

Figure S1. Powder X-ray diffractogram of $[\text{Ag}(\text{CF}_3\text{CO}_2)(\text{Me}_4\text{bpzH}_2)]$ at room temperature. The simulated diffractogram (dashed line) is based on the X-ray data collected at -95°C .

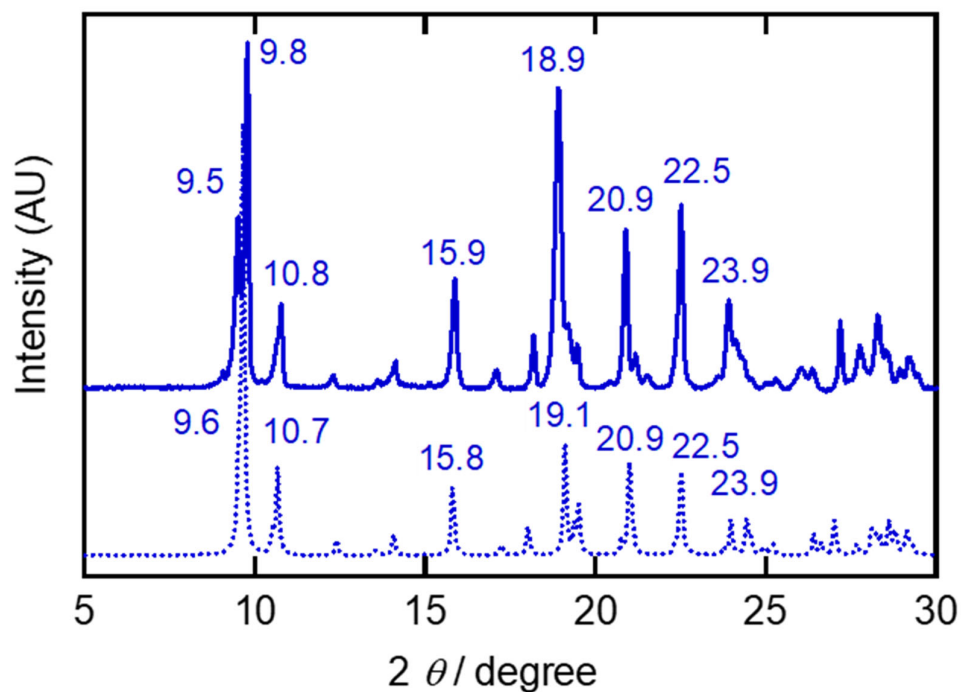


Figure S2. Powder X-ray diffractogram of $[\text{Ag}(\text{CF}_3\text{SO}_3)(\text{Me}_4\text{bpzH}_2)]$ at room temperature. The simulated diffractogram (dashed line) is based on the X-ray data collected at -95°C .

