Electronic Supplementary Material (ESI) for Dalton Transactions.

Supporting Information

Catalytic fixation of atmospheric carbon dioxide by copper(II) complexes of bidentate ligands

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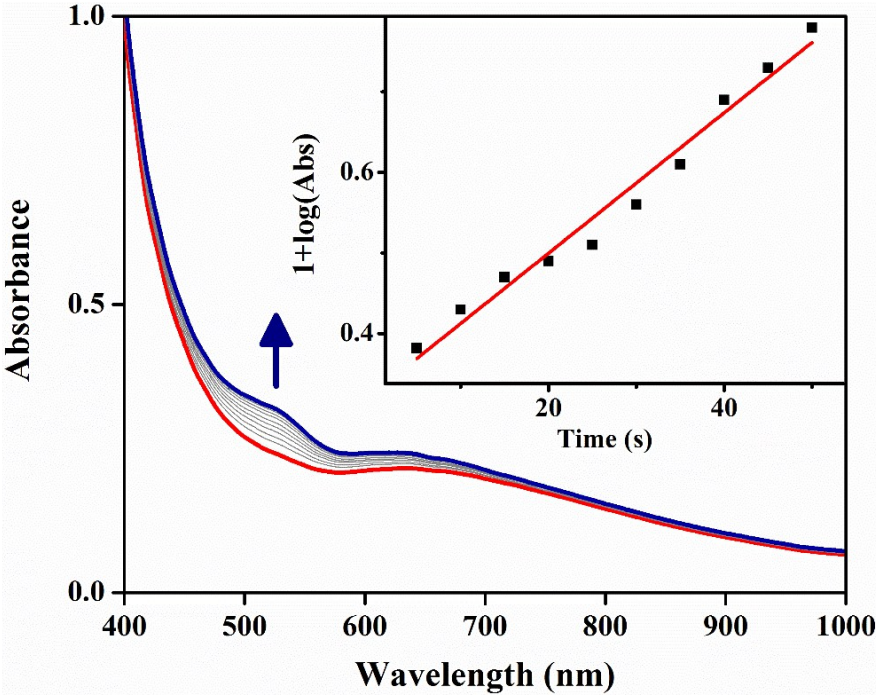


Figure S1. UV-vis spectral changes for the reaction of complex **2** (1 $\times 10^{-3}$ M) with one equivalent Et_3N in CH_3CN at 25 ˚C.

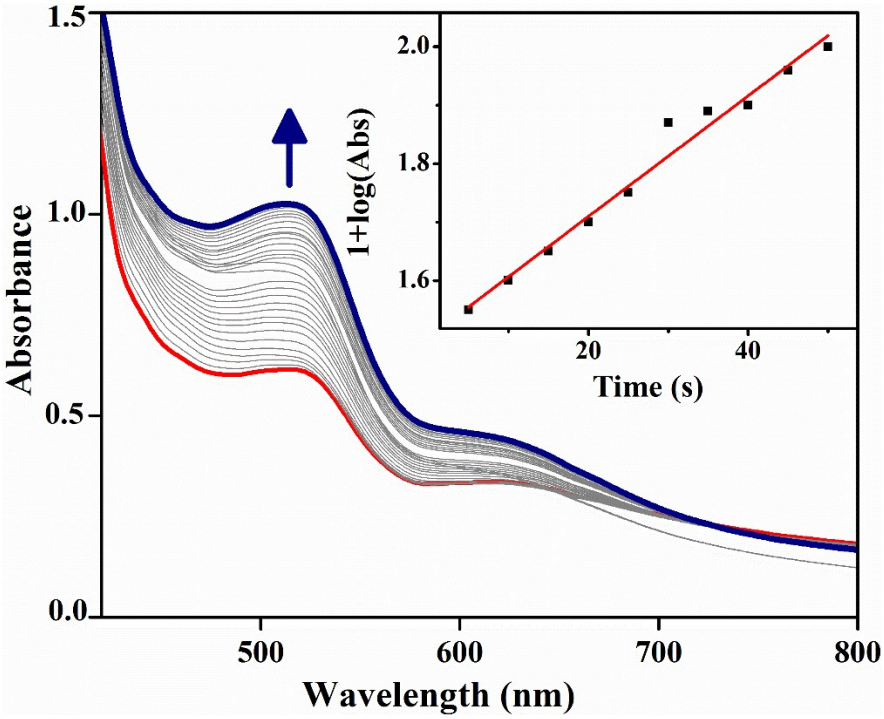


Figure S2. UV-vis spectral changes for the reaction of complex **3** (1 $\times 10^{-3}$ M) with one equivalent of Et_3N in CH_3CN at 25 ˚C.

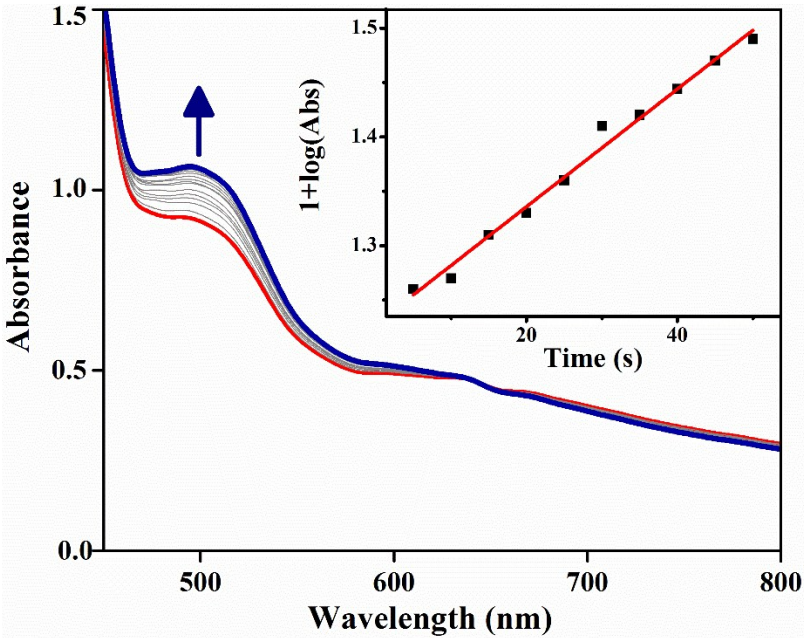


Figure S3. UV-vis spectral changes for the reaction of complex **4** (1 ×10^{-3} M) with one equivalent of Et_3N in CH_3CN at 25 ˚C.

