Electronic Supplementary Information

An efficient $LiSrGaF_6$: Cr^{3+} fluoride phosphor with broadband NIR emission towards sunlight-like full-spectrum lighting

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Table S1 Crystallographic data determined from the Rietveld refinement for $LiSrGa_{0.6}F_6$: $0.4Cr^{3+}$ and $LiSrGaF_6$ host.

Formula	$LiSrGa_{0.6}F_6$: $0.4Cr^{3+}$	$LiSrGaF_6$
Crystal system	Hexagonal	Hexagonal
Space group	*P*-31*c*	*P*-31*c*
a(Å)	5.1516(8)	5.1566
b(Å)	5.1516(8)	5.1566
c(Å)	10.3174(9)	10.3176
V(Å^3)	237.14	237.59
α, β, γ (deg.)	90, 90, 120	90, 90, 120
*R*wp(%)	5.71%	-
*R*p(%)	3.91%	-
χ^2	4.687	-

Table S2 The photoelectric efficiency of NIR phosphors.

Phosphor	Current (mA)	NIR output power (mW)	Photoelectric efficiency (%)	Reference
$Ga_{2-x}Sc_xO_3$: Cr^{3+}	350	66.09	6.57	[1]
$LiScP_2O_7$: Cr^{3+}, Yb^{3+}	100	36	12	[2]
$Ca_3Sc_2Si_3O_{12}$: Cr^{3+}	520	109.9	3.8	[3]
ScF_3: Cr^{3+}	300	24.15	2.54	[4]
K_3AlF_6: Cr^{3+}	350	7	0.7	[5]
K_3GaF_6: Cr^{3+}	350	8.4	0.7	
K_3ScF_6: Cr^{3+}	300	75.69	7.955	[6]
$LiCaAlF_6$: Cr^{3+}	300	48.52	5.002	[7]
$LiSrAlF_6$: Cr^{3+}	300	54.68	5.468	
$LiSrGaF_6$: Cr^{3+}	350	120.01	8.96	This work

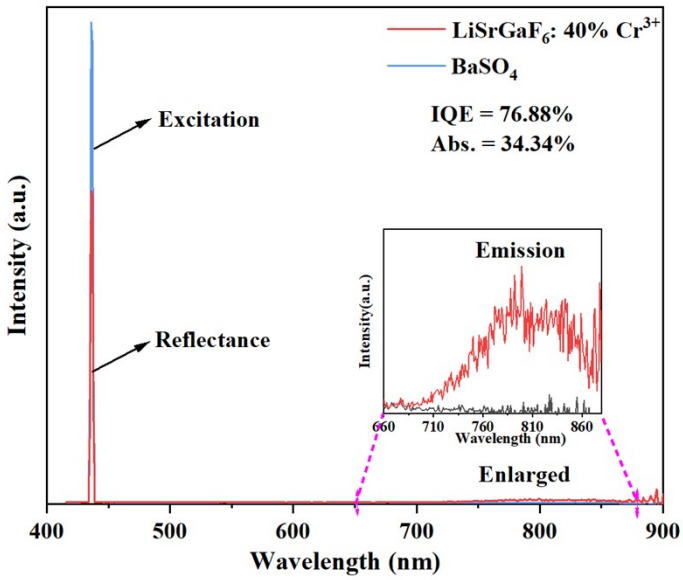

Fig. S1 The internal quantum efficiency and absorption efficiency of $LiSrGa_{0.6}F_6$: $0.4Cr^{3+}$ sample.

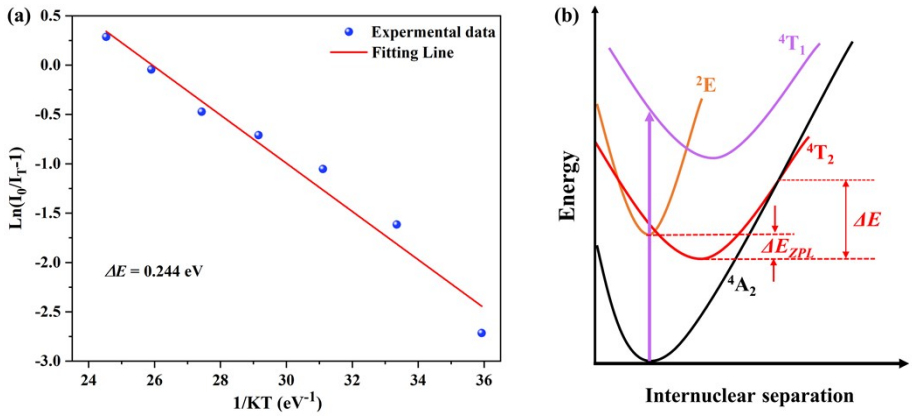

Fig. S2 (a) Fitted activation energy of $LiSrGa_{0.6}F_6$: $0.4Cr^{3+}$ sample. (b) Configurational coordinate diagram of $LiSrGaF_6$: Cr^{3+}.

Reference:

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