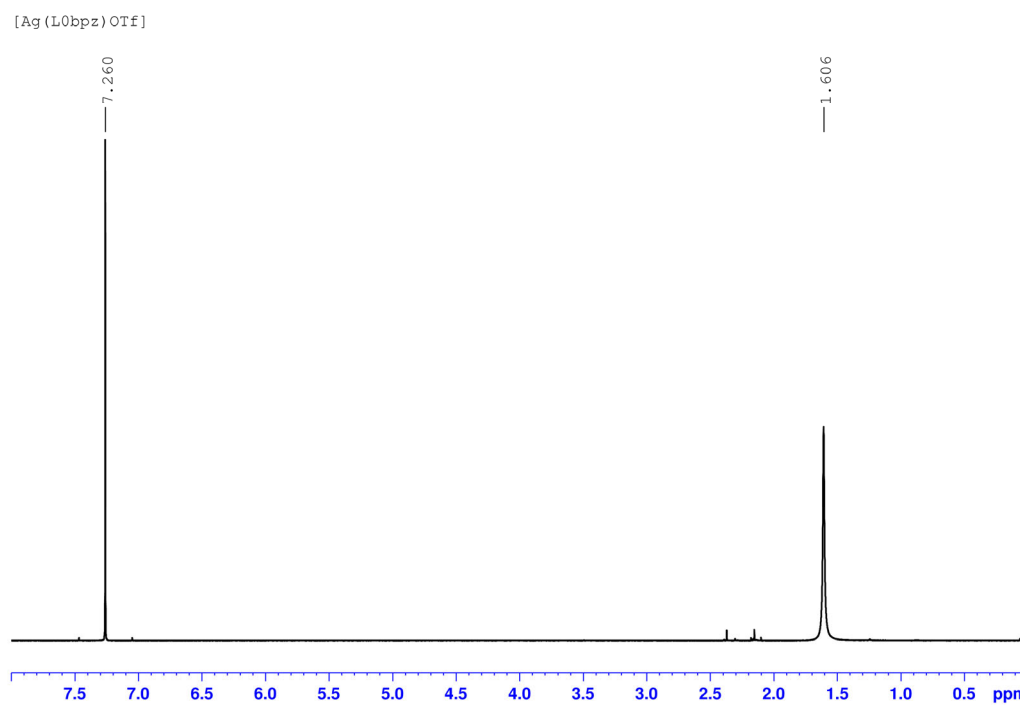


Figure S3. ^1H -NMR spectrum of $[\text{Ag}(\text{CF}_3\text{SO}_3)(\text{Me}_4\text{bpzH}_2)]$ at room temperature in CDCl_3 .

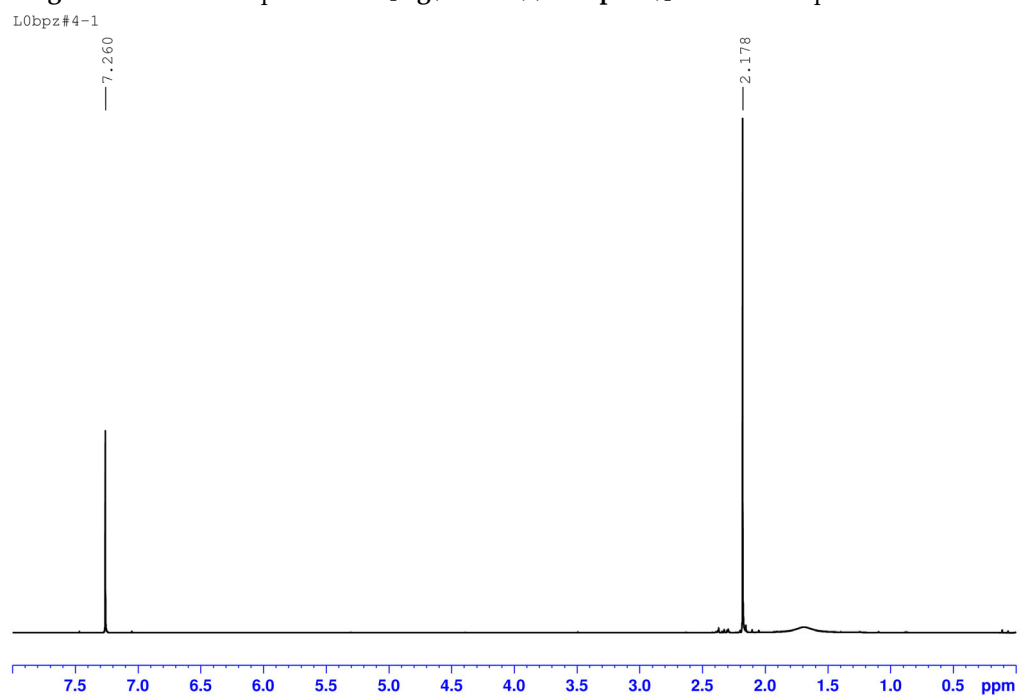


Figure S4. ^1H -NMR spectrum of Me_4bpzH_2 at room temperature in CDCl_3 .

