Electronic supplementary data to accompany

Self-Assembly of heteroleptic dinuclear silver(I) complexes bridged by bis(diphenylphosphino)-acetylene

Sarah Keller,[a] Timothy N. Camenzind,[a,b] Johannes Abraham,[c] Alessandro Prescimone,[a] Daniel Häussinger,[c] Edwin C. Constable[a] and Catherine E. Housecroft*[a]

[a]Department of Chemistry, University of Basel, BPR 1096, Mattenstrasse 24a, CH-4058 Basel, Switzerland; email: catherine.housecroft@unibas.ch
[b]Current address: Department of Physics, University of Basel, Klingelbergstrasse 82, CH-4056 Basel, Switzerland
[c]Department of Chemistry, University of Basel, St. Johanns-Ring 19, CH-4056 Basel, Switzerland

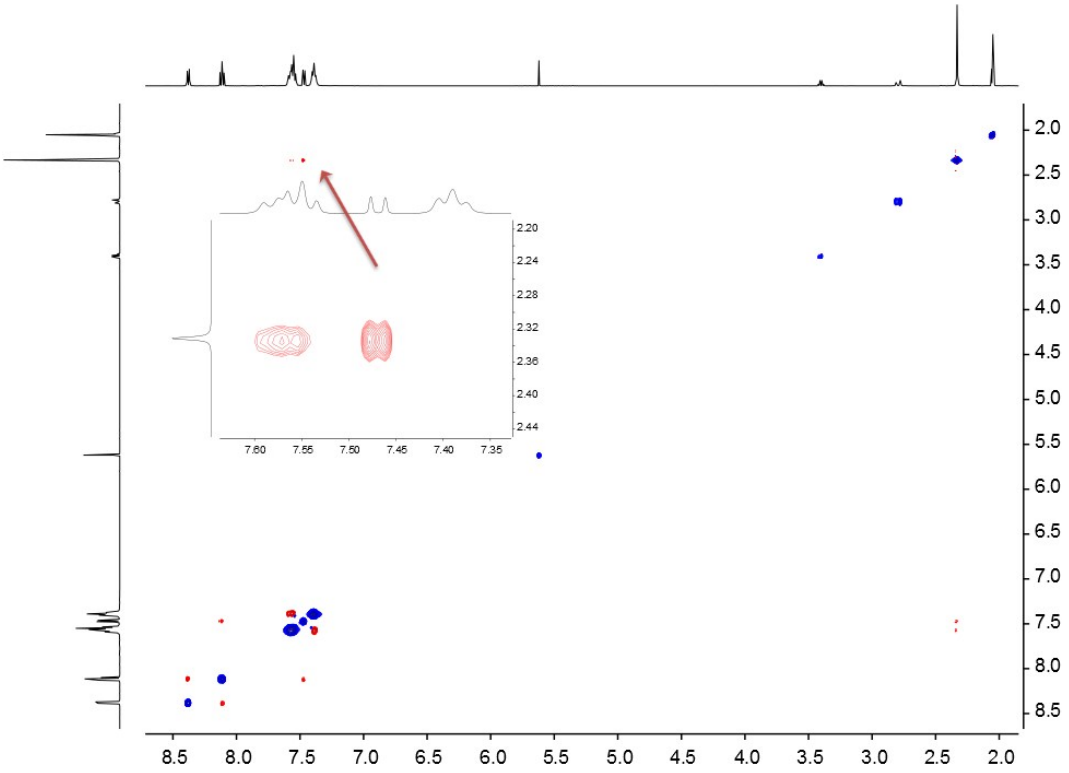

Fig. S1: NOESY spectrum of $[Ag_2(dppa)_2(6,6'\text{-}Me_2bpy)_2][PF_6]_2$ in $(CD_3)_2CO$ at 298 K, 500 MHz. The NOESY cross peaks between the Me signal at δ 2.33 ppm and the H^{C2+C4} signal at δ 7.57 ppm are clearly visible.

