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ARTICLE TYPE

Rietveld refinement, cluster modelling, growth mechanism and photoluminescence properties of $\text{CaWO}_4\text{:Eu}^{3+}$ microcrystals

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Table S1: Lattice parameters, unit cell volume, site occupancy and statistical parameters of quality obtained by Rietveld refinement for the $\text{CaWO}_4\text{:Eu}^{3+}$ crystals (with 0, 1, 2 and 4 mol% Eu^{3+})

$\text{CaWO}_4\text{:Eu}^{3+}$ crystals	Parameters		Cell volume ($\text{\AA}^3$)	R_{Bragg} (%)	R_{wp} (%)	R_{p} (%)	χ^2	CCDC Number*
	$a = b$ ($\text{\AA}$)	c ($\text{\AA}$)						
0 mol%	5.244(79)	11.381(30)	313.076(50)	2.58	6.66	5.00	1.95	1032997
1 mol%	5.247(01)	11.384(60)	313.431(80)	4.68	7.29	5.48	2.24	1032998
2 mol%	5.246(43)	11.383(57)	313.333(90)	2.96	7.99	5.91	2.34	1032999
4 mol%	5.246(82)	11.381(43)	313.321(70)	2.35	6.33	4.72	1.97	1033000

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Table S2: Length of chemical bond [W–O] e angles between [O–W–O] for the $\text{CaWO}_4\text{:Eu}^{3+}$ crystals (with 0, 1, 2 and 4 mol% Eu^{3+})

$\text{CaWO}_4\text{:Eu}^{3+}$ crystals	Length of chemical bond ($\text{\AA}$) [W–O]	Angles ($^\circ$) [O–W–O]	
		α	β
0 mol%	1.76	114.64	106.95
1 mol%	1.71	114.74	106.90
2 mol%	1.77	114.12	107.20
4 mol%	1.75	113.90	107.30

* <http://www.ccdc.cam.ac.uk>

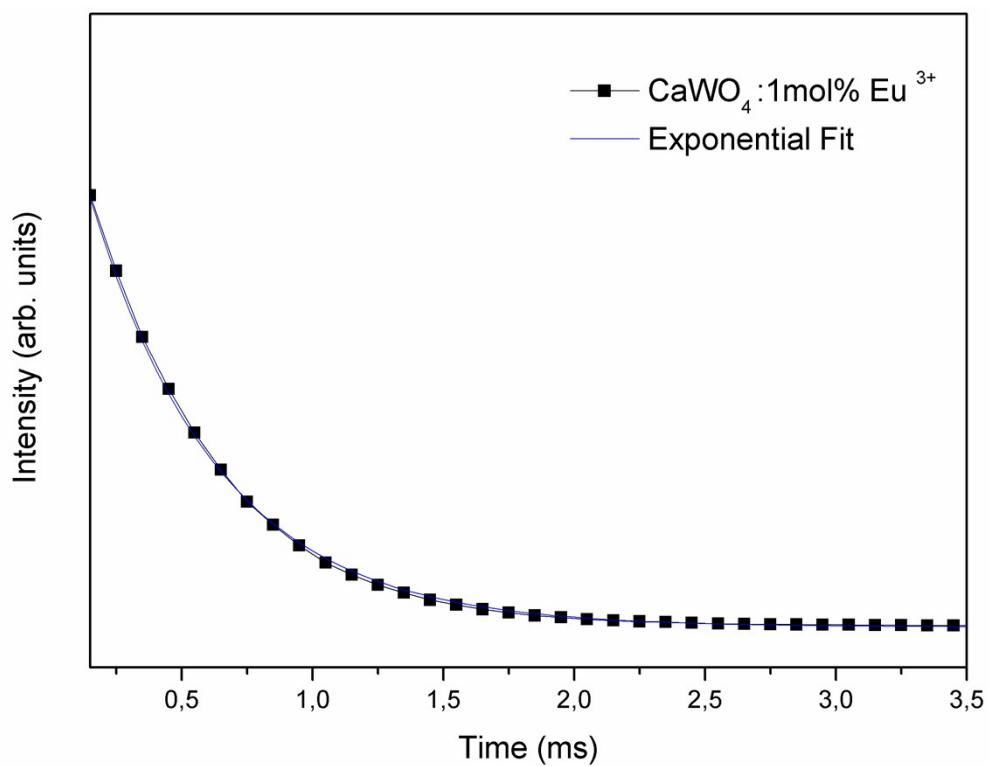
Table S3: Length of chemical bond [Ca–O] / [Eu–O] and angles between [O–Ca–O] / [O–Eu–O] for the CaWO₄:Eu³⁺ crystals (with 0, 1, 2 and 4 mol% Eu³⁺)

CaWO ₄ :Eu ³⁺ crystals	Length of chemical bond (Å) [Ca–O] / [Eu–O]		Angles (°) [O–Ca–O] / [O–Eu–O]							
			A	β	Γ	δ	ε	ω	η	ρ
0 mol%	2.47	2.47	68.62	72.94	76.96	79.89	98.52	125.99	134.72	152.08
1 mol%	2.50	2.51	68.26	72.34	78.75	79.15	97.73	126.45	136.95	150.33
2 mol%	2.46	2.48	68.48	72.97	76.96	80.09	98.61	125.88	134.47	152.28
4 mol%	2.48	2.49	68.26	72.65	77.54	80.44	98.47	125.66	134.86	152.17