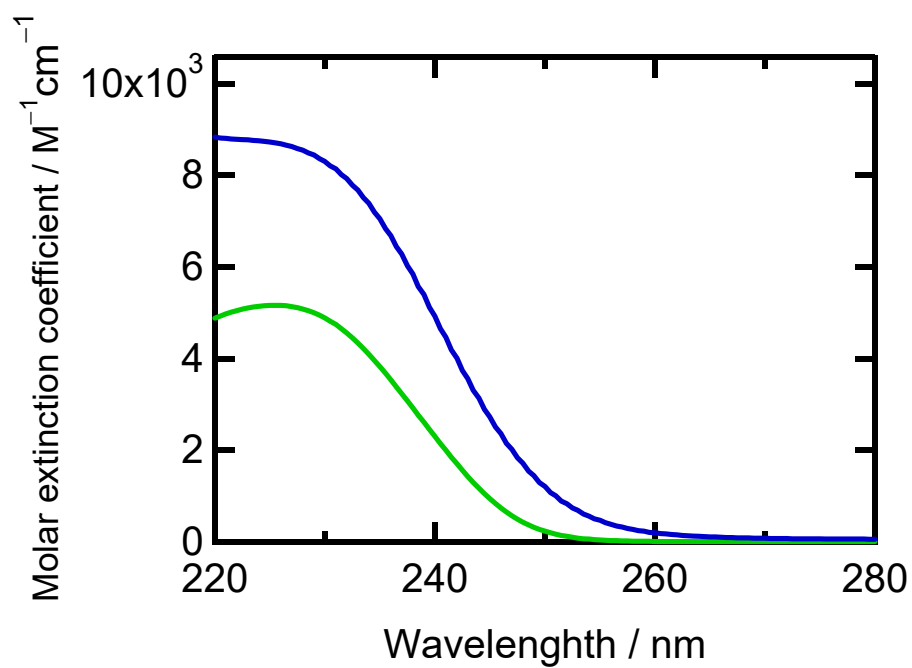


Figure S5. UV spectra of the ligand Me₄bpzH₂ (green line) and silver(I) coordination polymers [Ag(CF₃SO₃)(Me₄bpzH₂)] (blue line) at room temperature in MeOH.