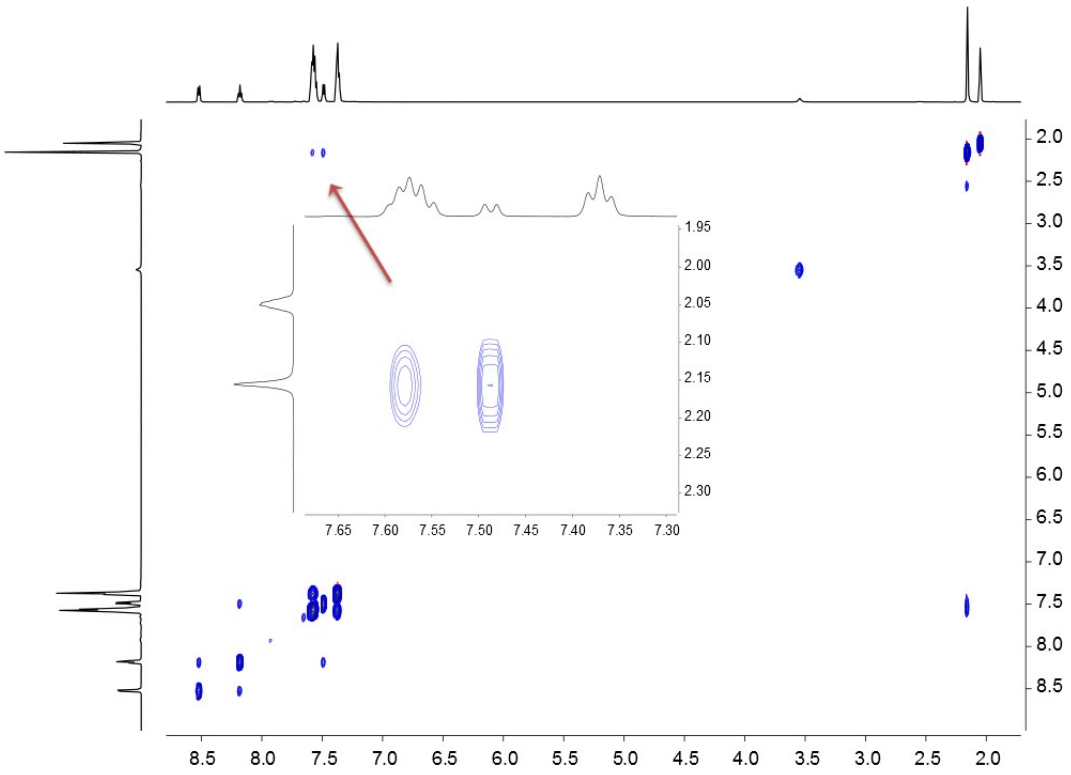

Fig. S2: NOESY spectrum of $[Ag_2(dppa)_2(6,6'\text{-}Me_2bpy)_2][PF_6]_2$ in $(CD_3)_2CO$ at 208 K, 600 MHz. The NOESY cross peaks between the Me signal at δ 2.16 ppm and the H^{C2+C4} signal at δ 7.58 ppm are clearly visible.

