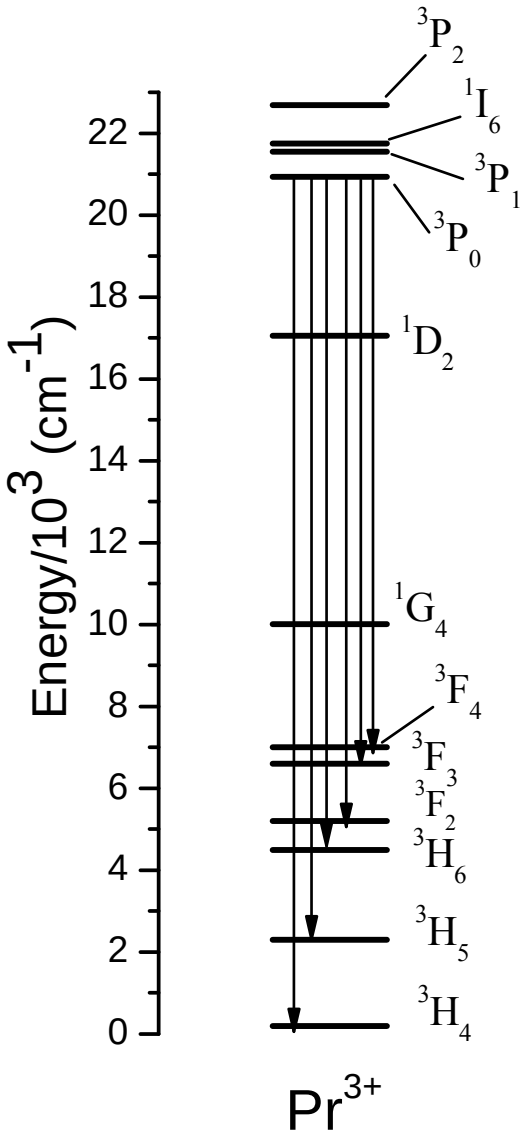

Figure SF2. Energy levels and radiative transitions for Pr^{3+}.

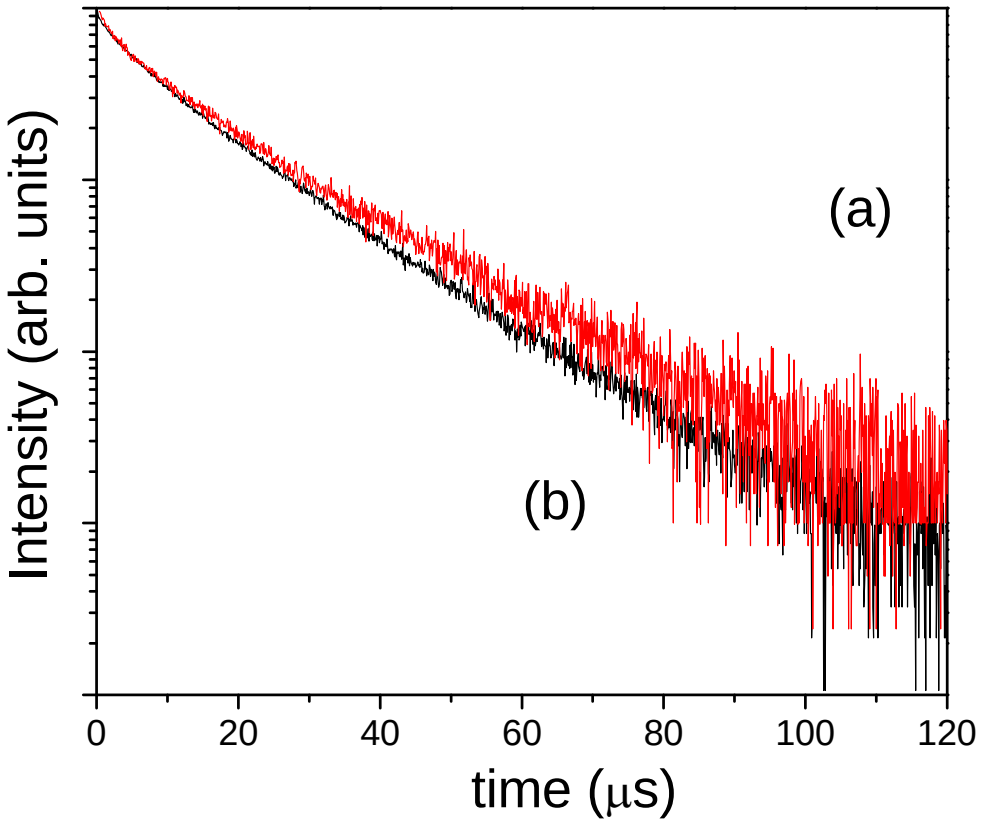

Figure SF3. Emission decay curves (λ_{exc}=470 nm, λ_{em}=650 nm) for Pr^{3+} doped lutetium oxyfluoride at 10 K (a, red line) and RT (b, black line).