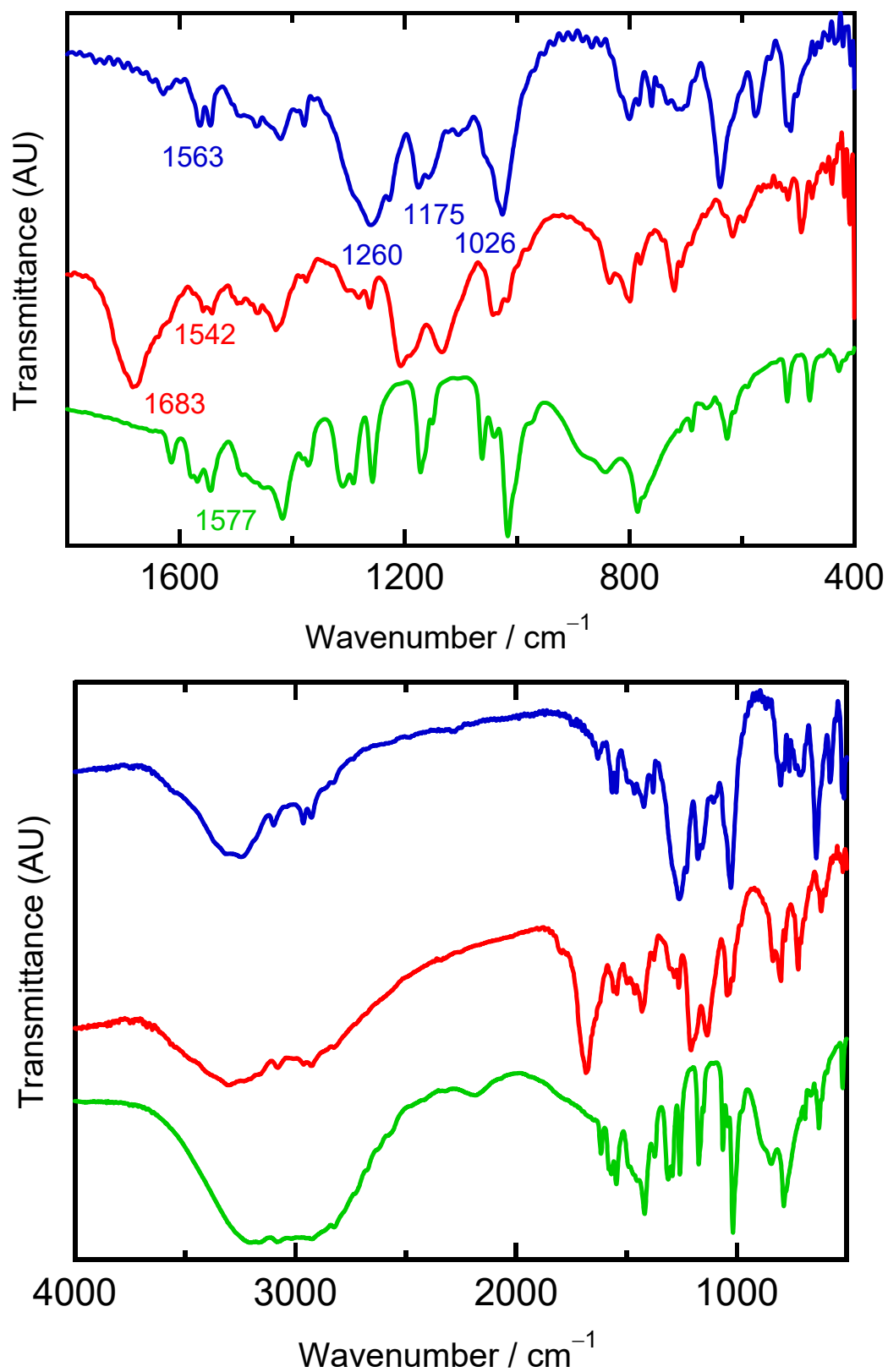


Figure S6. IR spectra of the ligand Me_4bpzH_2 (green line) and silver(I) complexes $[\text{Ag}(\text{CF}_3\text{CO}_2)(\text{Me}_4\text{bpzH}_2)]$ (red line) and $[\text{Ag}(\text{CF}_3\text{SO}_3)(\text{Me}_4\text{bpzH}_2)]$ (blue line) at room temperature. Top: 4000–500 cm^{-1} range, bottom: 1800–400 cm^{-1} region.