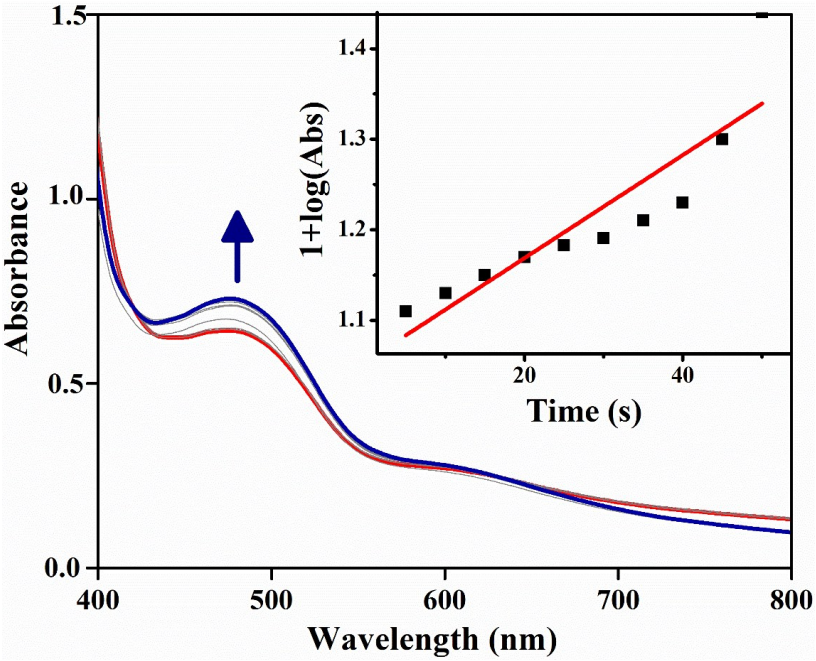


Figure S4. UV-vis spectral changes for the reaction of complex **5** (1 ×10^{-3} M) with one equivalent of Et_3N in CH_3CN at 25 ˚C.

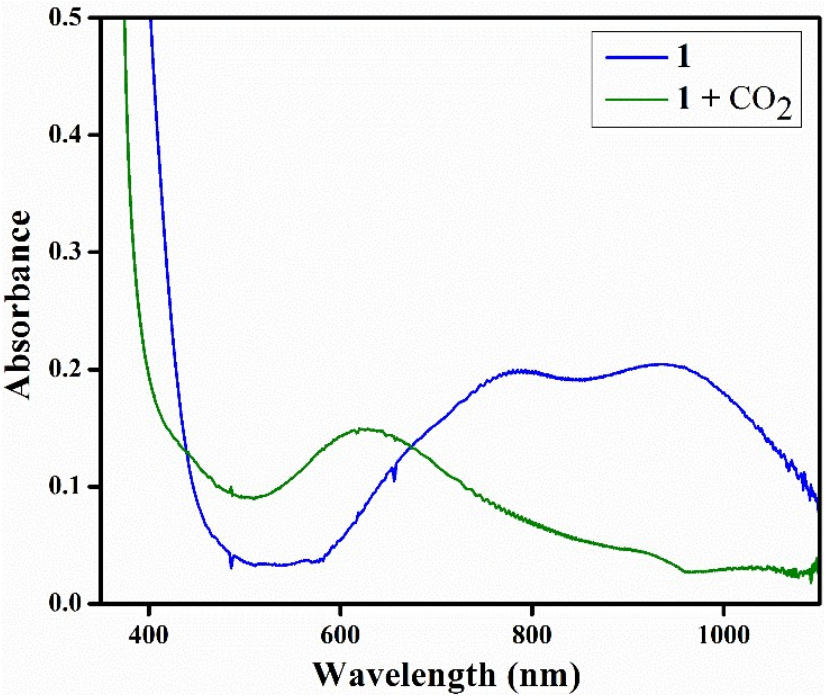


Figure S5. Uv-vis spectral change for the reaction of complex **1** (5×10^{-3} M) with CO_2 in the presence of one equivalent Et_3N in CH_3CN at 25 °C.

