Supporting Information

Effect of Composition Modulation on the Luminescence Properties of Eu^{3+} doped $Li_{1-x}Ag_xLu(MoO_4)_2$ Solid-Solution Phosphors

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Table S1. Fractional atomic coordinates and isotropic displacement parameters (Å^2) of $MLn(MoO_4)_2$ (M=Ag, Li; Ln = Lu, Eu) samples

	x	*y*	*z*	B_{iso}	Occ.
			$AgLu(MoO_4)_2$		
Ag	0	0.25	0.625	0.68 (5)	0.5
Lu	0	0.25	0.625	0.68 (5)	0.5
Mo	0	0.25	0.125	0.90 (5)	1
O	0.2430 (10)	0.0946 (8)	0.0435 (4)	1.81 (15)	1
			$AgEu(MoO_4)_2$		
Ag	0	0.25	0.625	0.50 (4)	0.5
Eu	0	0.25	0.625	0.50 (4)	0.5
Mo	0	0.25	0.125	0.81 (5)	1
O	0.2415 (6)	0.1017 (4)	0.04352 (18)	1.22 (10)	1
			$LiLu(MoO_4)_2$		
Li	0	0.25	0.625	0.70 (8)	0.5
Lu	0	0.25	0.625	0.70 (8)	0.5
Mo	0	0.25	0.125	0.81 (8)	1
O	0.2466 (14)	0.0912 (9)	0.0398 (4)	1.17 (16)	1
			$LiEu(MoO_4)_2$		
Li	0	0.25	0.625	0.66 (5)	0.5
Eu	0	0.25	0.625	0.66 (5)	0.5
Mo	0	0.25	0.125	0.69 (4)	1
O	0.2434 (5)	0.0993 (3)	0.04113 (14)	1.00 (8)	1

Table S2. Main bond lengths (Å) of $MLn(MoO_4)_2$ (M=Ag, Li; Ln = Lu, Eu) samples

		$AgLu(MoO_4)_2$	
(Ag/Lu)—O^i	2.410 (5)	Mo—O	1.757 (5)
(Ag/Lu)—O^{ii}	2.469 (5)		
		$AgEu(MoO_4)_2$	
(Ag/Eu)—O^i	2.482 (3)	Mo—O	1.764 (3)
(Ag/Eu)—O^{ii}	2.499 (2)		
		$LiLu(MoO_4)_2$	
(Li/Lu)—O^i	2.365 (6)	Mo—O	1.770 (6)
(Li/Lu)—O^{ii}	2.381 (5)		
		$LiEu(MoO_4)_2$	
(Li/Eu)—O^i	2.447 (2)	Mo—O	1.767 (2)
(Li/Eu)—O^{ii}	2.438 (2)		

Symmetry codes: (i) $-x+1/2, -y, z+1/2$; (ii) $-x+1/2, -y+1/2, -z+1/2$.

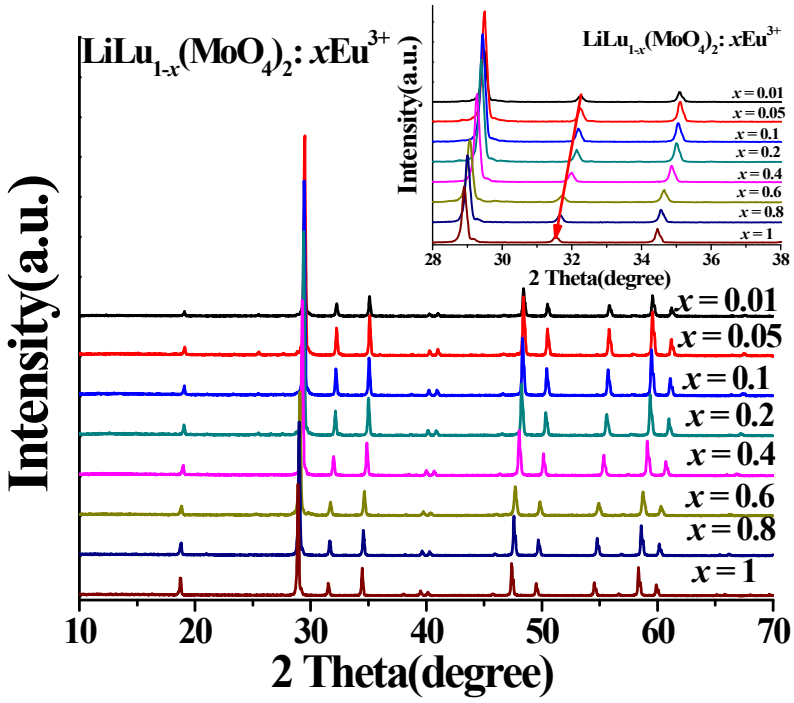

Fig. S1 XRD patterns of $LiLu_{1-x}Eu_x(MoO_4)_2$ (x = 0.01, 0.05, 0.1, 0.2, 0.4, 0.6, 0.8, 1.0), and the inset shows the enlarged patterns in the range of 28-38 ° highlighting the shift of the peaks.

