

Tunable luminescence of silver-exchanged SOD zeolite thermally treated under mild conditions

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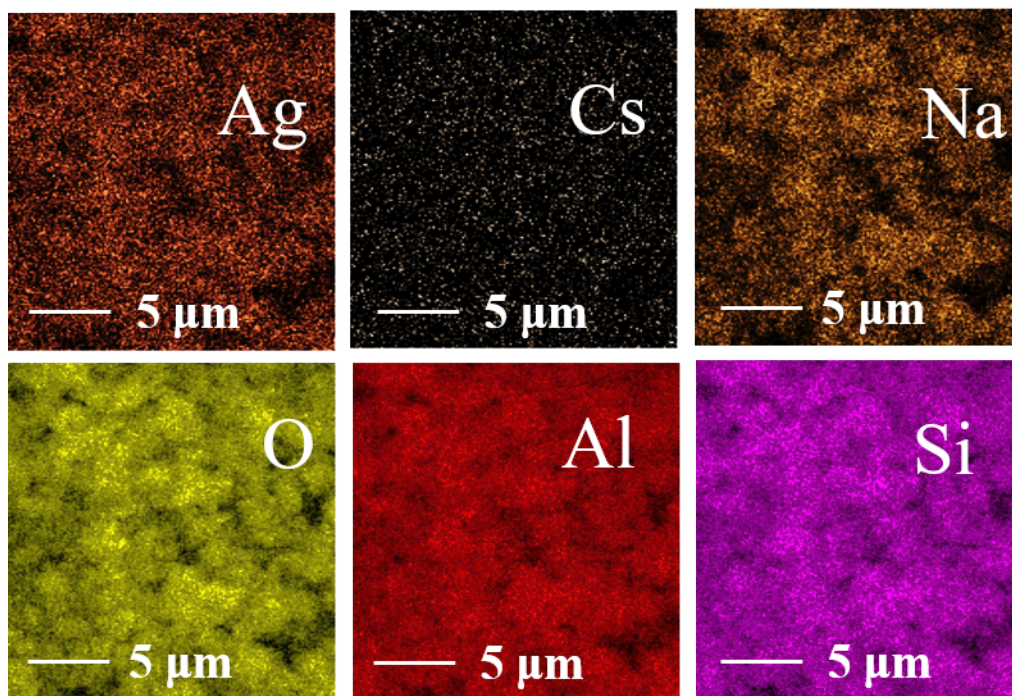


Figure S1. Elemental mapping of heat-treated 1Cs-0.05Ag-SOD composites.

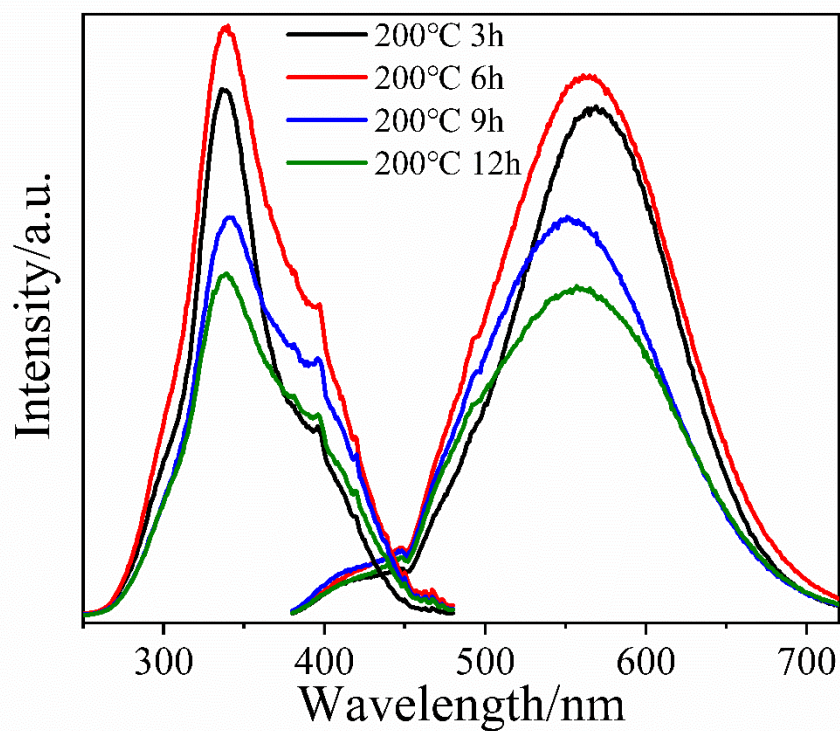


Figure S2. Excitation and emission spectra of 1Cs-0.05Ag-SOD at different times at 200

°C (excitation at 337 nm, emission at 570 nm).