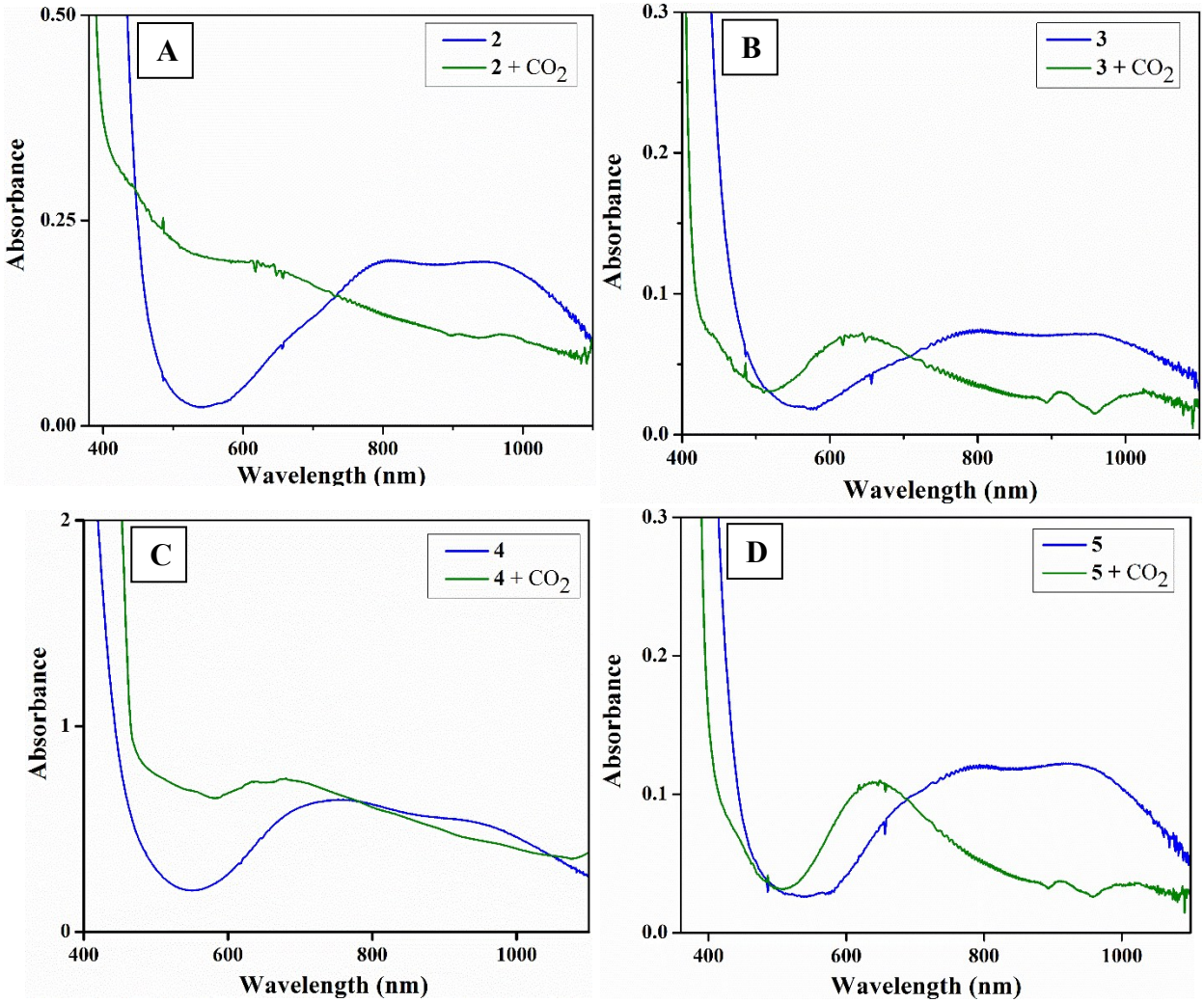

A
2
2 + CO2
Absorbance
Wavelength (nm)
B
3
3 + CO2
Absorbance
Wavelength (nm)
C
4
4 + CO2
Absorbance
Wavelength (nm)
D
5
5 + CO2
Absorbance
Wavelength (nm)

Figure S6. Uv-vis spectral change for the reaction of copper(II) complexes **2 (A)**, **3 (B)**, **4 (C)** and **5 (D)** (1 $\times 10^{-3}$ M) with CO_2 in the presence of one equivalent Et_3N in CH_3CN at 25 ^{o}C.

