Supporting Information

Improving and broadening luminescence in $Gd_{2-x}Al_xGaSbO_7:Cr^{3+}$ phosphors for NIR LEDs applications

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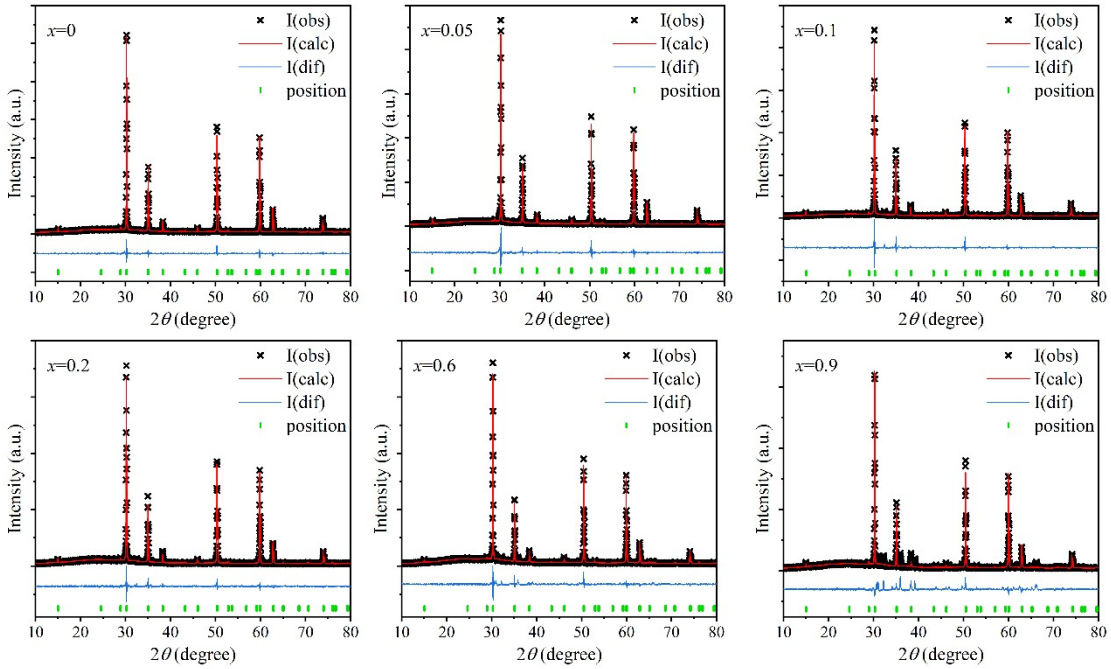

Figure S1. Rietveld refinement patterns of $Gd_{2-x}Al_xGaSbO_7$:5%Cr^{3+} (x = 0-0.9).

Table S1 Refined Crystallographic data of $Gd_{2-x}Al_xGaSbO_7$:5%Cr^{3+} (x = 0-0.9).

Formula	x = 0	x = 0.05	x = 0.1	x = 0.2	x = 0.6	x = 0.9
Crystal system	cubic					
Space group	*Fd-3m*					
a/b/c (Å)	10.27828	10.26376	10.26137	10.24885	10.23288	10.22578
α/β/γ (°)	90	90	90	90	90	90
Volume (Å^3)	1085.827	1081.235	1080.478	1076.528	1071.504	1069.273
R_{wp}%	8.53	9.71	10.85	9.71	11.03	16.29
R_p%	6.63	7.45	8.19	7.59	8.29	11.03

Table S2 D_{dis} of $Gd_{2-x}Al_xGaSbO_7$:5%Cr^{3+} (x = 0-0.9).

x	Gd-O1	Gd-O2	d_{av}	D_{dis}
0	2.22531	2.59608	2.50339	0.055540
0.05	2.22217	2.55440	2.47134	0.050412
0.1	2.22165	2.53620	2.457563	0.047997
0.2	2.21894	2.51544	2.44132	0.045544
0.6	2.21542	2.4777	2.41213	0.040775
0.9	2.21519	2.55951	2.47213	0.052397

Table S3 Spectral and lattice parameters of $G_{1.4}A_{0.6}GSO$:y%Cr^{3+}.

y	C O (cm^{-1})	FWHM (cm^{-1})	S (cm^{-1})	$\hbar\omega$ (cm^{-1})
0.25	2979	2241	3.40	514
0.5	3141	2237	3.70	491
1	3259	2242	3.91	478
2	3335	2244	4.05	470
4	3472	2246	4.32	455
5	3452	2214	4.39	443