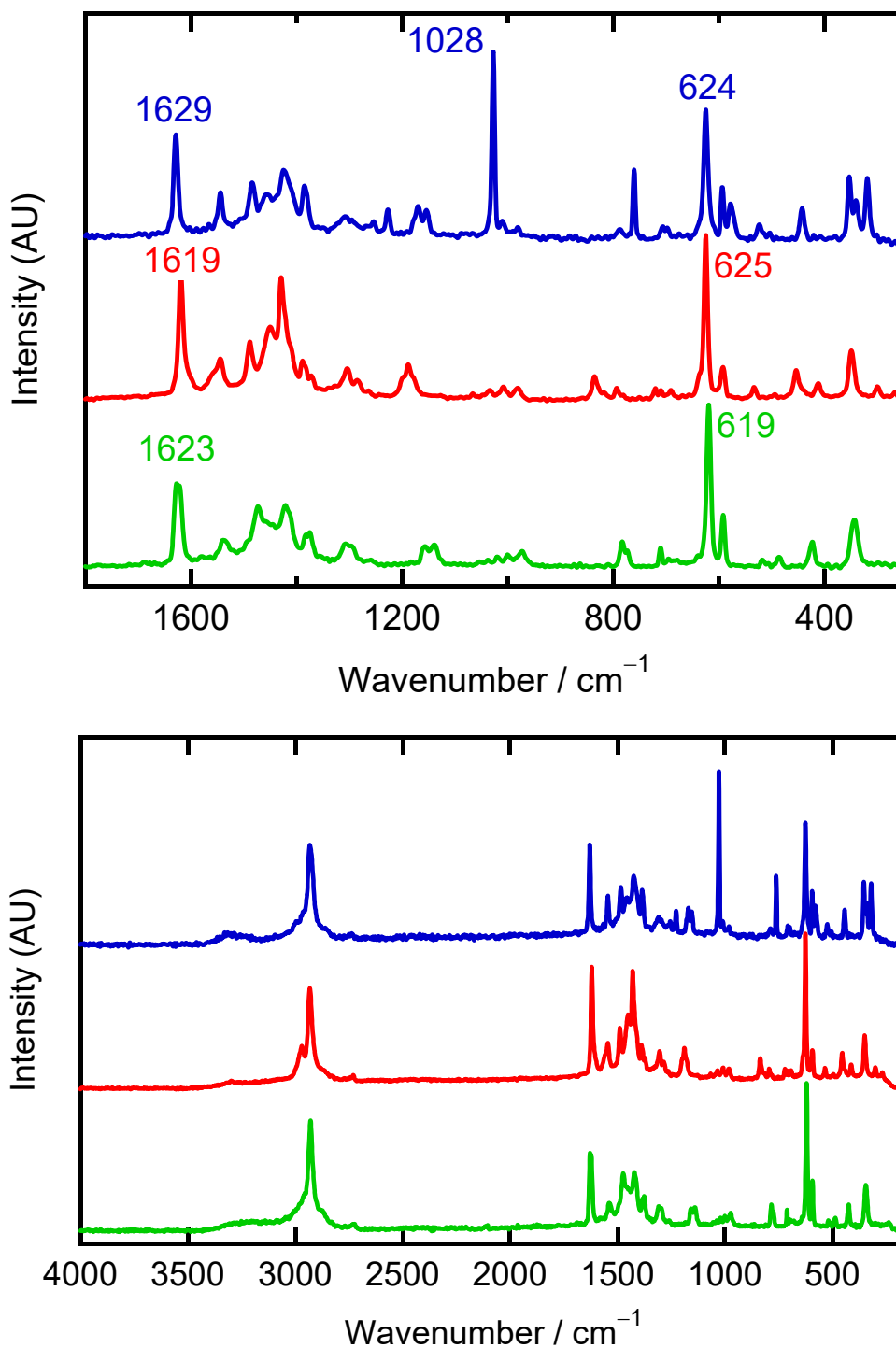


Figure S7. FT-Raman spectra (600 mW Laser power) of the ligand Me₄bpzH₂ (green line) and silver(I) complexes [Ag(CF₃CO₂)(Me₄bpzH₂)] (red line) and [Ag(CF₃SO₃)(Me₄bpzH₂)] (blue line) at room temperature. Top: 4000–1500 cm⁻¹ range, bottom: 1800–250 cm⁻¹ region.

