

Emission-tunable silver clusters constrained within EMT zeolite achieved by PEG400

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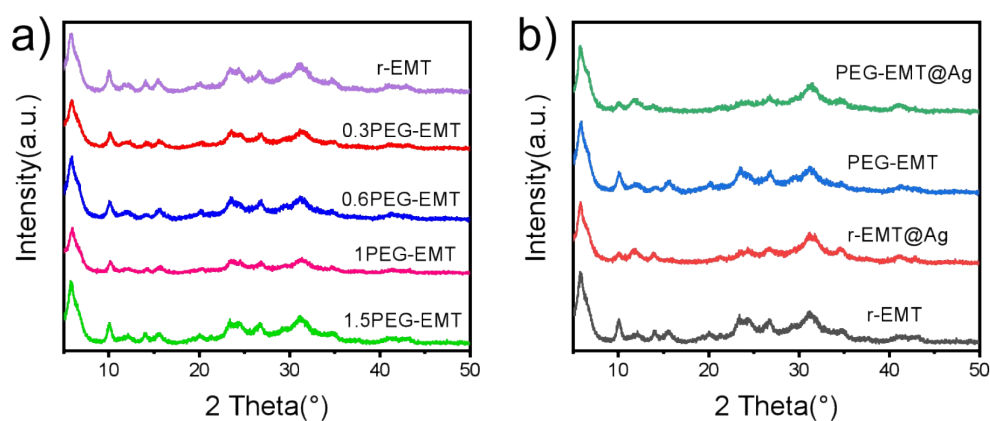


Figure S1. a) XRD patterns of EMT zeolites modified with different proportions of PEG400, b) XRD patterns of r-EMT@Ag and PEG-EMT@Ag.

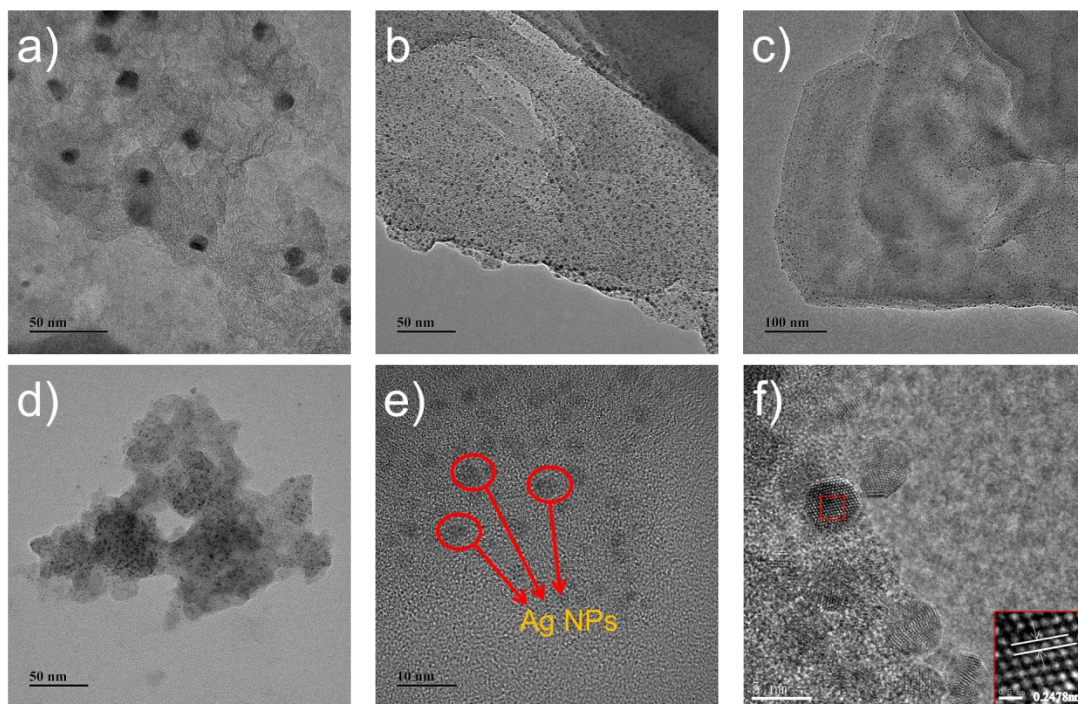


Figure S2. TEM images of a) PEG-EMT, b-c) PEG-EMT@Ag, d) r-EMT@Ag. HRTEM images of e) Ag nanoparticles from PEG-EMT@Ag, f) PEG-EMT@Ag.