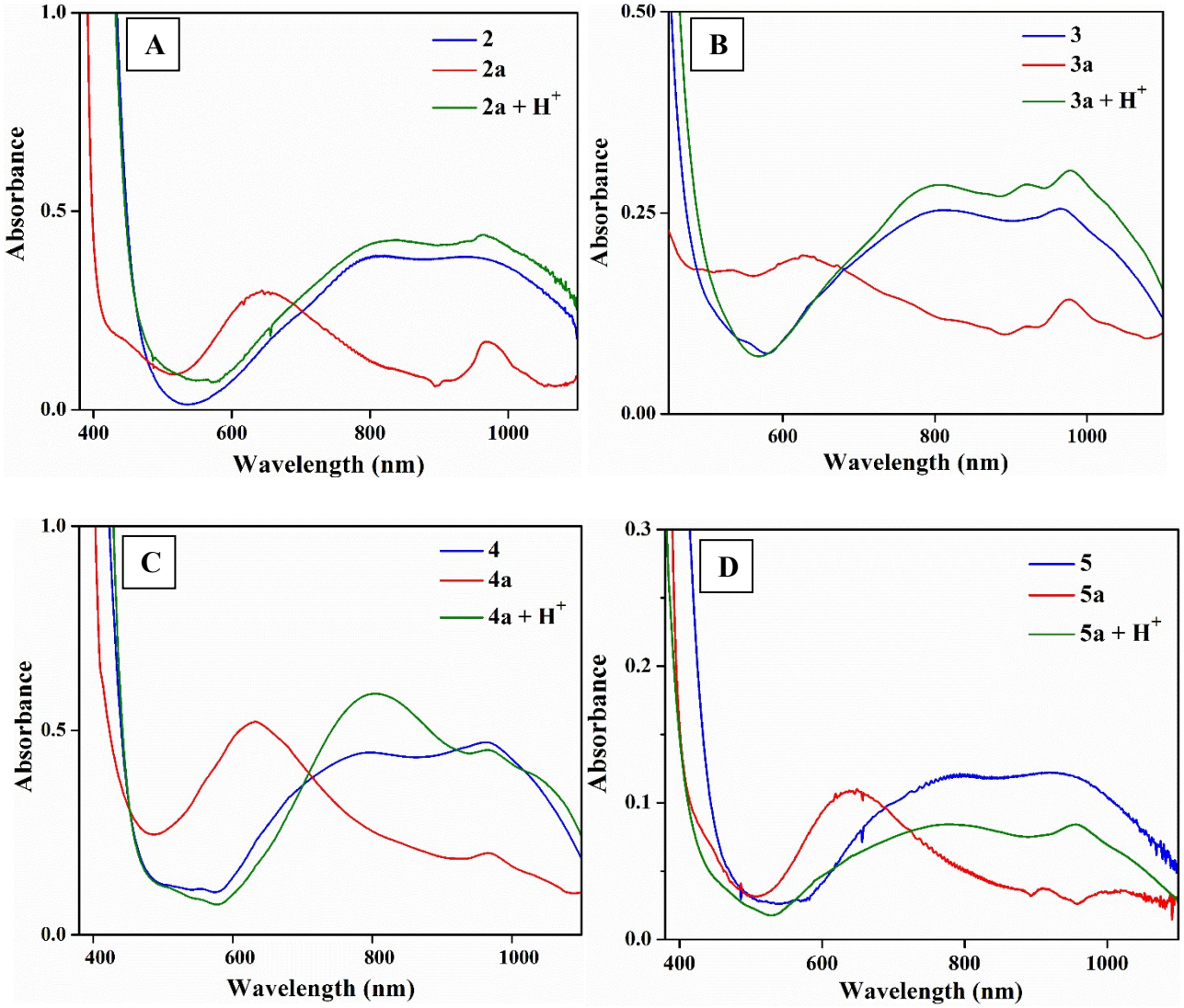


Figure S7. Uv-vis spectra for the regeneration of the complexes 2 **(A)**, 3 **(B)**, 4 **(C)** and 5 **(D)** (1 $\times 10^{-3}$ M) in the presence of one equivalent H^+ (HCl).

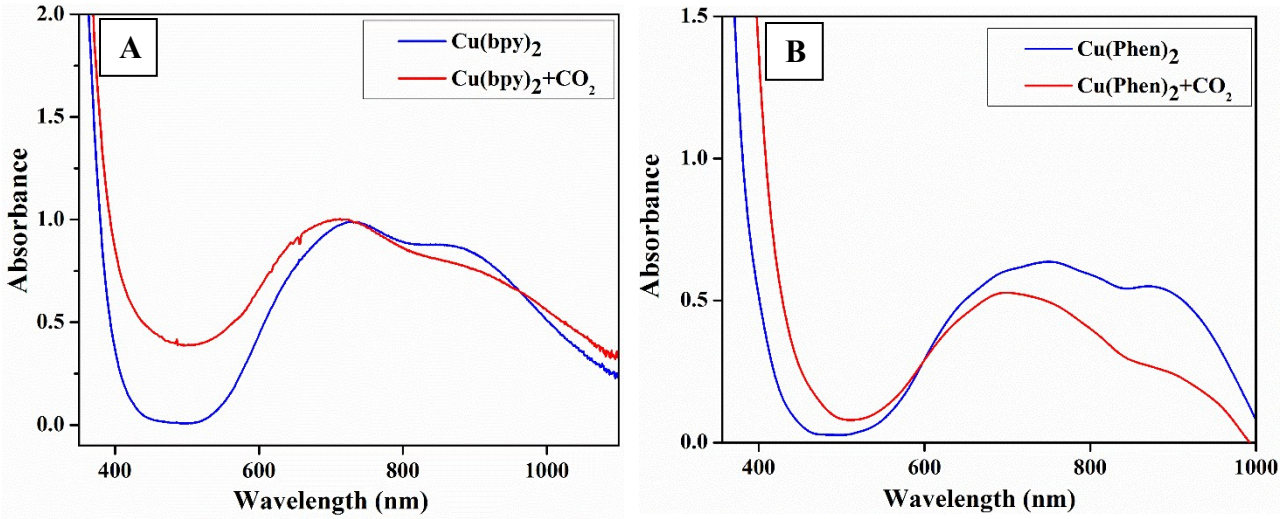


Figure S8. Uv-vis spectra of the reaction of $[Cu(bpy)_2](ClO_4)_2$ (1 $\times 10^{-3}$ M) **(A)** and $[Cu(phen)_2](ClO_4)_2$ **(B)** (1 $\times 10^{-3}$ M) with CO_2 in the presence of Et_3N at 25 ^oC.

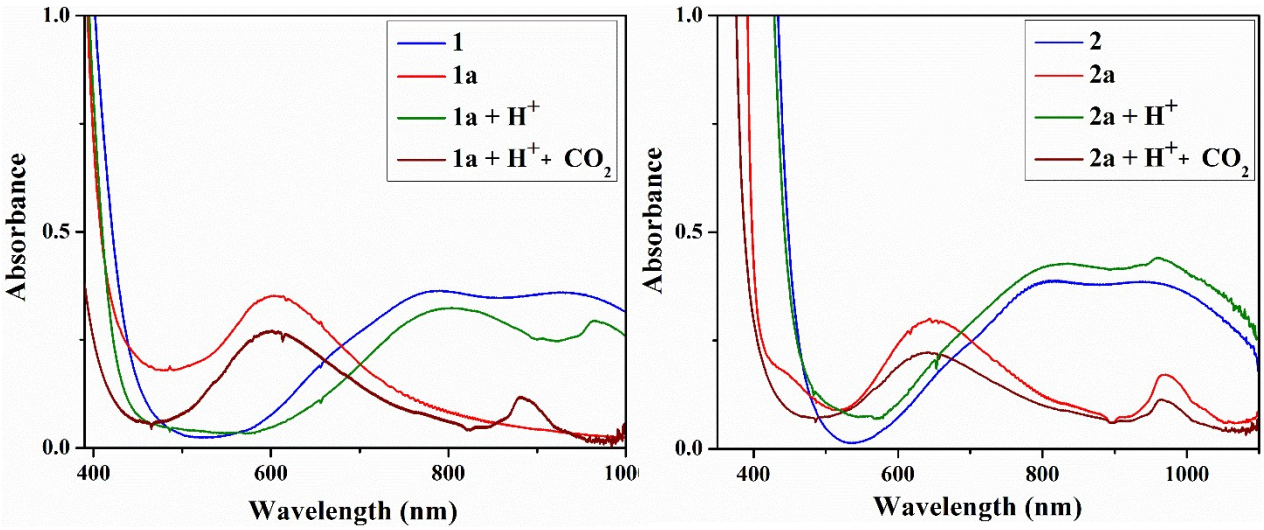


Figure S9. Absorption spectral changes during recycling **1** (1 ×10^{-3} M) (left) and **2** (1 ×10^{-3} M) (right) at 25 °C.