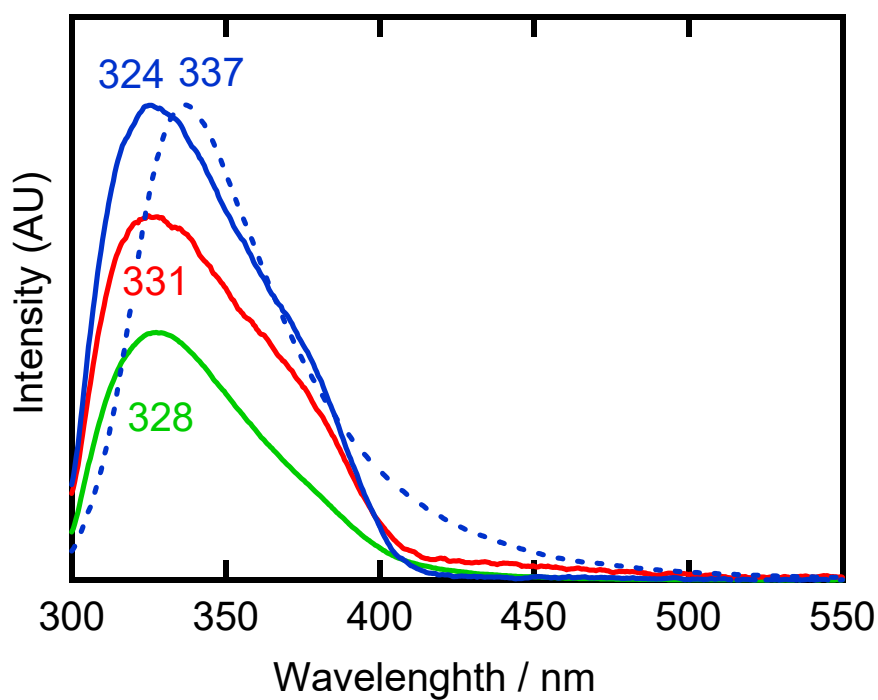


Figure S8. Photoluminescence spectra of the ligand Me₄bpzH₂ (solid-state, green line at 250 nm excitation), and silver(I) complexes [Ag(CF₃CO₂)(Me₄bpzH₂)] (solid-state, red line at 250 nm excitation) and [Ag(CF₃SO₃)(Me₄bpzH₂)] (solid-state, blue line at 240 nm excitation and solution-state in MeOH, blue dashed line at 260 nm exaction) at 298 K.

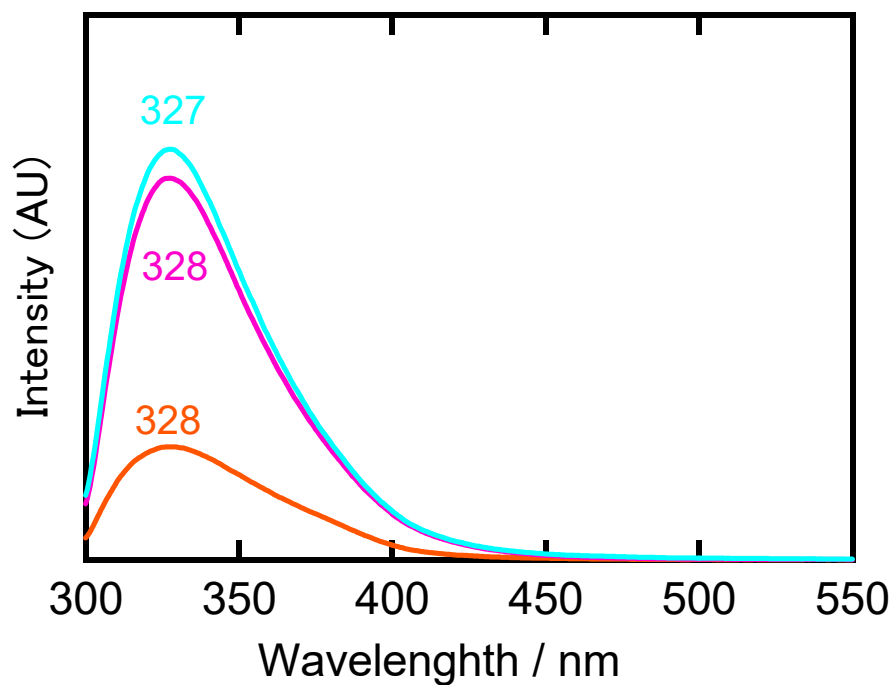


Figure S9. Temperature dependent photoluminescence spectra of the ligand Me₄bpzH₂ (solid-state) at 250 nm excitation wavelength, temperatures: (83 K (light blue), 173 K (purple), and 298 K (orange)).