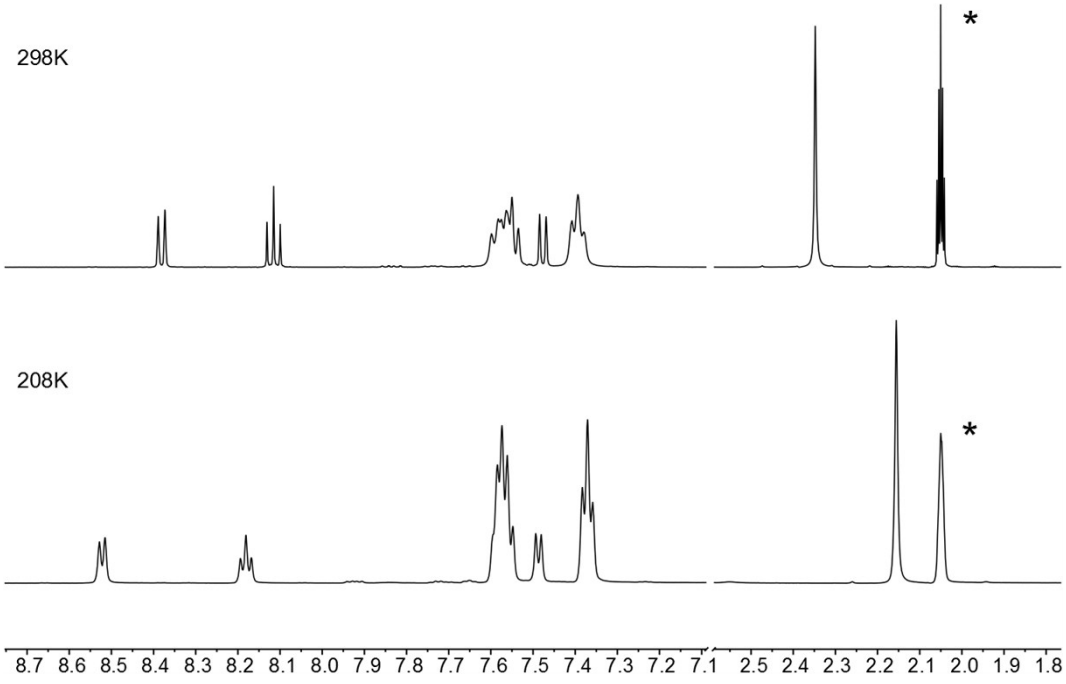

Fig. S3: ^1H NMR spectra of $[Ag_2(dppa)_2(6,6'\text{-}Me_2bpy)_2][PF_6]_2$ in $(CD_3)_2CO$ at 298 K, 500 MHz (top) and 208 K, 600 MHz (bottom). Signals marked with an asterisk indicate residual CD_3CD_2HCO.

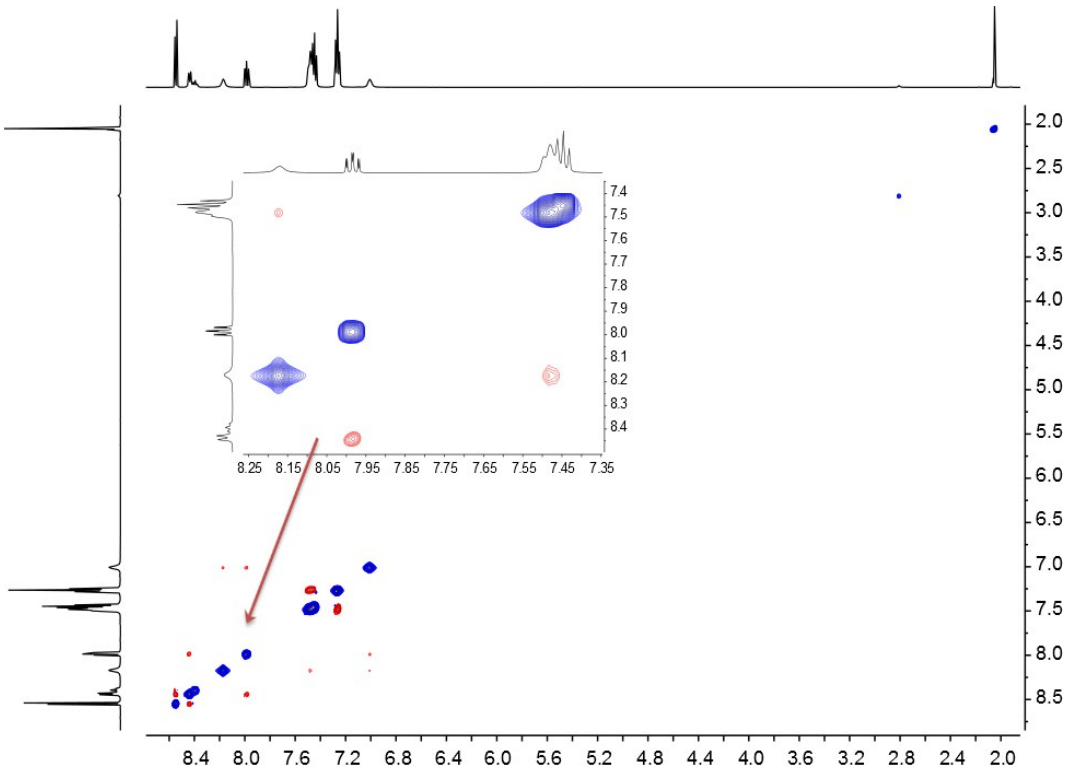

Fig. S4: NOESY spectrum of $[Ag_2(dppa)_2(tpy)_2][PF_6]_2$ in $(CD_3)_2CO$ at 298 K, 500 MHz. The NOESY cross peaks between the H^{A6} signal at δ 8.17 ppm and the H^{C2} signal at δ 7.48 ppm are sufficiently visible.