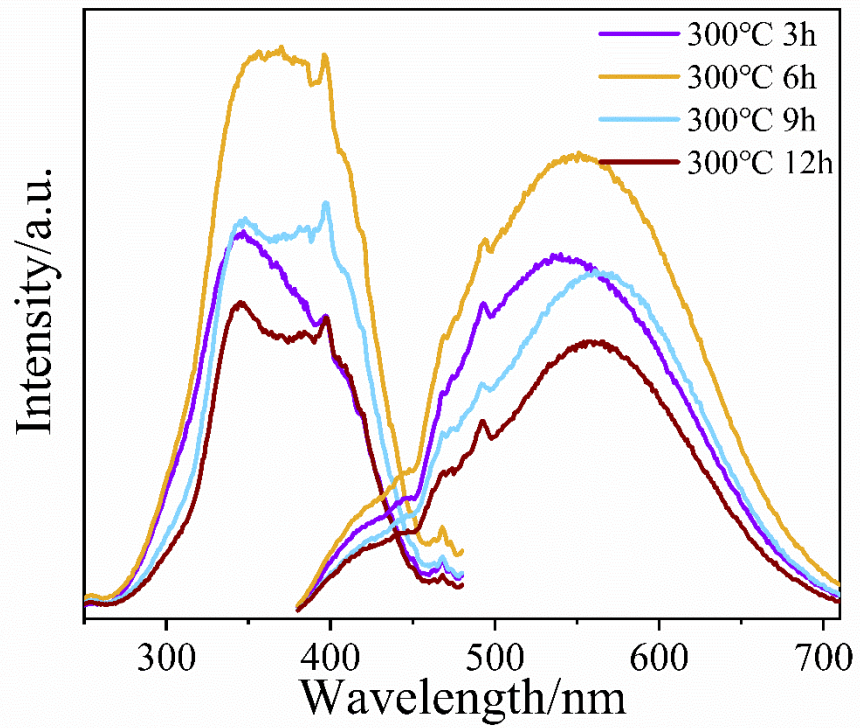


Figure S3. Excitation and emission spectra of 1Cs-0.05Ag-SOD at different times at 300°C (excitation at 337 nm, emission at 570 nm).

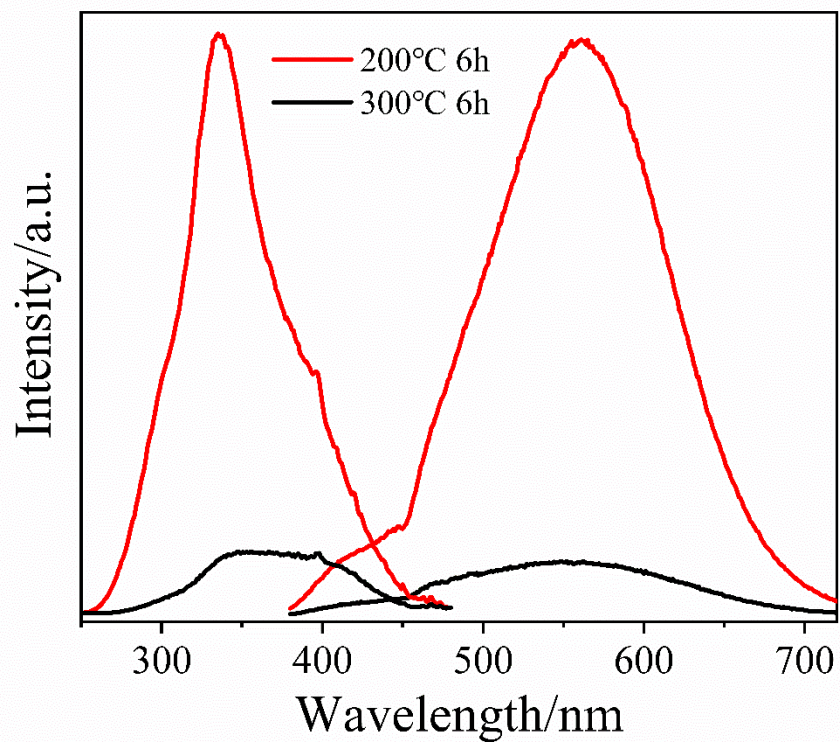


Figure S4. Excitation and emission spectra of 1Cs-0.05Ag-SOD at different temperatures (excitation at 337 nm, emission at 570 nm).