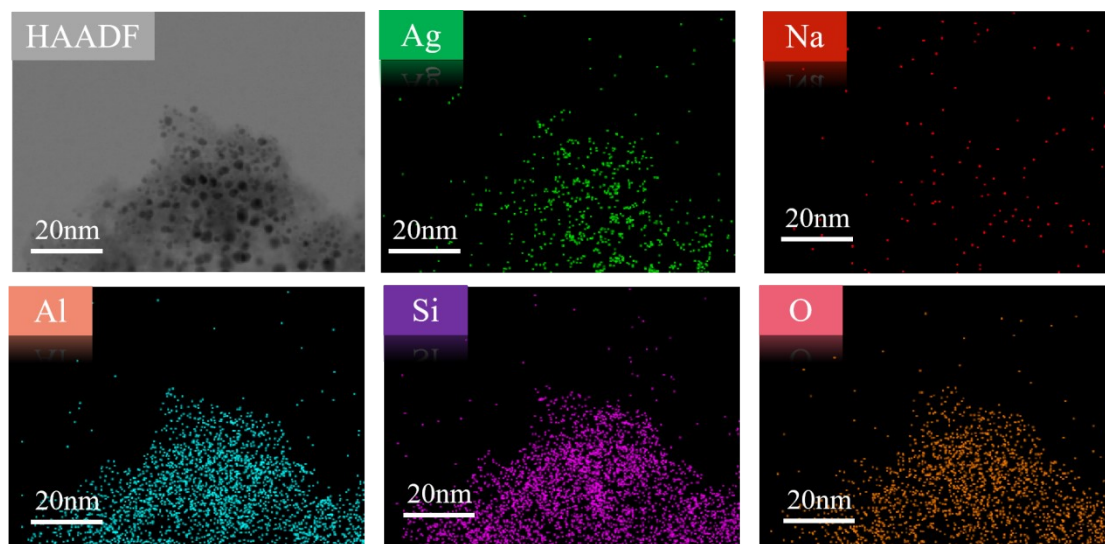


Figure S3. Elemental mapping images of r-EMT@Ag.

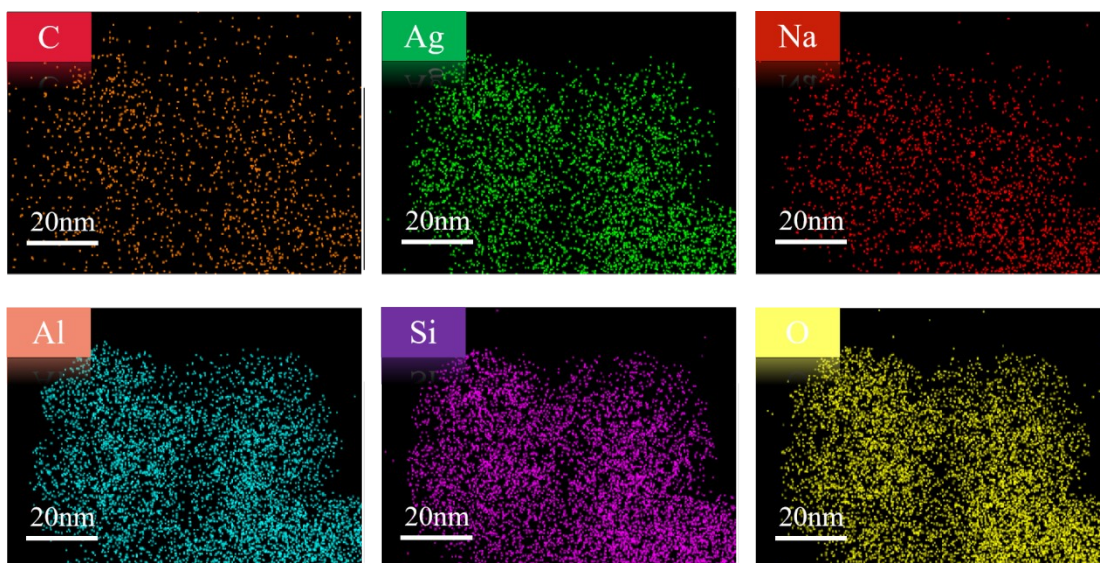


Figure S4. Elemental mapping images of PEG-EMT@Ag.

