Electronic Supplementary Material (ESI) for RSC Advances.

Electronic Supplementary Information

Novel Sm^{3+} singly doped $LiCa_3ZnV_3O_{12}$ phosphor: a potential luminescent material for multifunctional applications

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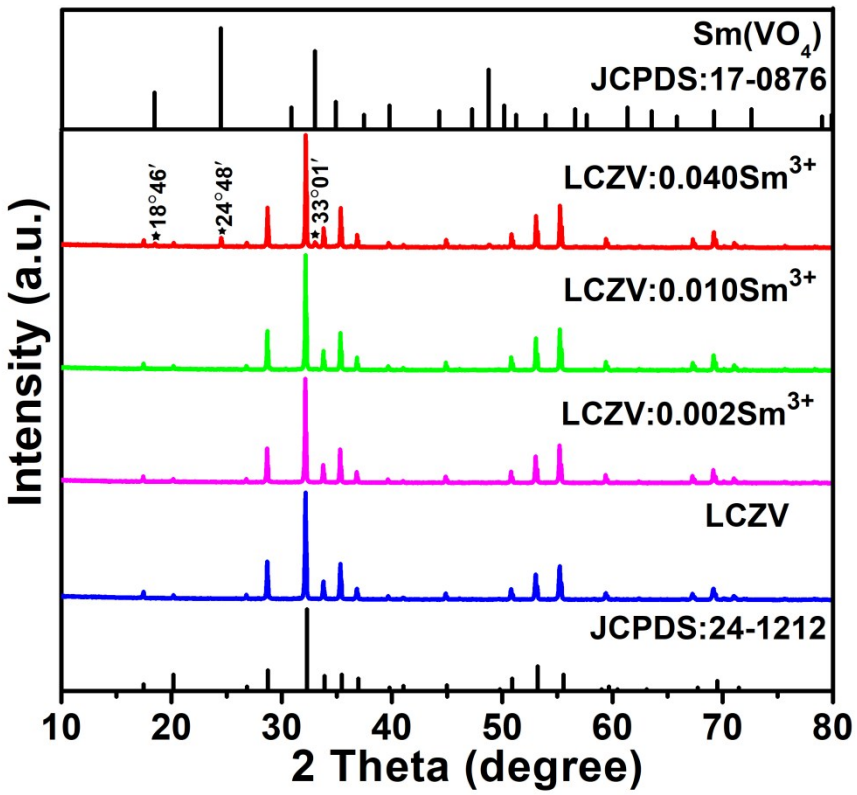

Figure S1. XRD patterns of LCZV:xSm^{3+} (x = 0, 0.002, 0.010 and 0.040) phosphors. The standard PDF card (LCZV; JCPDS 24-1212) and ($SmVO_4$; JCPDS 17-0876) were also shown as references.

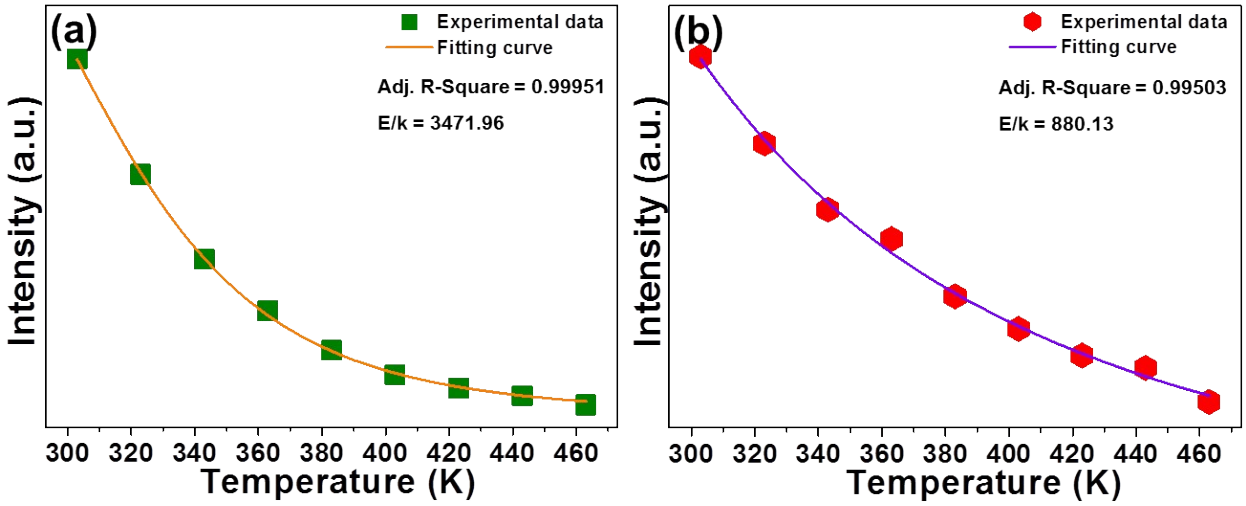

Figure S2. Temperature-dependent PL emission intensities of (a) VO_4^{3-} group and (b) Sm^{3+} ions.

Table S1. Refined Crystallographic parameters of LCZV:0.01Sm^{3+} phosphor.

Parameter	LCZV:0.01Sm^{3+}
Radiation type	Cu Kα radiation with λ = 1.5405 Å
2θ range	10-80°
Crystal symmetry	Cubic
Space group	$Ia\bar{3}d$
Cell parameters	$a = b = c$ = 12.4437(1) Å V = 1926.86(3) $Å^3$
Reliability factors	R_{wp} = 4.53%, R_p = 6.26% χ^2 = 2.13

Table S2. Atomic coordinates of LCZV host lattices.

$LiCa_3ZnV_3O_{12}$						
atom	*x*	y	z	Occ.	$U_{iso}(nm^2)$	Wyckoff
Ca1	0.875	0.0	0.75	1	0.0156	24c
Zn1	0.5	0.5	0.0	0.5	0.0088	16a
Li1	0.5	0.5	0.0	0.5	0.00878	16a
V1	0.125	0.0	0.75	1	0.0035	24d
O1	0.03605	0.05492	0.6562	1	0.00626	96h

Table S3. CIE coordinates and CCT of the LCZV:xSm^{3+} phosphors.

Sample	CIE coordinates (x, y)	CCT (K)
x = 0	(0.265, 0.361)	8690
x = 0.002	(0.321, 0.380)	5937
x = 0.005	(0.358, 0.380)	4663
x = 0.01	(0.364, 0.388)	4211
x = 0.02	(0.389, 0.393)	3890
x = 0.03	(0.399, 0.394)	3684
x = 0.04	(0.397, 0.395)	3738