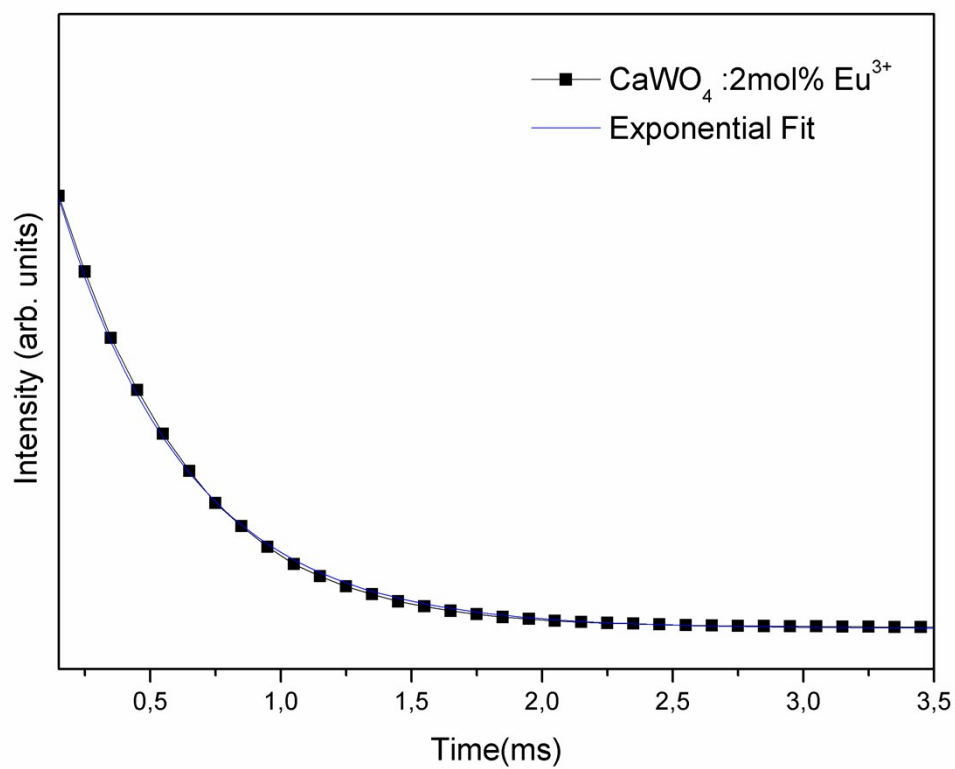
Table S4: Crystallite size and lattice strain obtained from XRD patterns for the CaWO₄:Eu³⁺ crystals (with 0, 1, 2 and 4 mol% Eu³⁺)

CaWO ₄ :Eu ³⁺ crystals	Crystallite size (nm)	Lattice strain (nm)
0 mol%	36.5	0.0061
1 mol%	31.26	0.0071
2 mol%	23.39	0.0095
4 mol%	28.69	0.0078

Figure S1 (a-c)



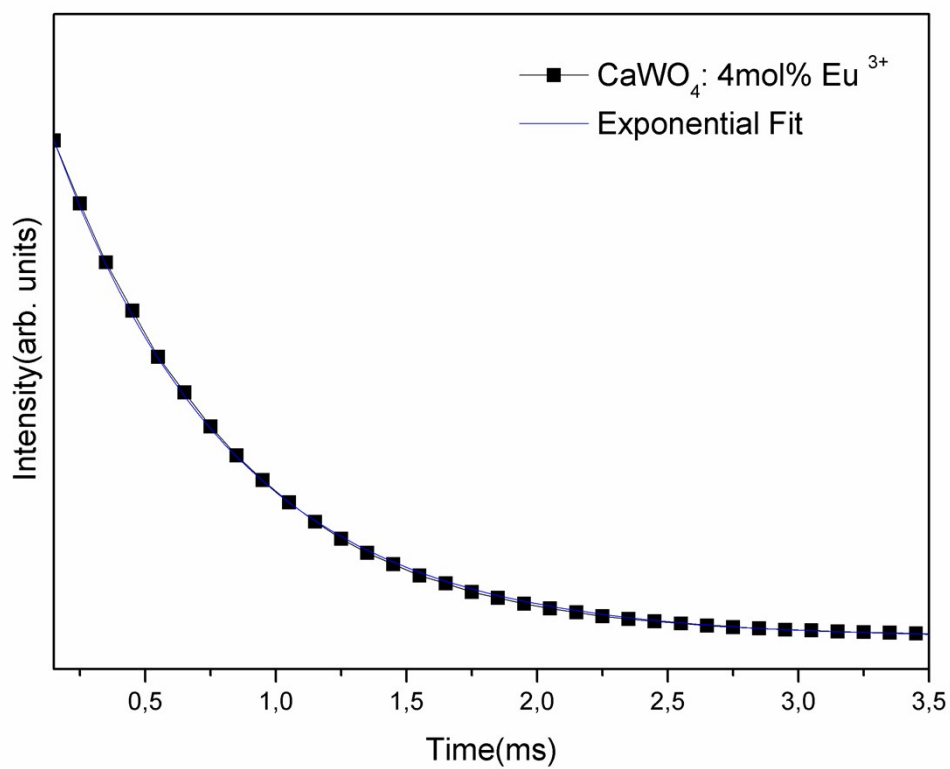
(a)



(b)

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(c)

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Fig. S1. Lifetime of CaWO₄:Eu³⁺ microcrystals with various amount of Eu³⁺ (a) 1 mol%, (b) 2 mol% and (c) 4 mol%.

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