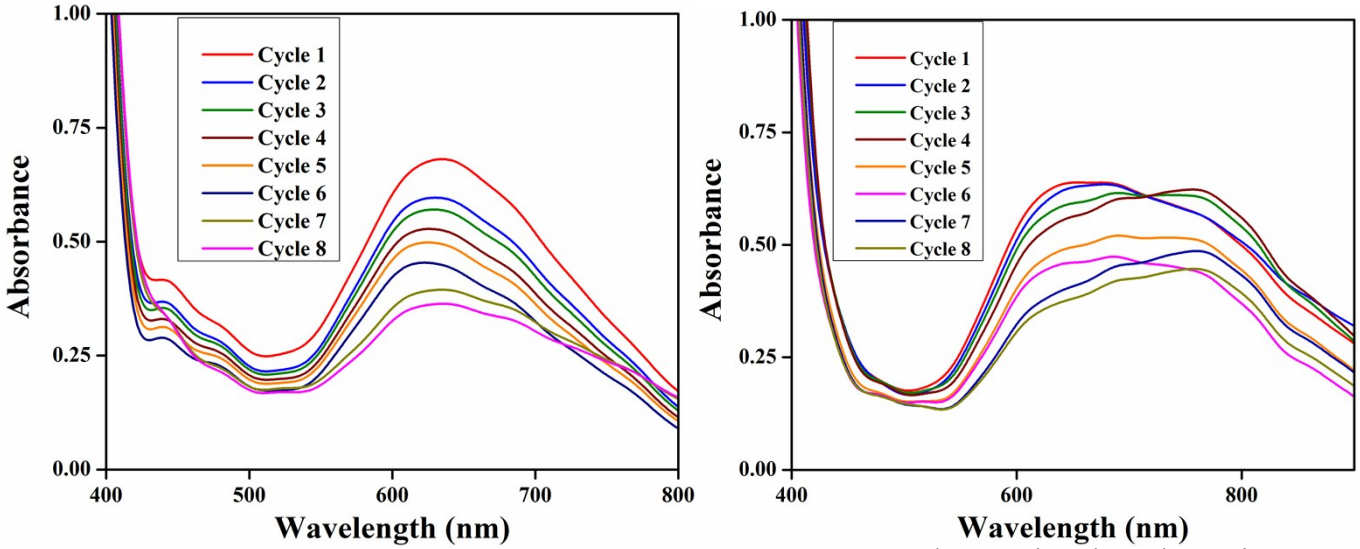
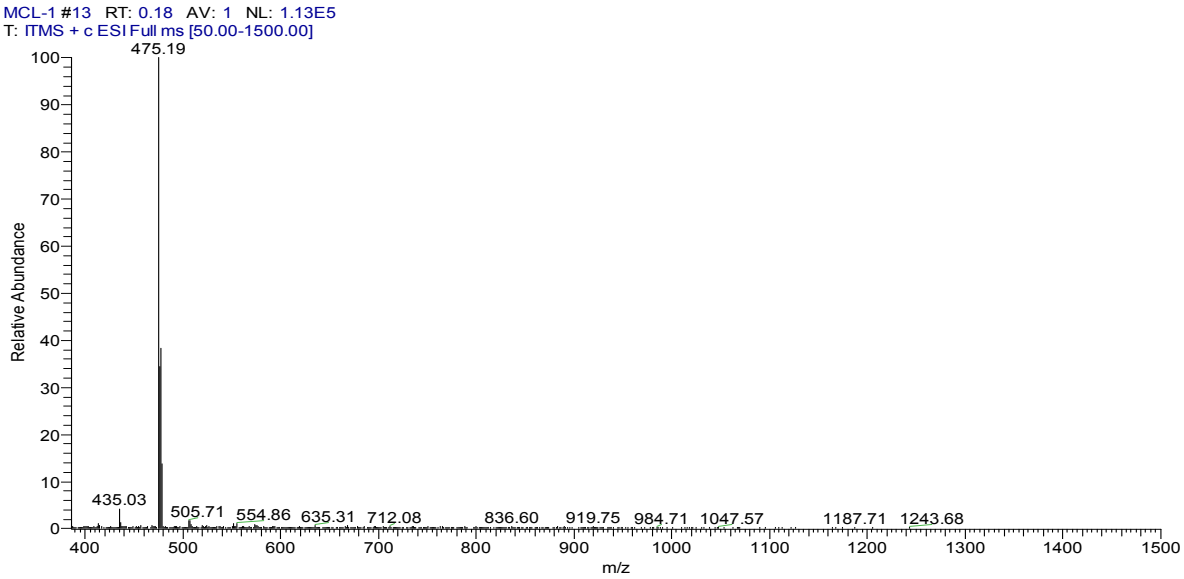
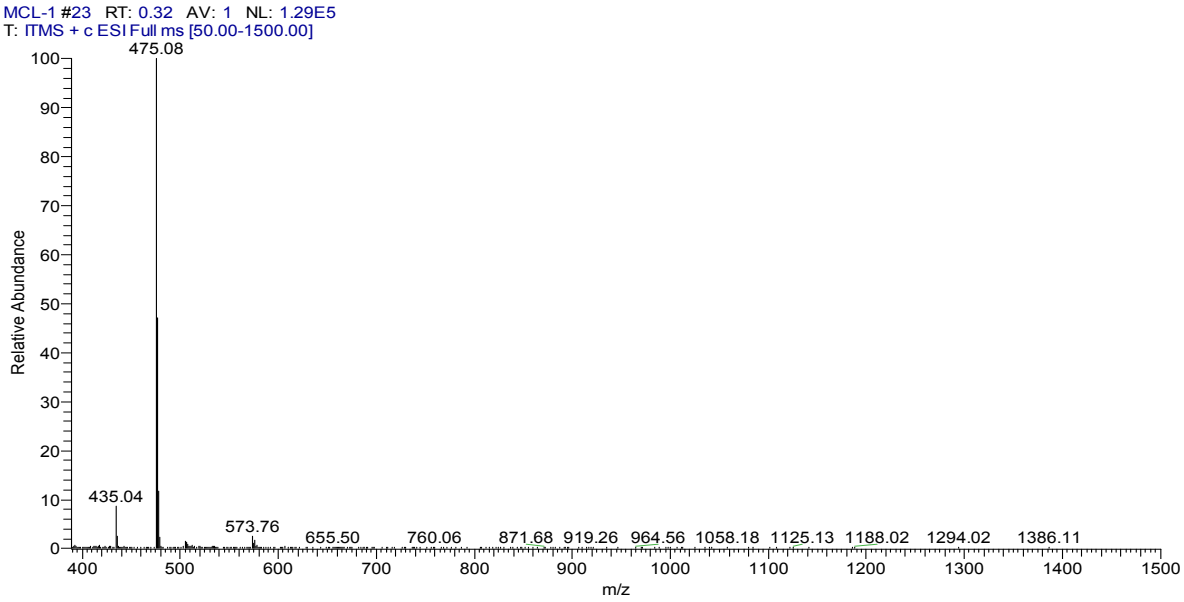