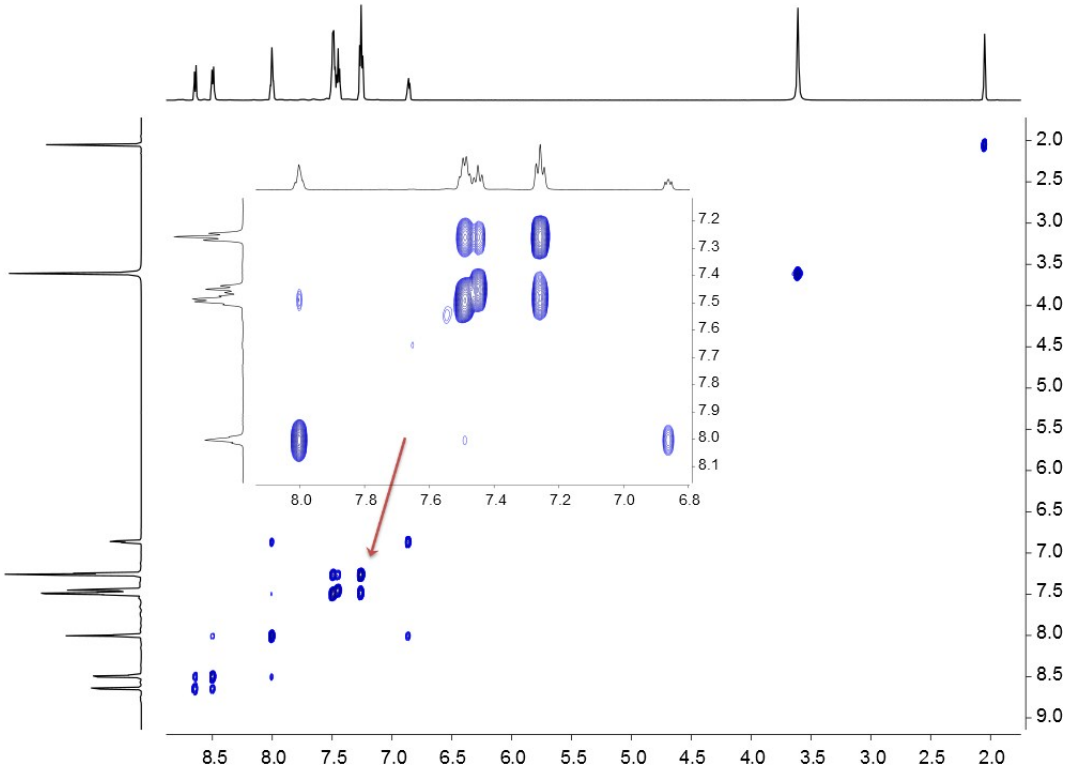

Fig. S5: NOESY spectrum of $[Ag_2(dppa)_2(tpy)_2][PF_6]_2$ in $(CD_3)_2CO$ at 208 K, 600 MHz. The NOESY cross peaks between the H^{A6} signal at δ 8.00 ppm and the H^{C2} signal at δ 7.49 ppm are sufficiently visible.

