

Supporting information

Variations of $^5D_0 \rightarrow ^7F_{0-4}$ transitions of Eu^{3+} and white light emissions in Ag-Eu exchanged zeolite-Y

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Fig.S1 shows the Raman spectra of the Ag-Eu codoped Zeolite-Y(ZY) samples. According to the literatures¹⁻⁴, it can be deduced that the band at 500 cm⁻¹ is derived from the "pore-opening" vibration of six-membered rings. And the bands at about 295 cm⁻¹ are originated from the vibrations of six-membered rings⁴. The structure of these samples remains almost the unchanged. Fig.S2 depicts the luminescence intensity ratios between the $^5D_0 \rightarrow ^7F_2$ of Eu^{3+} and Ag ACs, which shows that the emission of Eu^{3+} is largely enhanced for laser excitation. Fig.S3 gives the deconvolution fitting for the luminescence spectra. Table S1 and Table S2 list the specific chromaticity coordinates and color rendering index (CRI) for 266 nm xenon lamp and laser excitation.

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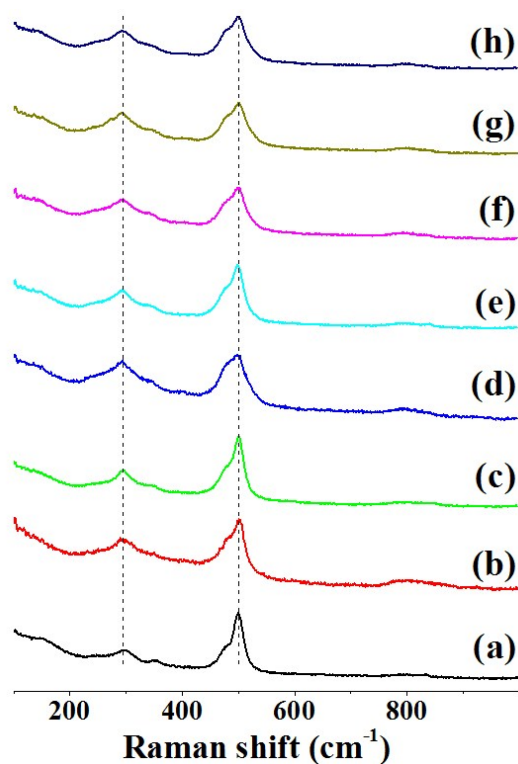


Fig.S1 Raman spectra of (a)ZY without treatment; (b)ZY; (c)ZY:0.02Ag; (d)ZY:0.05Eu; (e)ZY:0.02Ag-0.01Eu; (f)ZY:0.02Ag-0.05Eu; (g)ZY:0.02Ag-0.1Eu; and (h)ZY:0.02Ag-0.15Eu sintered at 800°C.

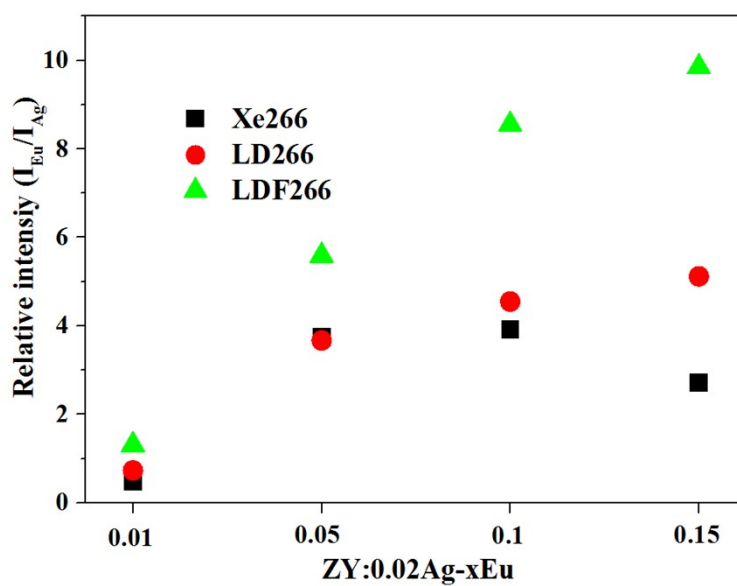


Fig.S2 Relative intensity of Ag and Eu³⁺ emission peaks of Ag-Eu doped ZY under excitation of 266 nm xenon lamp, 266 nm laser diode, and focused 266 nm laser diode