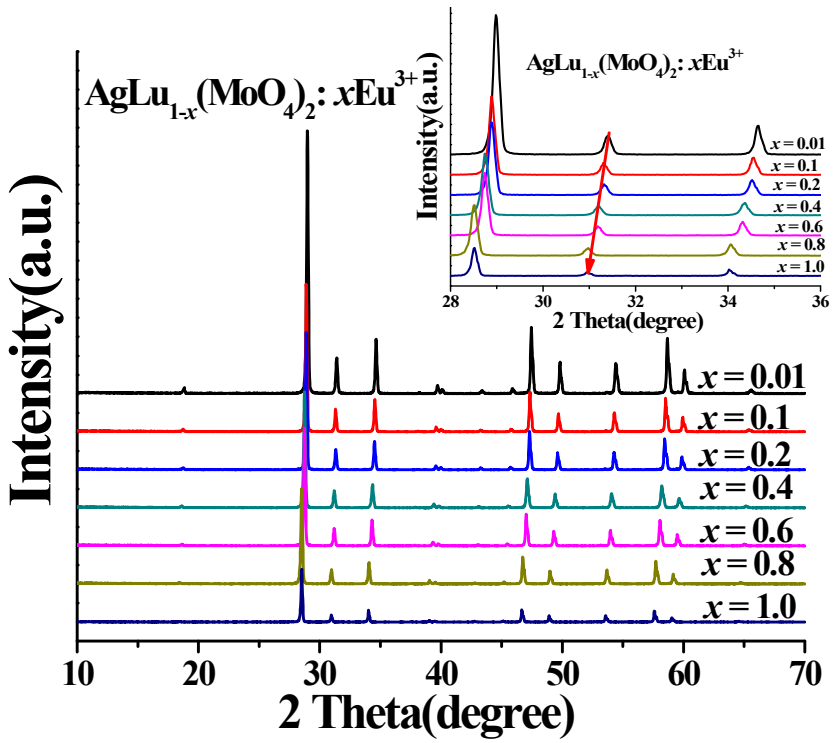

Fig. S2 XRD patterns of $AgLu_{1-x}Eu_x(MoO_4)_2$ (x = 0.01, 0.1, 0.2, 0.4, 0.6, 0.8, 1.0), and the inset shows the enlarged patterns in the range of 28-38 ° highlighting the shift of the peaks.

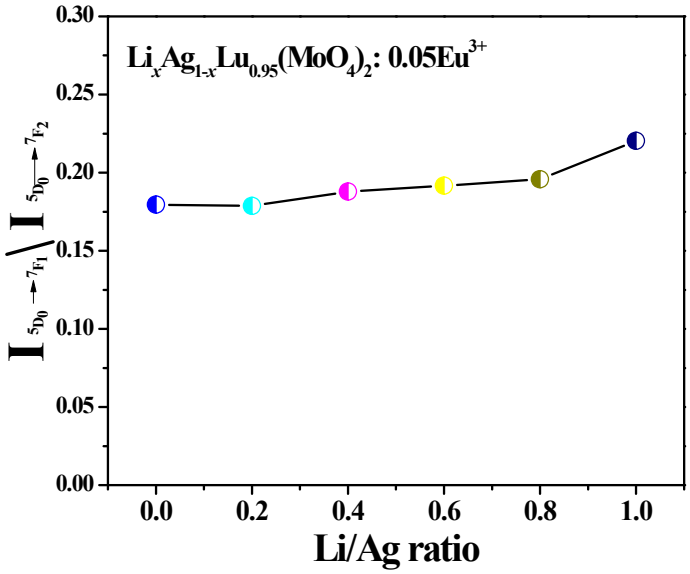

Fig. S3 Li/Ag ratio dependent I ($^5D_0$-$^7F_1$)/ I ($^5D_0$-$^7F_2$) of $Li_xAg_{1-x}Lu_{0.95}(MoO_4)_2$: $0.05Eu^{3+}$(x = 0, 0.2, 0.4, 0.6, 0.8, 1.0) phosphors measured at room temperature.