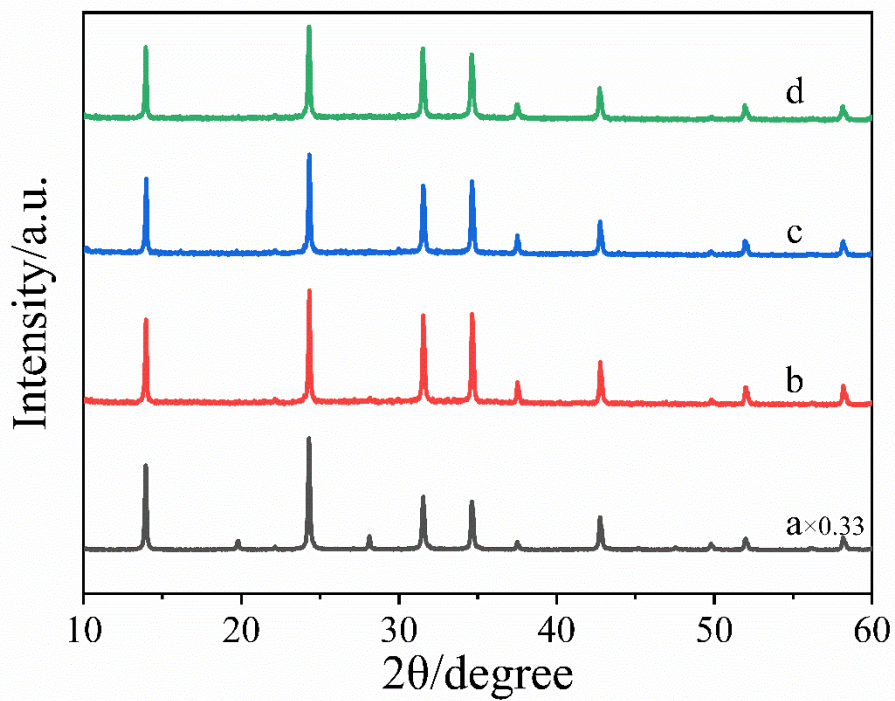


Figure S5. XRD patterns of a) pure SOD zeolites; b) zeolite after ion exchange; c) zeolite after ion exchange and heat-treated at 200 °C and d) 300 °C.

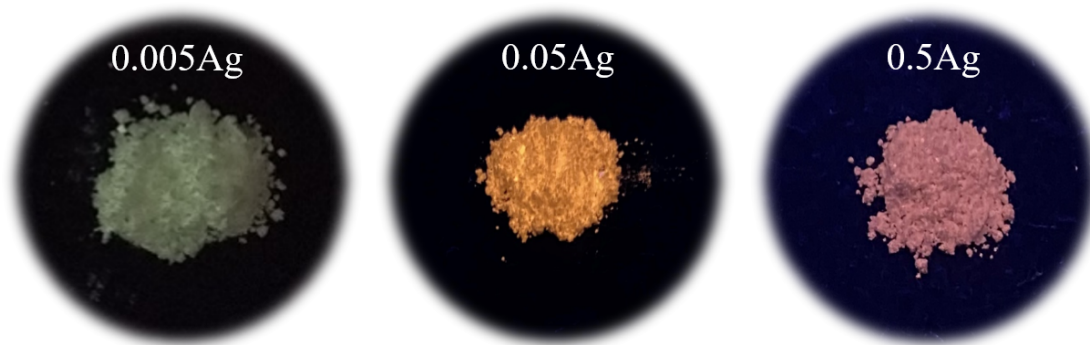
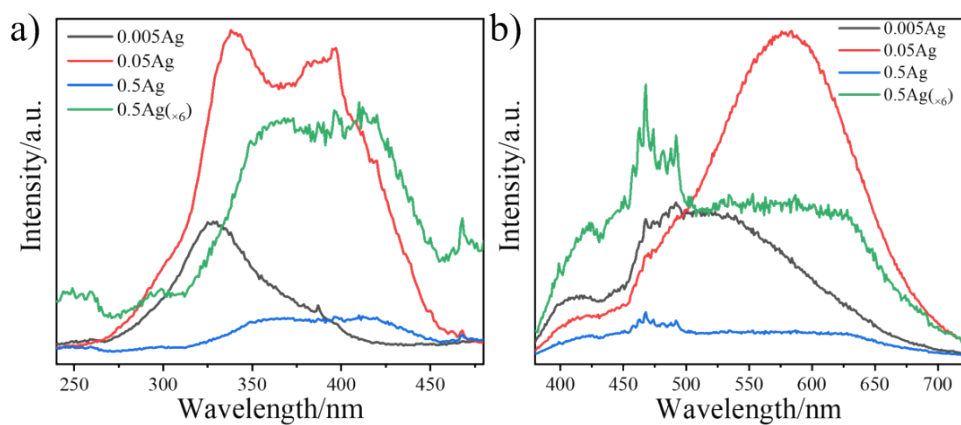


Figure S6. Pictures of Ag-SOD composites with different Ag^+ content under 302 nm (0.005Ag) or 365 nm illumination (0.05Ag and 0.5Ag).



Fig

ure S7. Excitation a) and emission b) spectrum of Ag-SOD composites (excitation at 337 nm, emission at 570 nm).