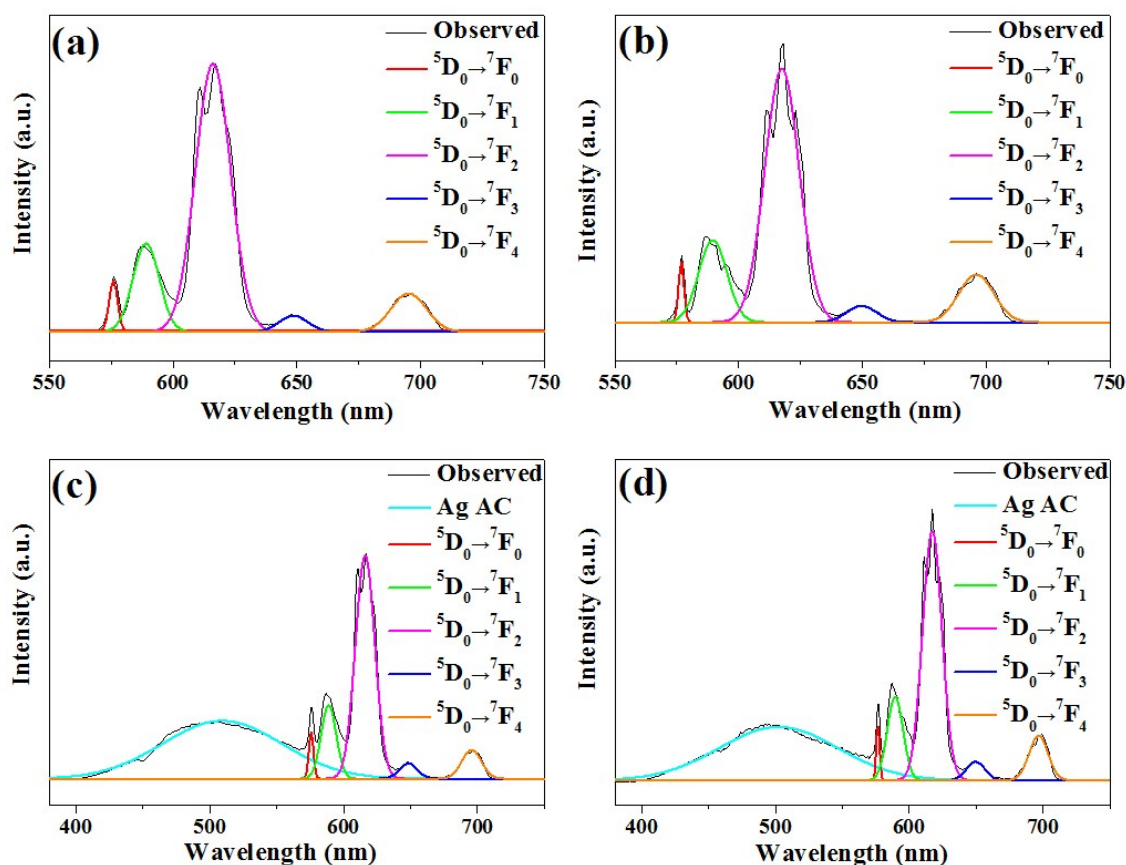


Fig.S3 Deconvolution of the emission spectra of (a)ZY:0.05Eu under 266 nm xenon lamp excitation; (b)ZY:0.05Eu under 266 nm laser diode excitation; (c)ZY:0.02Ag-0.1Eu under 266 nm xenon lamp excitation (a)ZY:0.02Ag-0.1Eu,266 nm under 266 nm laser diode excitation

Table S1 The CIE chromaticity coordinates and Color Rendering Index (CRI) of the Ag-Eu doped ZY under excitation of 266 nm Xenon lamp

Number	Sample	x	y	Ra
1	ZY:0.02Ag	0.2332	0.3872	50
2	ZY:0.02Ag-0.01Eu	0.2738	0.4195	59
3	ZY:0.02Ag-0.05Eu	0.4159	0.3813	74
4	ZY:0.02Ag-0.1Eu	0.4107	0.3736	72
5	ZY:0.02Ag-0.15Eu	0.3838	0.3887	80
6	ZY:0.05Eu	0.6176	0.3654	20

Table S2 The chromaticity coordinates (CIE) and Color Rendering Index (CRI) of the Ag-Eu doped zeolite Y under excitation of 266 nm laser diode

Number	Sample	x	y	Ra
1	ZY:0.02Ag	0.2807	0.3739	65
2	ZY:0.02Ag-0.01Eu	0.3178	0.3759	85
3	ZY:0.02Ag-0.05Eu	0.445	0.3567	64
4	ZY:0.02Ag-0.1Eu	0.4944	0.3604	60
5	ZY:0.02Ag-0.15Eu	0.5141	0.3576	58
6	ZY:0.05Eu	0.6235	0.3644	23

References:

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- 3 A. De Man and R. Van Santen, *Zeolites*, 1992, **12**, 269.
- 4 W. Mozgawa, W. Jastrzębski and M. Handke, *J Mol Struct*, 2005, **744**, 663.