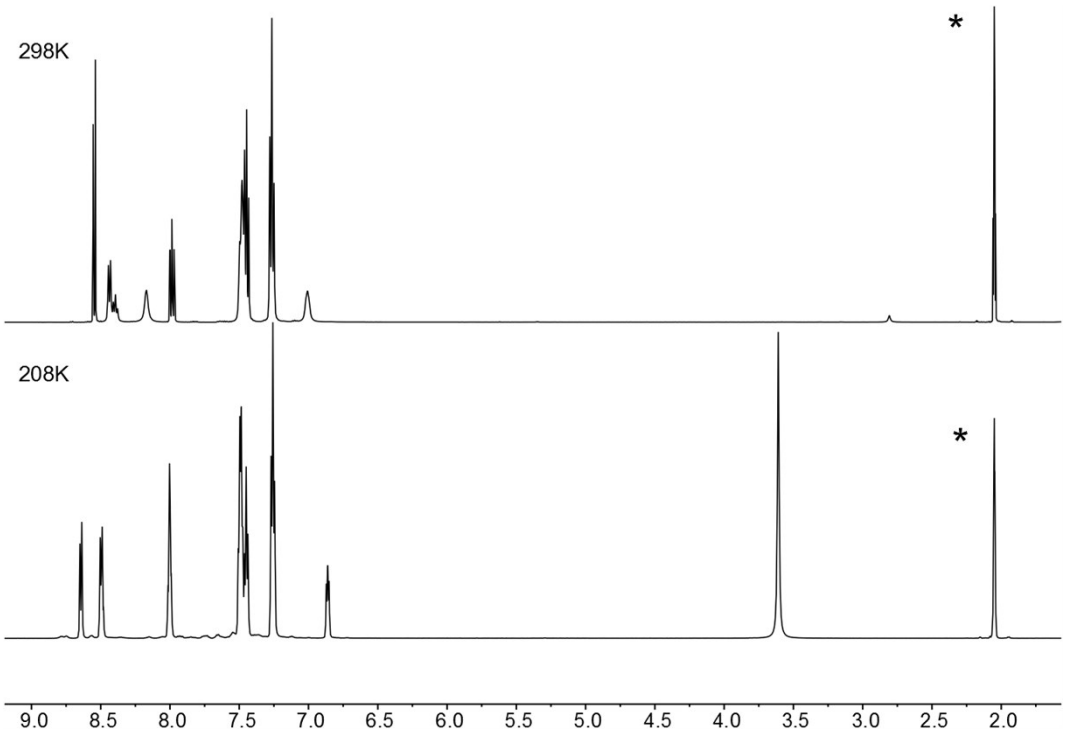

Fig. S6: ^{1}H NMR spectra of $[Ag_2(dppa)_2(tpy)_2][PF_6]_2$ in $(CD_3)_2CO$ at 298 K, 500 MHz (top) and 208 K, 600 MHz (bottom). Signals marked with an asterisk indicate residual CD_3CD_2HCO.

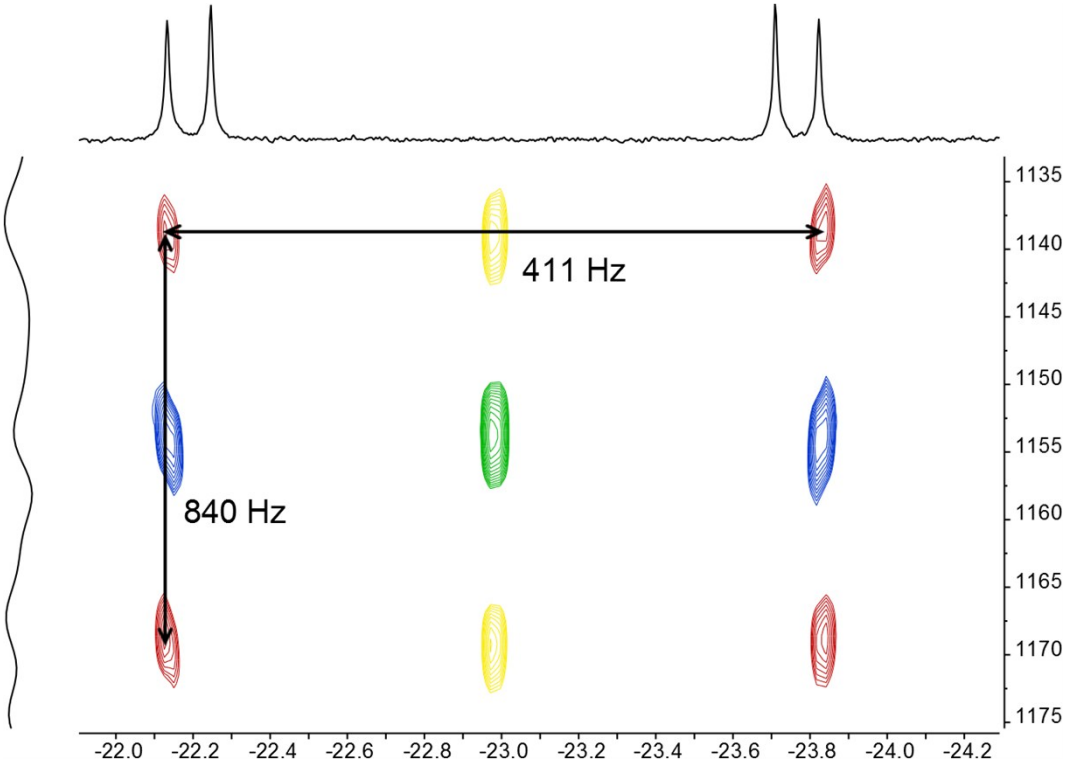

Fig. S7: $^{31}P\{^{1}H\}$-^{109}Ag HSQC spectrum of $[Ag_2(dppa)_2(tpy)_2][PF_6]_2$ in $(CD_3)_2CO$ at 208 K, 14.1 T. Cross peaks without decoupling are coloured in red, with $\{^{31}P\}$ decoupling in blue, with $\{^{109}Ag\}$ decoupling in yellow and with both $\{^{31}P\}$ and $\{^{109}Ag\}$ decoupling green.