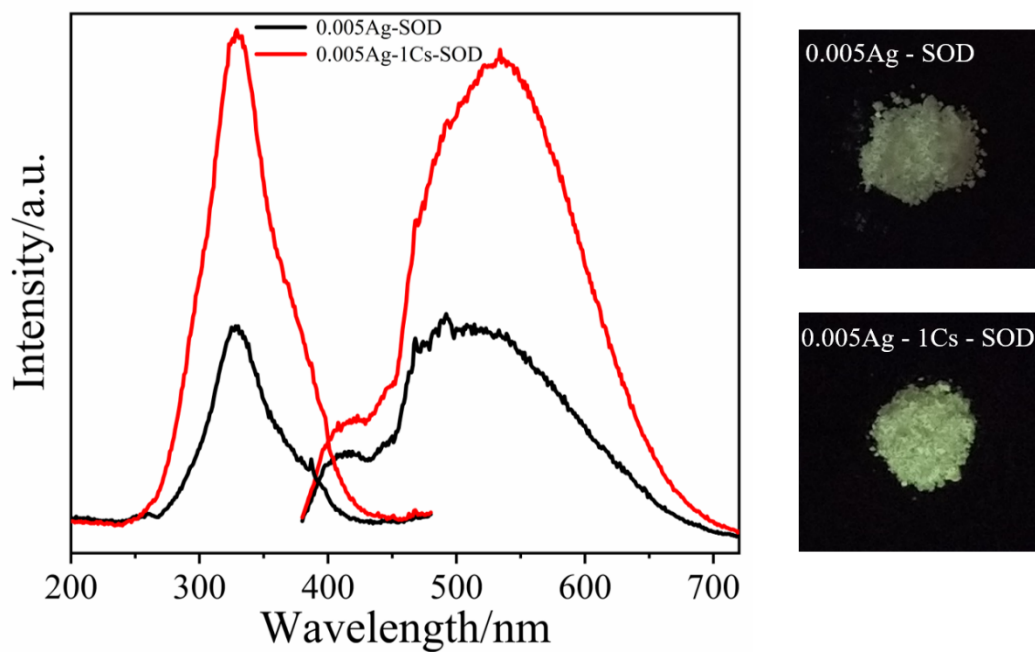


Figure S8. Excitation-emission spectrum (excitation at 337 nm, emission at 570 nm) and pictures (under 302 nm UV-lamp) of Ag-SOD zeolite composites.

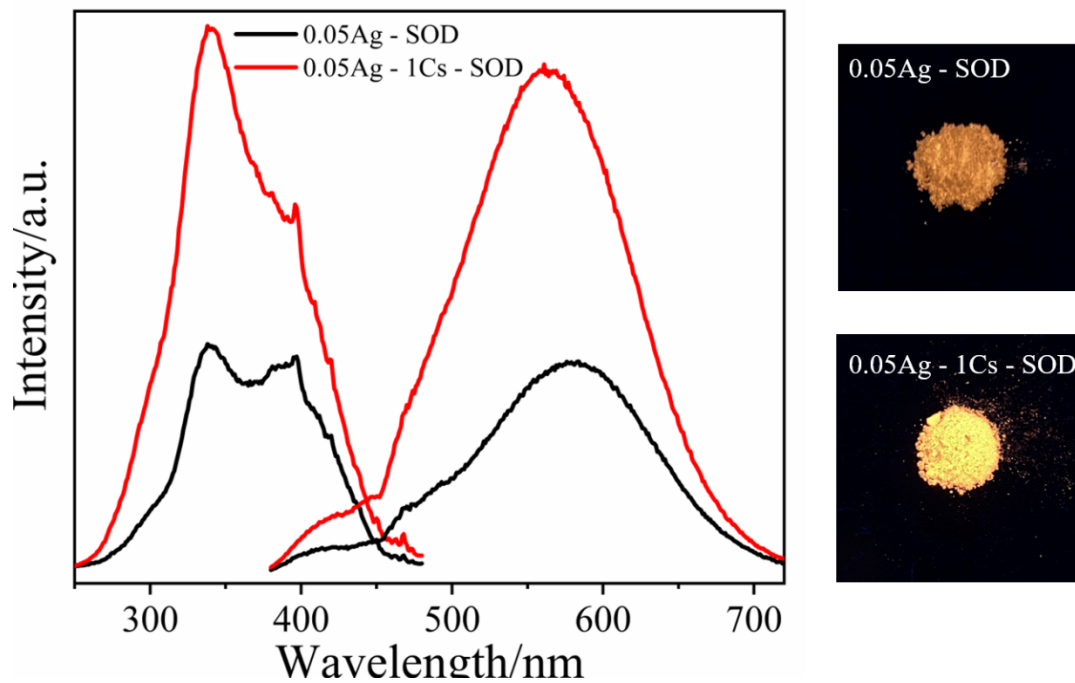


Figure S9. Excitation-emission spectrum (excitation at 337 nm, emission at 570 nm) and pictures (under 365 nm UV-lamp) of Ag-SOD zeolite composites.