Figure S10. Change in the absorption spectra in the recyclability test of the catalyst **1** (5 ×10^{-3} M) (left) and **2** (5 ×10^{-3} M) (right) in acetonitrile at 25 °C.

Authentic 1



Recovered catalyst



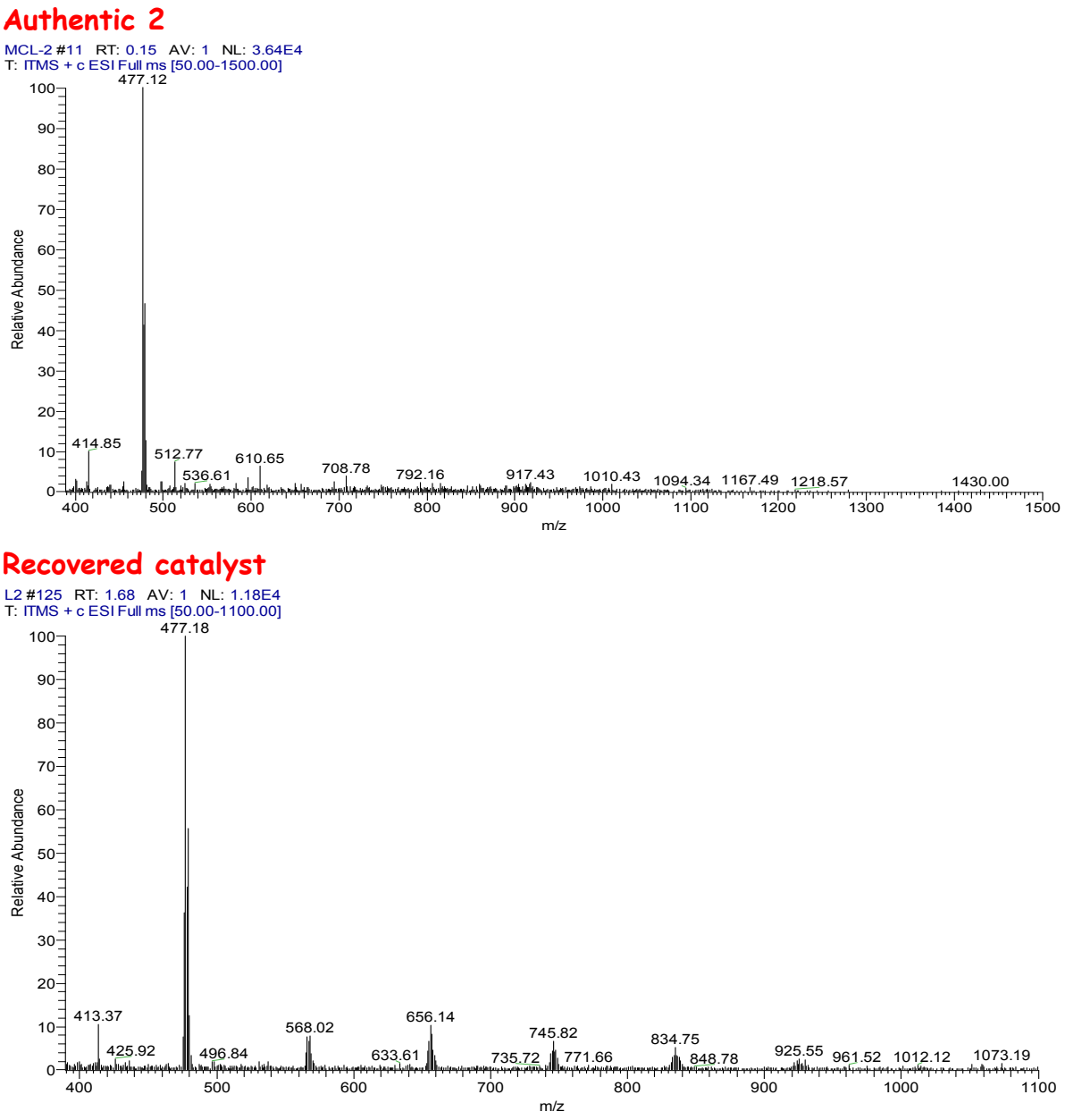


Figure S11. ESI-MS spectra of complex **1** (top) and regeneration of the catalyst **1** (bottom) in acetonitrile solution.

Figure S12. ESI-MS spectra of complex **2** (top) and regeneration of the catalyst **2** (bottom) in acetonitrile solution.