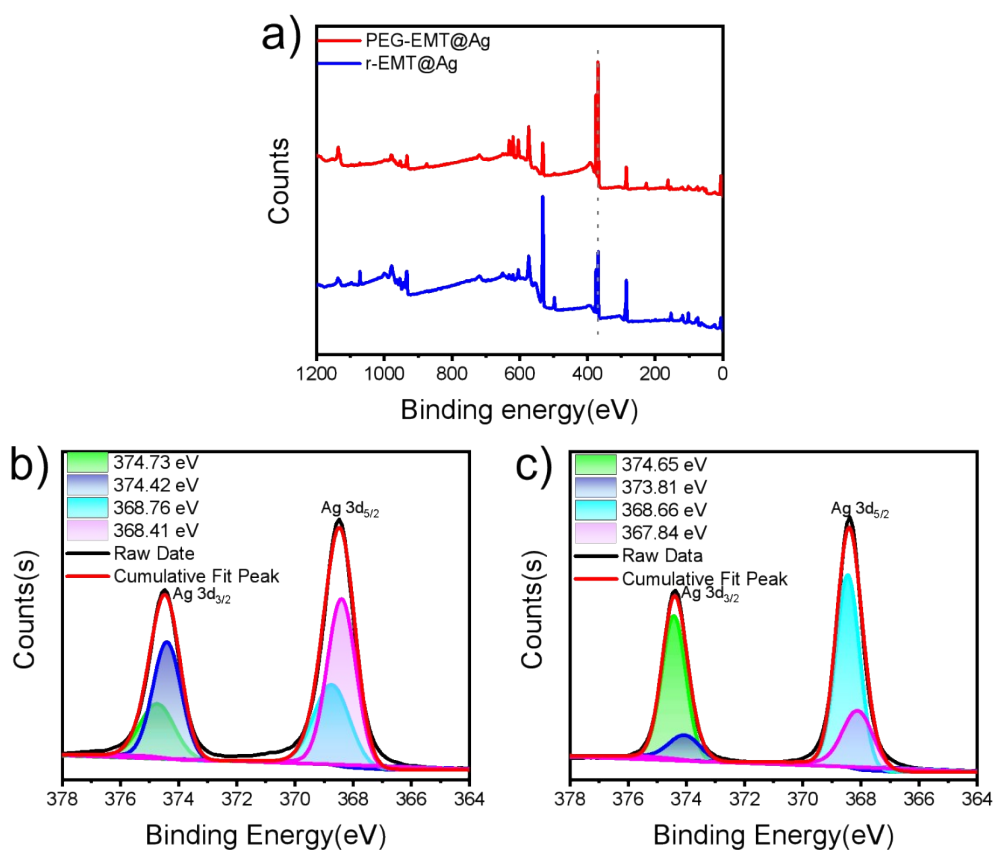
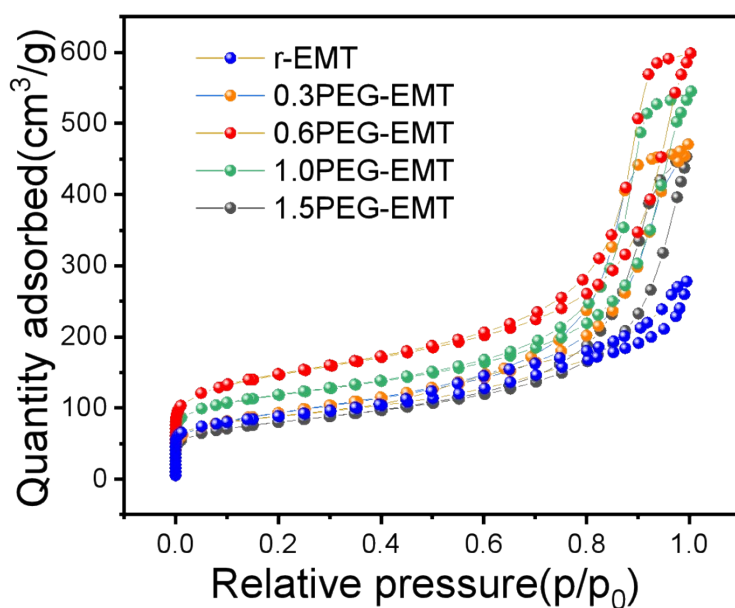


Figure S5. a) XPS spectra for r-EMT@Ag and PEG-EMT@Ag, Gaussian fitting of Ag based on the XPS spectra of b) r-EMT@Ag, c) PEG-EMT@Ag.