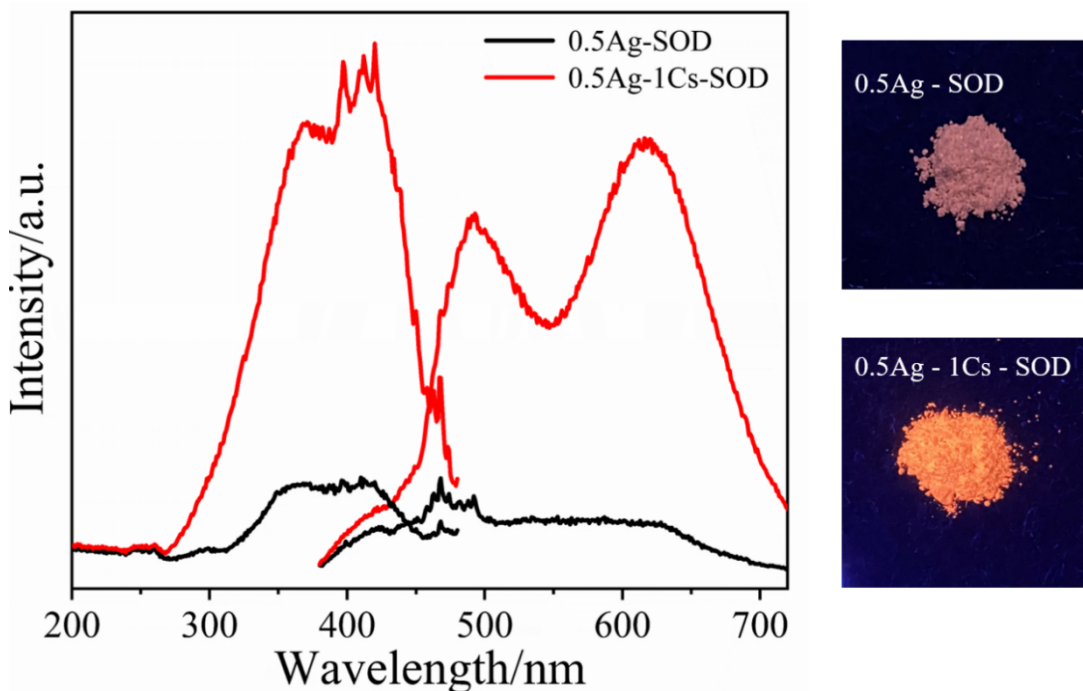


Figure S10. Excitation-emission spectrum (excitation at 337 nm, emission at 570 nm) and pictures (under 365 nm UV-lamp) of Ag-SOD zeolite composites.

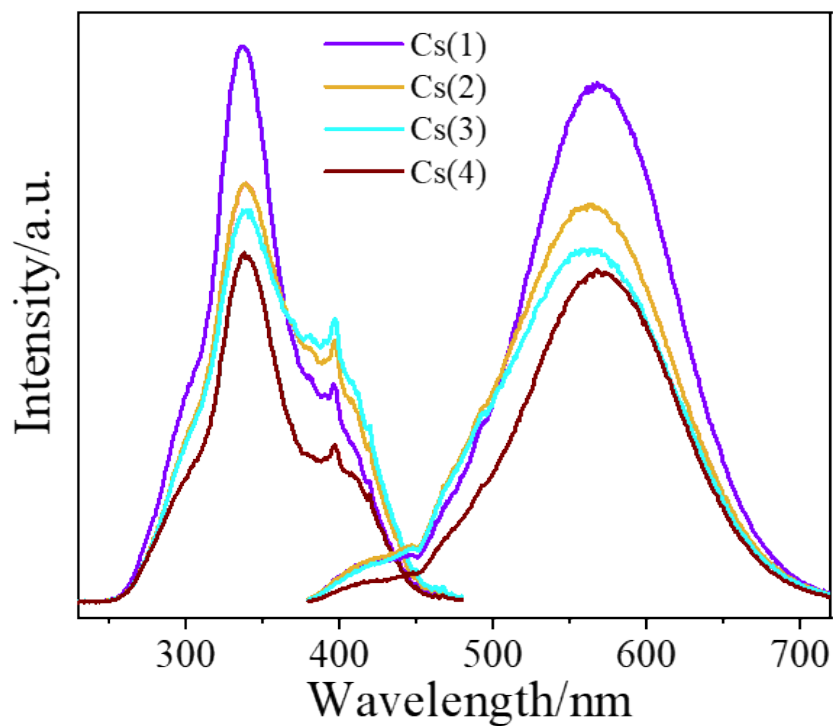


Figure S11. Excitation-emission spectrum of different cesium counts samples, which initial concentration of silver are 0.05M (excitation at 337 nm, emission at 570 nm).