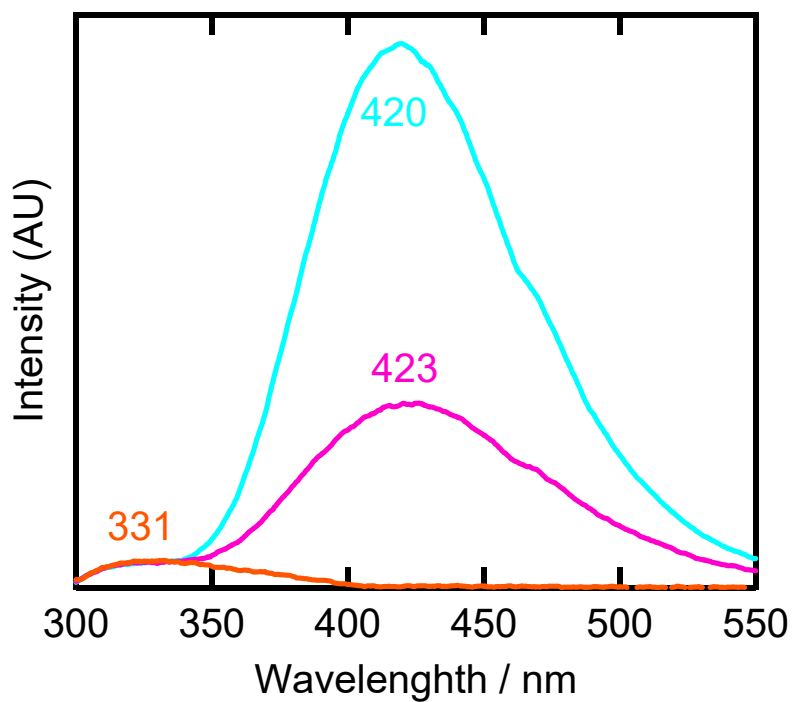


Figure S10. Temperature dependent photoluminescence spectra of [Ag(CF₃CO₂)(Me₄bpzH₂)] (solid-state) at 250 nm excitation wavelength, (83 K (light blue), 173 K (purple), and 298 K (orange)).

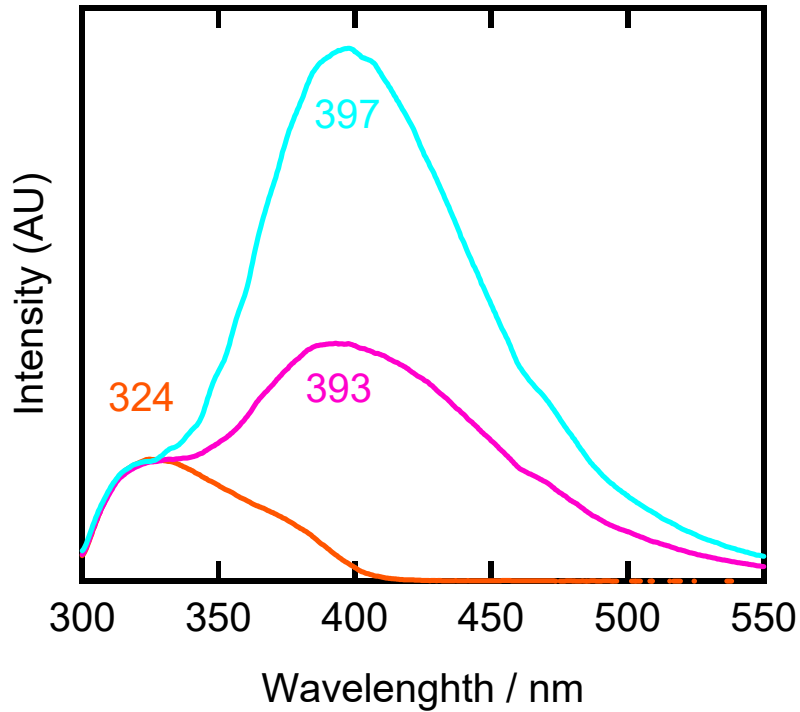


Figure S11. Temperature dependent photoluminescence spectra of [Ag(CF₃SO₃)(Me₄bpzH₂)] (solid-state) at 240 nm excitation wavelength, (83 K (light blue), 173 K (purple), and 298 K (orange)).