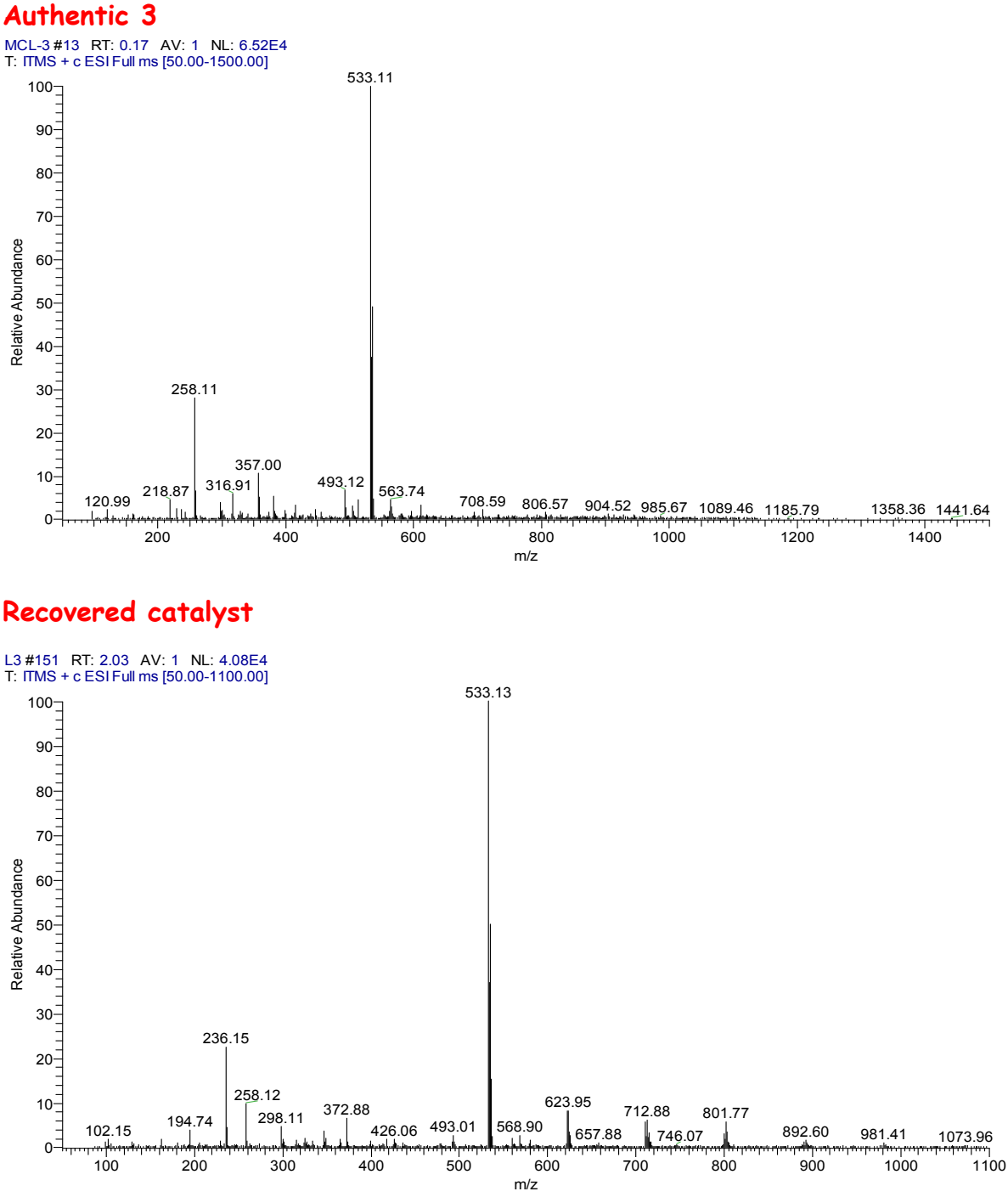


Figure S13. ESI-MS spectra of complex **3** (top) and regeneration of the catalyst **3** (bottom) in acetonitrile solution.