Figure

e S6. The N₂ sorption isotherm of r-EMT and nPEG-EMT zeolite.

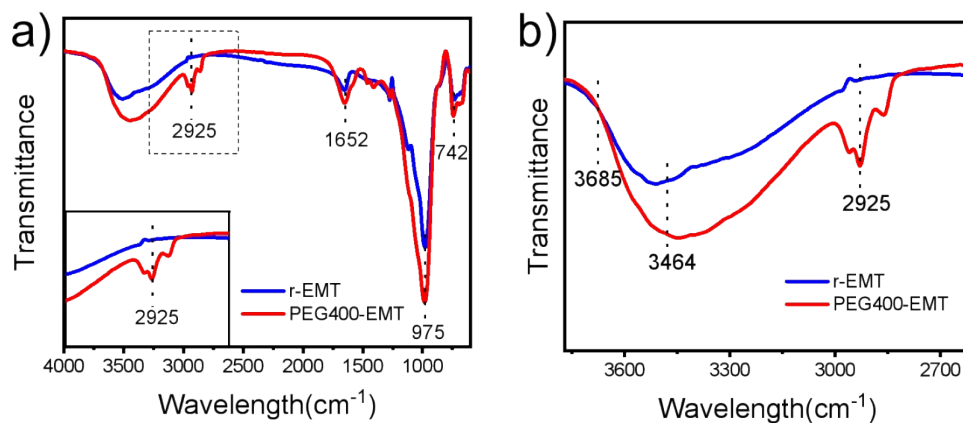


Figure S7. a) FT-IR spectra of r-EMT and PEG400-EMT. b) Enlarged images of an imaginary location in part a).

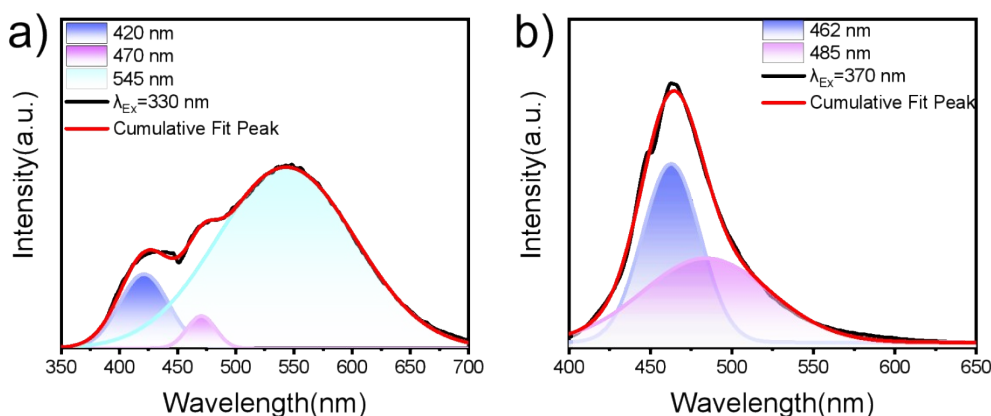


Figure S8. Gaussian peak fitting of fluorescence emission map a) r-EMT@Ag, b) PEG-EMT@Ag.

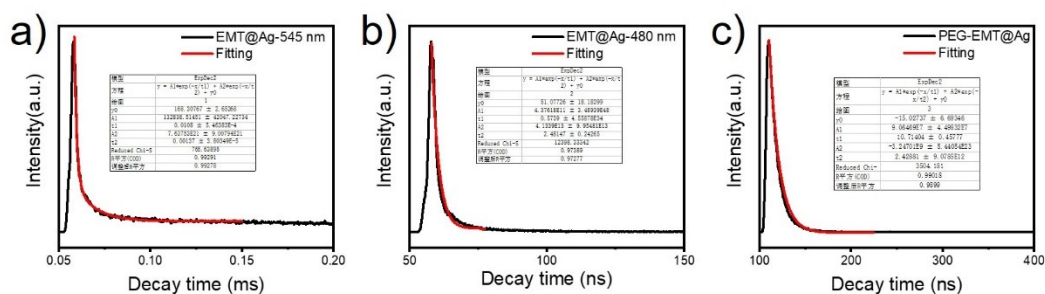


Figure S9. Emission decay time measurements of silver-loaded composites (a) r-EMT@Ag recorded at 545 nm, (b) r-EMT@Ag recorded at 480 nm and (c) PEG-EMT@Ag recorded at 460 nm.