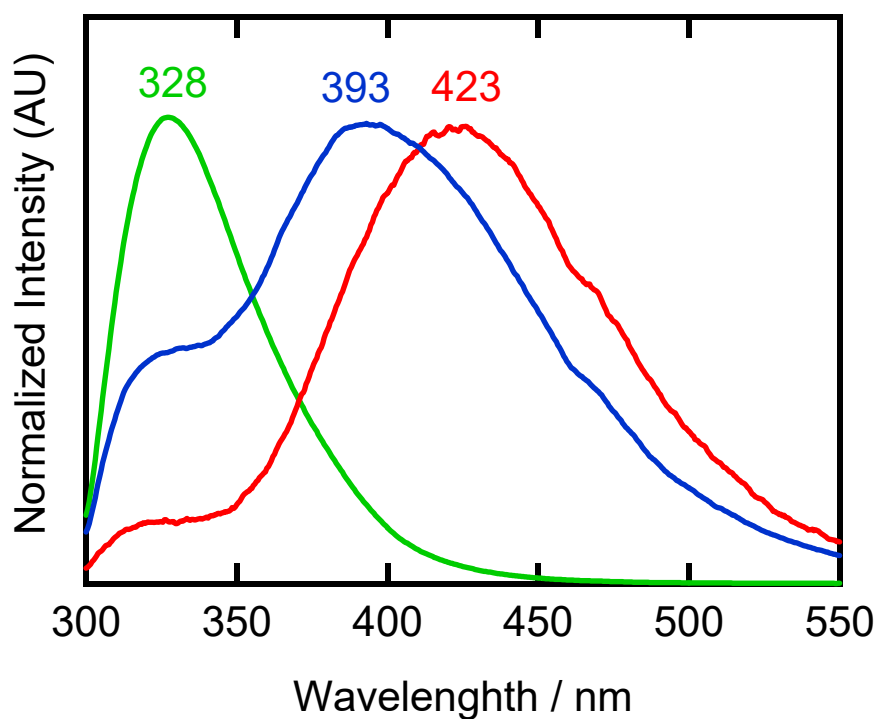


Figure S12. Solid-state photoluminescence spectra of the ligand Me₄bpzH₂ (green line, 250 nm excitation) and silver(I) complexes [Ag(CF₃CO₂)(Me₄bpzH₂)] (red line, 250 nm excitation) and [Ag(CF₃SO₃)(Me₄bpzH₂)] (blue line, 240 nm excitation) at 173 K

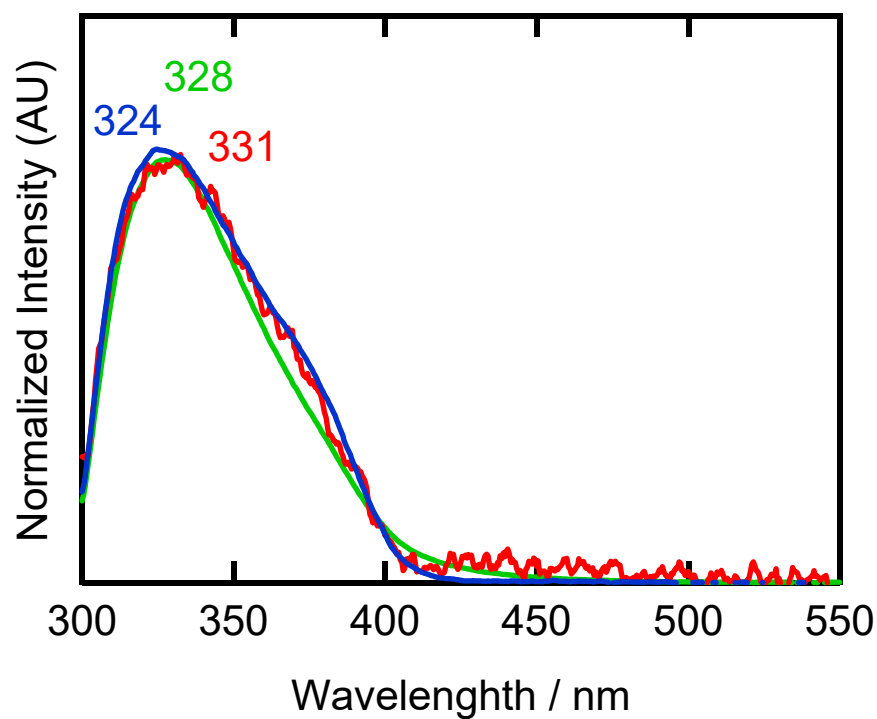


Figure S13. Solid-state photoluminescence spectra of the ligand Me₄bpzH₂ (green line, 250 nm excitation) and silver(I) complexes [Ag(CF₃CO₂)(Me₄bpzH₂)] (red line, 250 nm excitation) and [Ag(CF₃SO₃)(Me₄bpzH₂)] (blue line, 240 nm excitation) at 298 K.