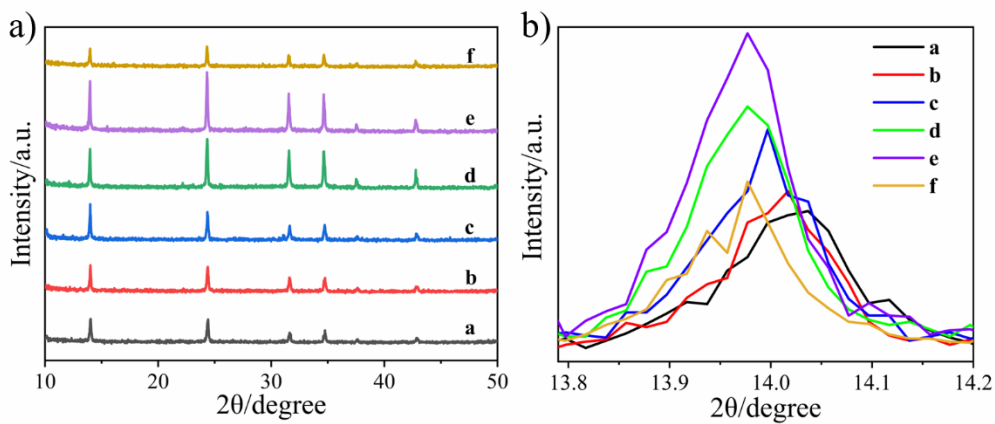


Figure S12. XRD patterns of SOD zeolite treated with different cesium content (a-f is 0.05 in turn 0.1; 0.2; 0.5; 1 and 1(2)).

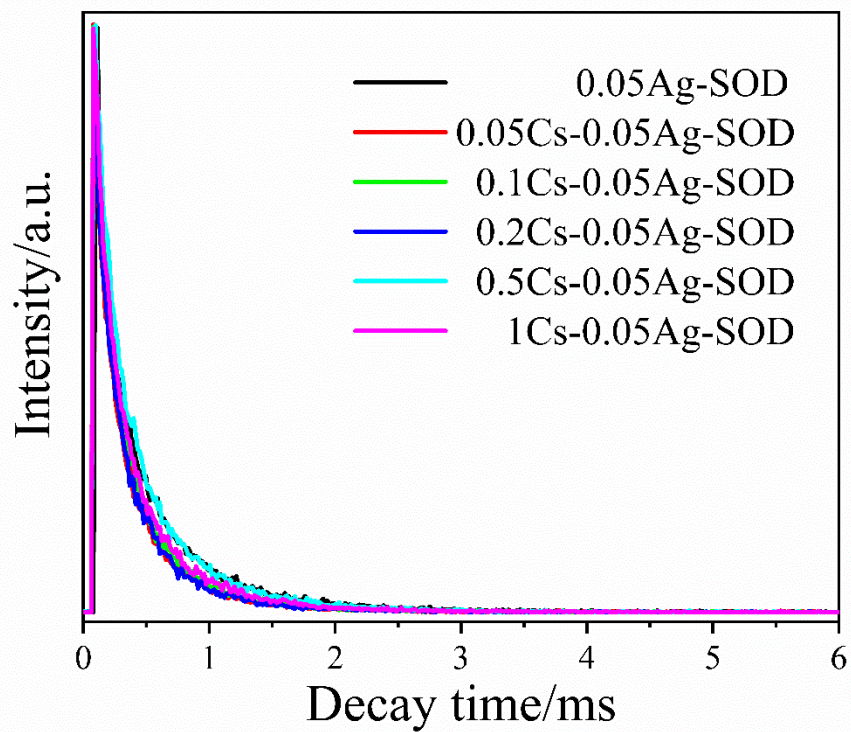


Figure S13. The luminescence lifetime of Cs-0.05Ag-SOD zeolites with different content of Cs⁺.