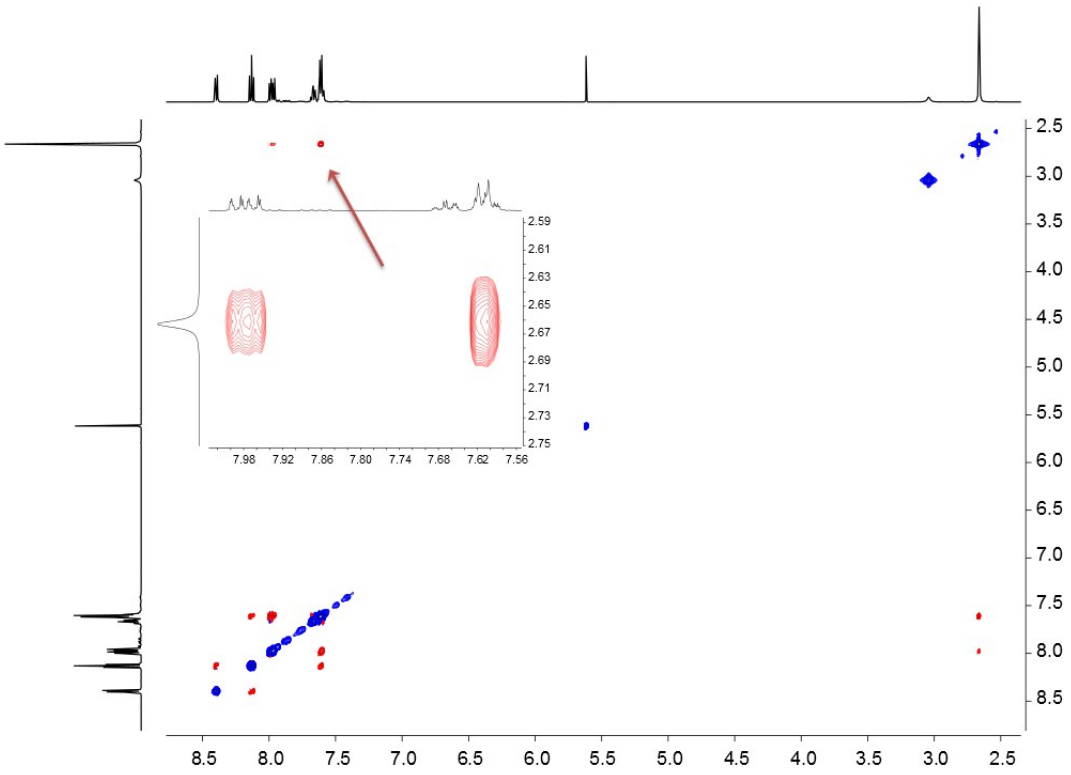

Fig. S8: NOESY spectrum of $[Ag_2(dppa)(6,6'\text{-}Me_2bpy)_2][PF_6]_2$ in $(CD_3)_2CO$ at 298 K, 500 MHz. The NOESY cross peaks between the Me signal at δ 2.66 ppm and the H^{C2} signal at δ 7.98 ppm are clearly visible.