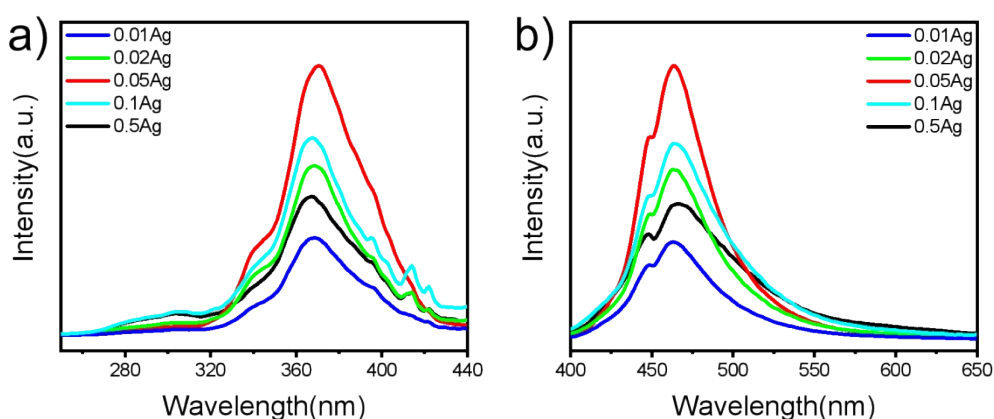


Figure S10. a) Excitation spectra of 0.6PEG-EMT@mAg ($m=0.01, 0.02, 0.05, 0.1, 0.5M$). b) Emission spectra of 0.6PEG-EMT@mAg ($m=0.01, 0.02, 0.05, 0.1, 0.5M$) (excitation at 370 nm, emission at 460 nm)

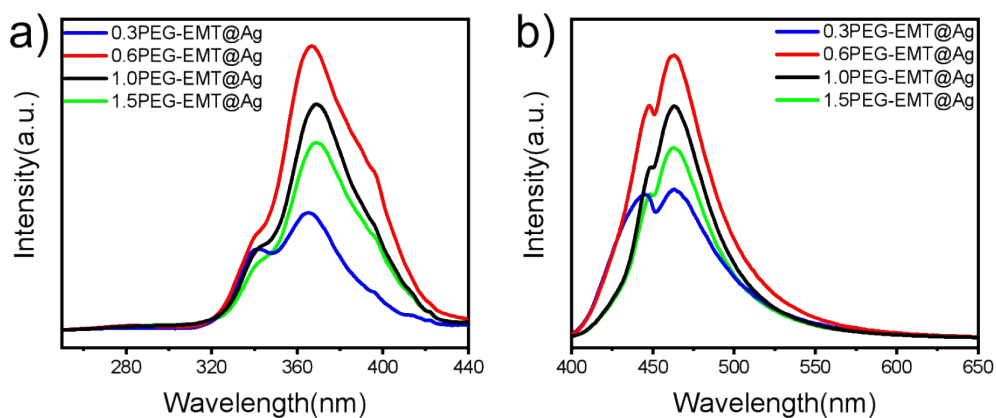


Figure S11. a) Excitation spectra of nPEG-EMT@0.05Ag (n=0.3, 0.6, 1.0, 1.5). b) Emission spectra of nPEG-EMT@0.05Ag (n=0.3, 0.6, 1.0, 1.5) (excitation at 370 nm, emission at 460 nm)