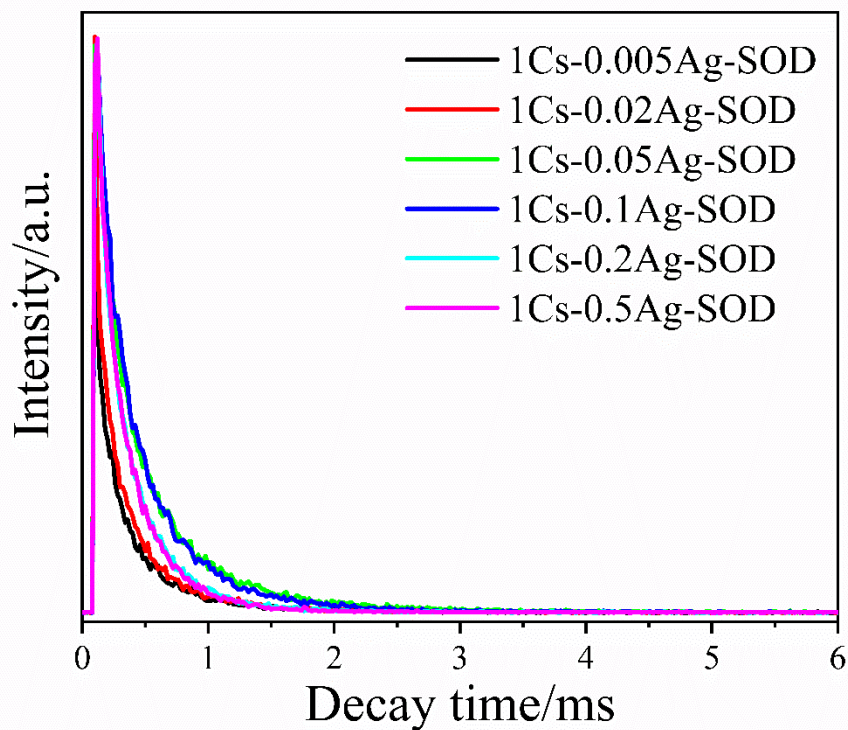


Figure S14. The luminescence lifetime of 1Cs-Ag-SOD zeolites with different content of Ag^+ .

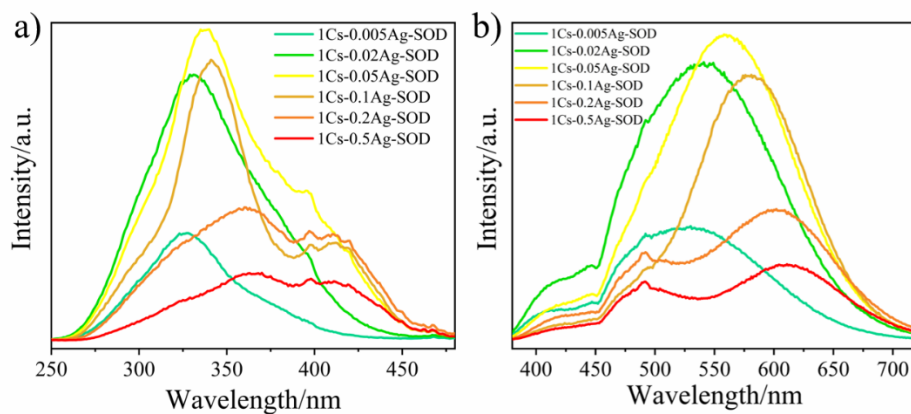


Figure S15. Excitation-emission spectrum of 1Cs-Ag-SOD zeolites with different content of Ag^+ (excitation at 337 nm, emission at 570nm).