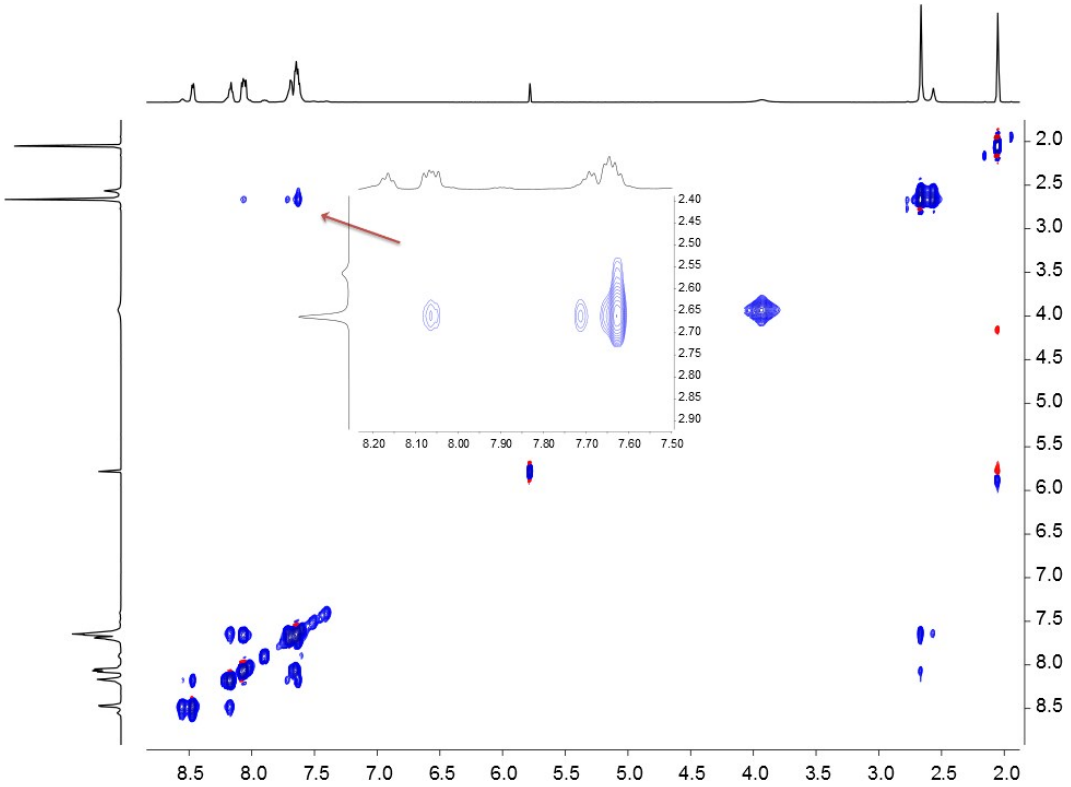

Fig. S9: NOESY spectrum of $[Ag_2(dppa)(6,6'\text{-}Me_2bpy)_2][PF_6]_2$ in $(CD_3)_2CO$ at 208 K, 600 MHz. The NOESY cross peaks between the Me signal at δ 2.66 ppm and the H^{C2} signal at δ 8.06 ppm are clearly

visible. Also we see an exchange between the main Me signal at δ 2.66 ppm and the additional Me signal at δ 2.56 ppm.