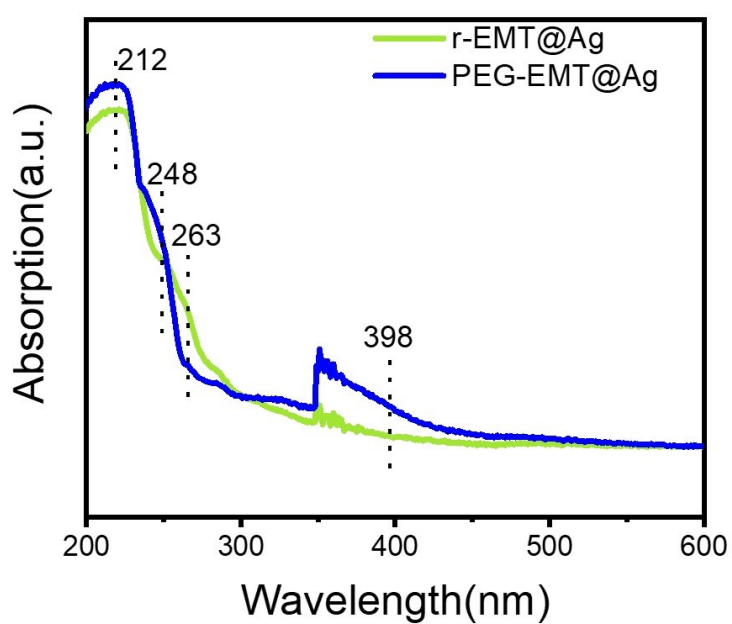


Figure S12. The UV-Vis absorbance spectra of r-EMT@Ag and PEG-EMT@Ag.

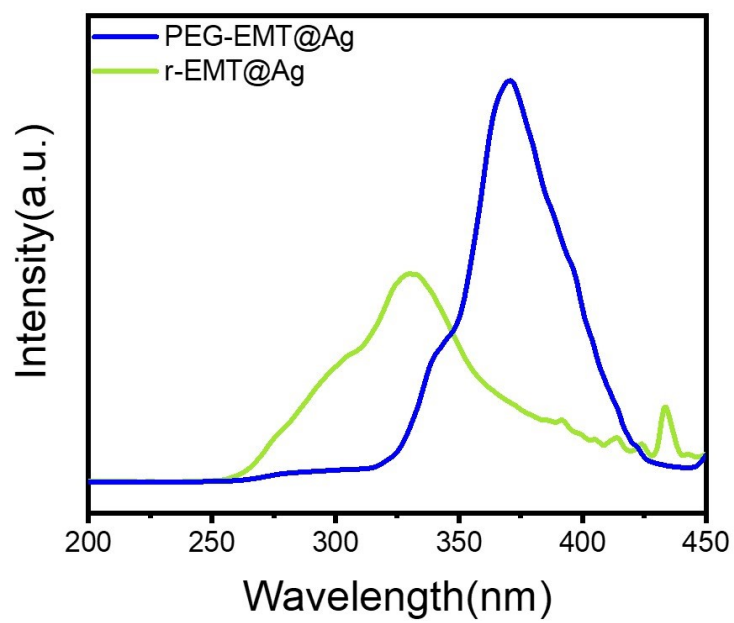


Figure S13. Excitation spectra of r-EMT@Ag and PEG-EMT@Ag

Table S1. The surface and bulk compositions of different materials

Name	Si/%	Al/%	C/%	O/%	Na/%	Ag/%	Ag ⁺ exchange rate/%	Ag (Bulk content)/%
r-EMT	16.14	15.38	25.53	36.88	6.07	0	0	0
r-EMT@Ag	11.98	11.6	33.1	37.24	2.11	3.97	65.24	9.453
PEG-EMT	14.93	14.12	25.55	39.02	6.38	0	0	0
PEG-EMT@Ag	12.06	11.39	35.34	26.24	1.15	13.82	81.98	13.944

Surface contents by XPS data. Bulk contents by ICP data.

Table S2. Pore structure parameters of r-EMT and PEG-EMT zeolite

Sample	S _{BET} (m ² /g)	E _{external} (m ² /g)	V _{Micropore} (cm ³ /g)	V _{Total} (cm ³ /g)
r-EMT	293.6242	182.0599	0.056587	0.429721
0.3PEG-EMT	333.0901	245.8087	0.036206	0.718857
0.6PEG-EMT	445.5775	278.2705	0.105900	0.905865
1.0PEG-EMT	391.6399	231.0730	0.081104	0.824188
1.5PEG-EMT	286.2630	194.6308	0.038639	0.701232