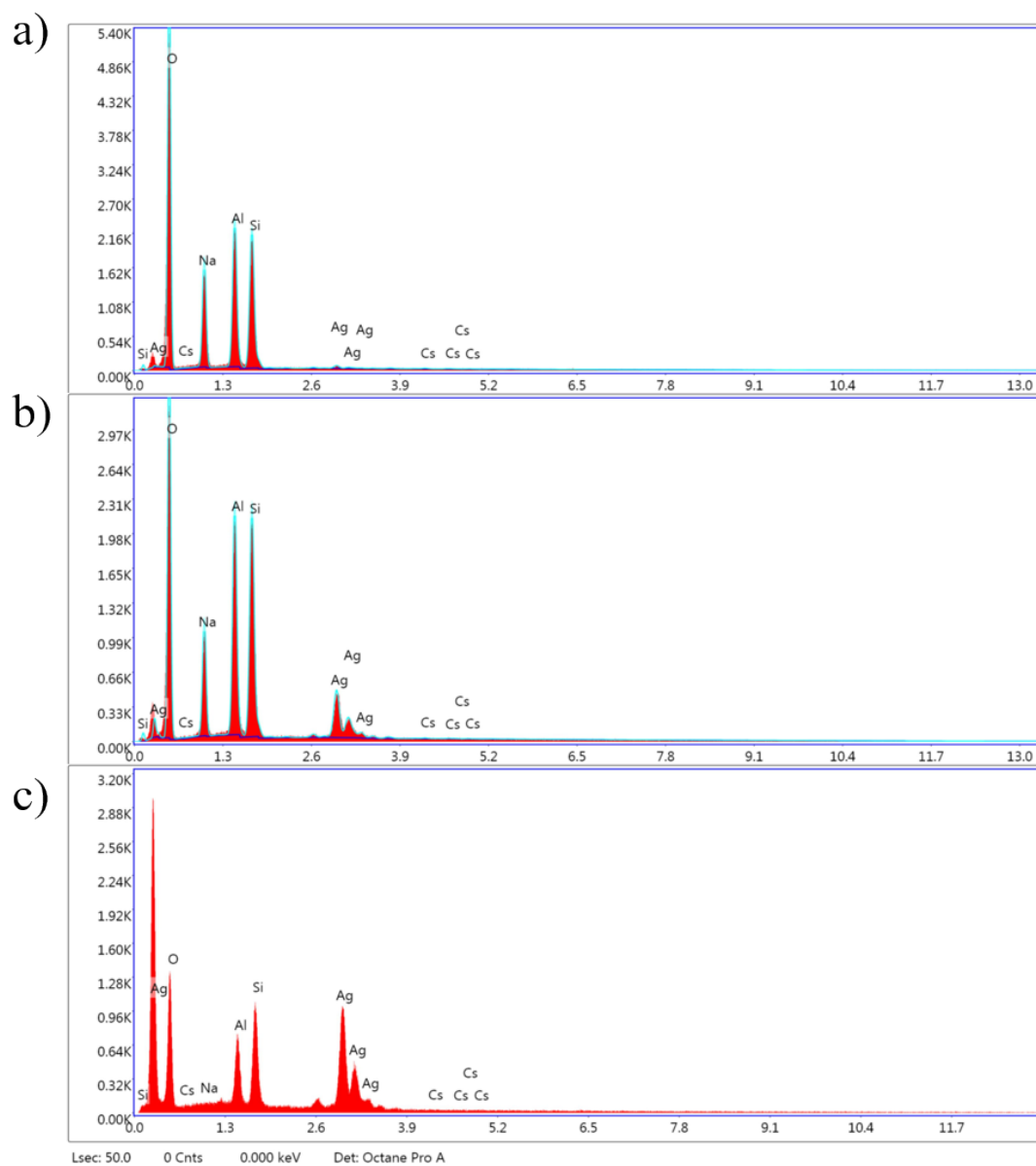


Figure S16. EDX spectrum of the Ag-1Cs-SOD zeolites Ag-1Cs-SOD composites heat treated at 200 °C for 6 h with different silver contents a) 0.005Ag; b)0.05Ag and c) 0.5Ag.

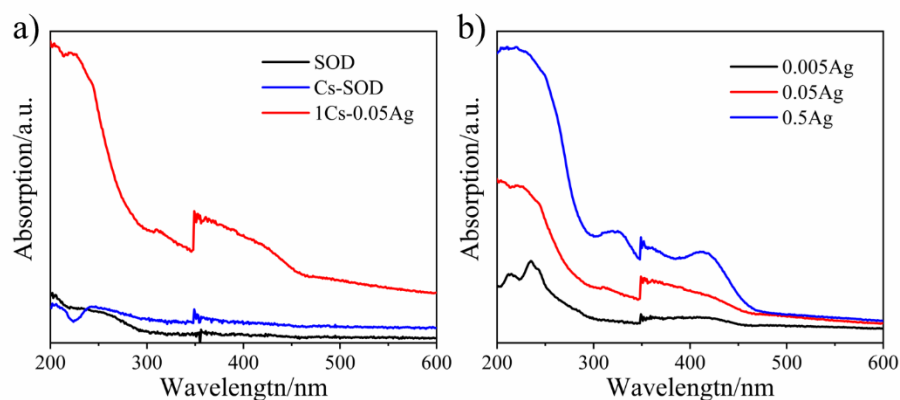


Figure S17. The diffuse reflectance spectra of a) the starting material SOD and Cs-SOD compared to 0.05Ag-1Cs-SOD and b) 1Cs-Ag-SOD composites with different silver contents (0.005, 0.05M and 0.5M).

Table S1. Luminescence lifetime 1Cs-Ag-SOD at different silver content

Name	luminescence lifetime/ms	Name	luminescence lifetime/ms
0.05Cs-0.05Ag-SOD	0.369	1Cs-0.02Ag-SOD	0.303
0.1Cs-0.05Ag-SOD	0.371	1Cs-0.05Ag-SOD	0.383
0.2Cs-0.05Ag-SOD	0.359	1Cs-0.1Ag-SOD	0.356
0.5Cs-0.05Ag-SOD	0.374	1Cs-0.2Ag-SOD	0.218
1Cs-0.005Ag-SOD	0.306	1Cs-0.5Ag-SOD	0.210

Table S2. Elemental composition (Atomic %) of 1Cs-Ag-SOD at some representative silver content

Concentration(M)	O	Na	Cs	Si	Al	Ag	Sliver Ion Exchange Ratio
0.005M	63.2	14.76	0.05	10.55	11.31	0.13	0.87%
0.05M	61.24	12.18	0.04	12.29	12.45	1.79	12.78%
0.5M	69.31	3.44	0.05	10.63	8.88	7.69	68.78%