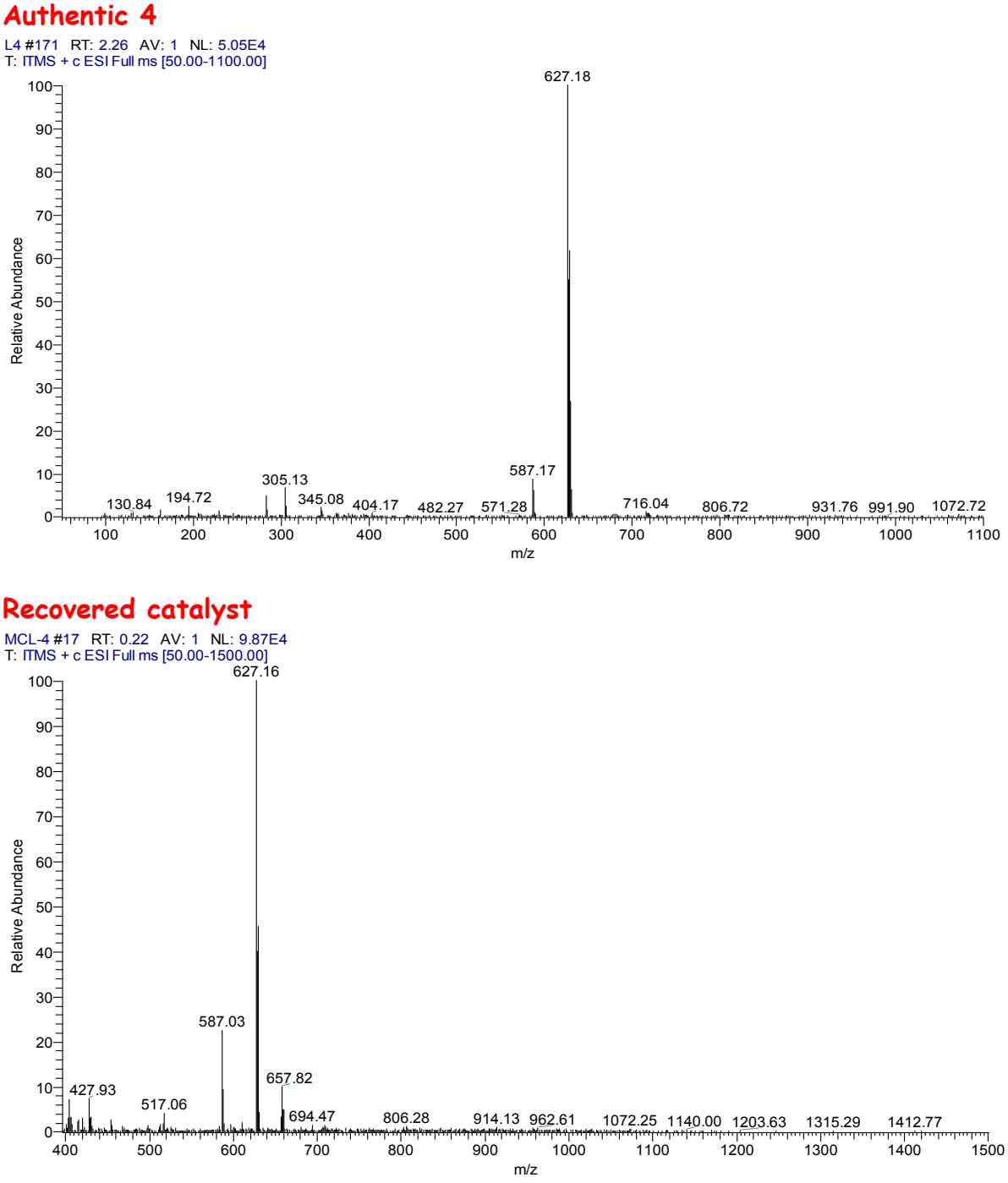


Figure S14. ESI-MS spectra of complex **4** (top) and regeneration of the catalyst **4** (bottom) in acetonitrile solution.

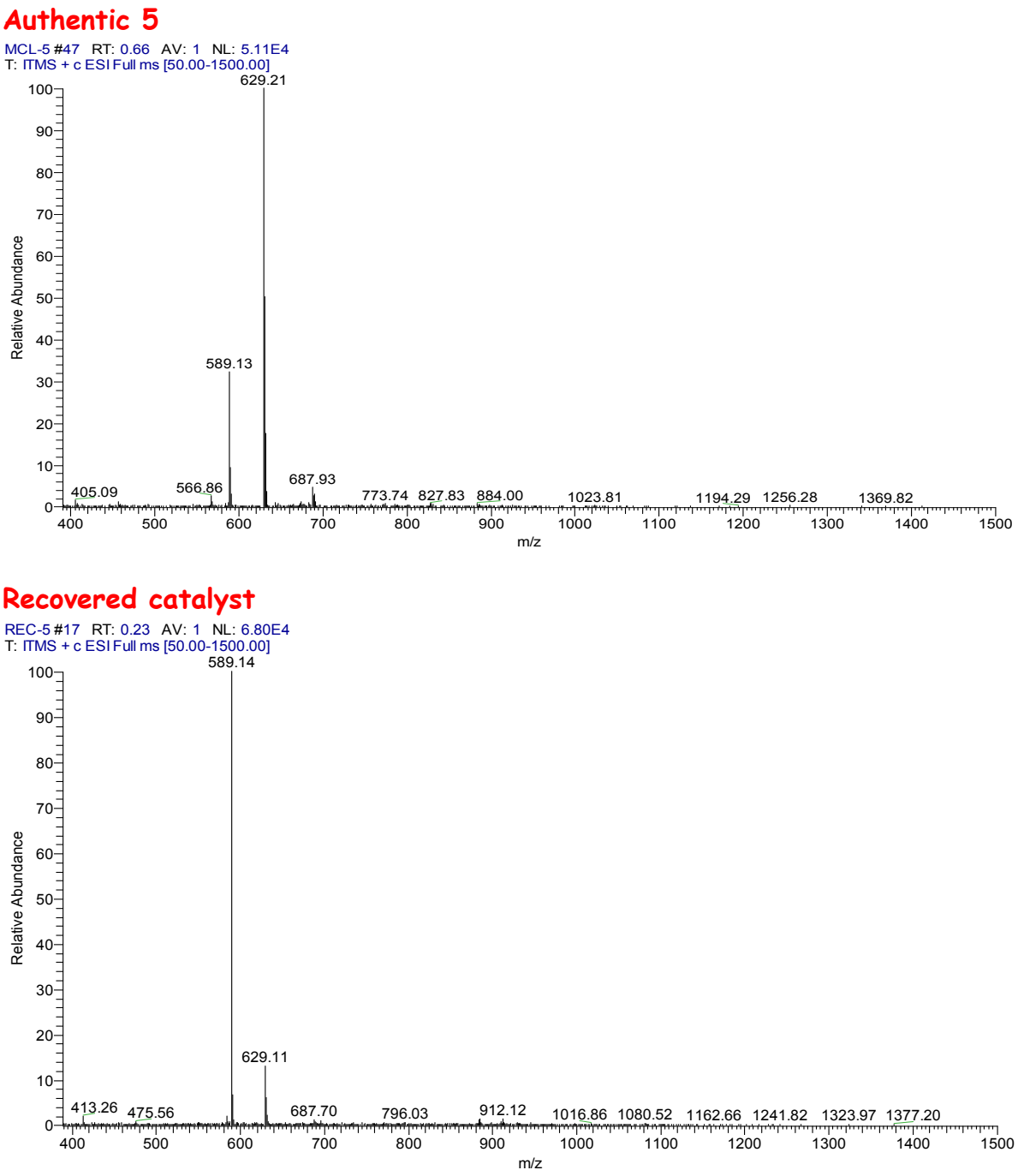


Figure S15. ESI-MS spectra of complex **5** (top) and regeneration of the catalyst **5** (bottom) in acetonitrile solution.