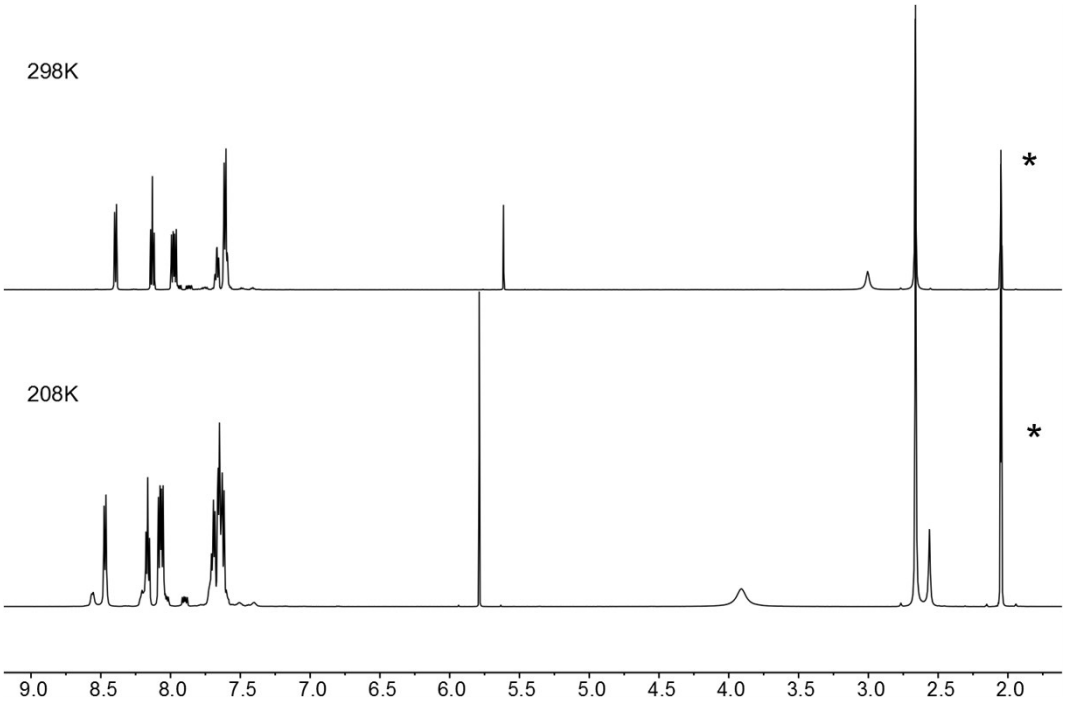

Fig. S10: ^{1}H NMR spectra of $[Ag_2(dppa)(6,6'\text{-}Me_2bpy)_2][PF_6]_2$ in $(CD_3)_2CO$ at 298 K, 500 MHz (top) and 208 K, 600 MHz (bottom). Signals marked with an asterisk indicate residual CD_3CD_2HCO.

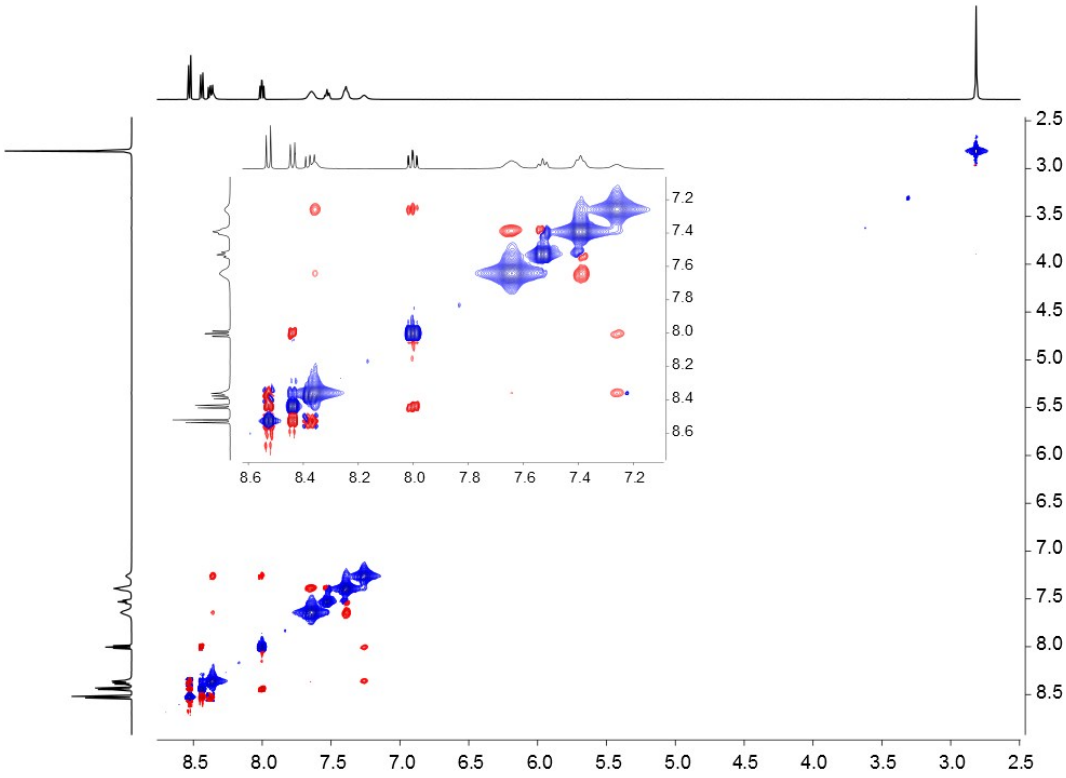

Fig. S11: NOESY spectrum of a 2:2:1 mixture of $[Ag][PF_6]$, tpy and dppa in $(CD_3)_2CO$ at 298 K, 500 MHz. The NOESY cross peaks between the H^{A6} signal at δ 8.36 ppm and the H^{C2} signal at δ 7.65 ppm are clearly visible.

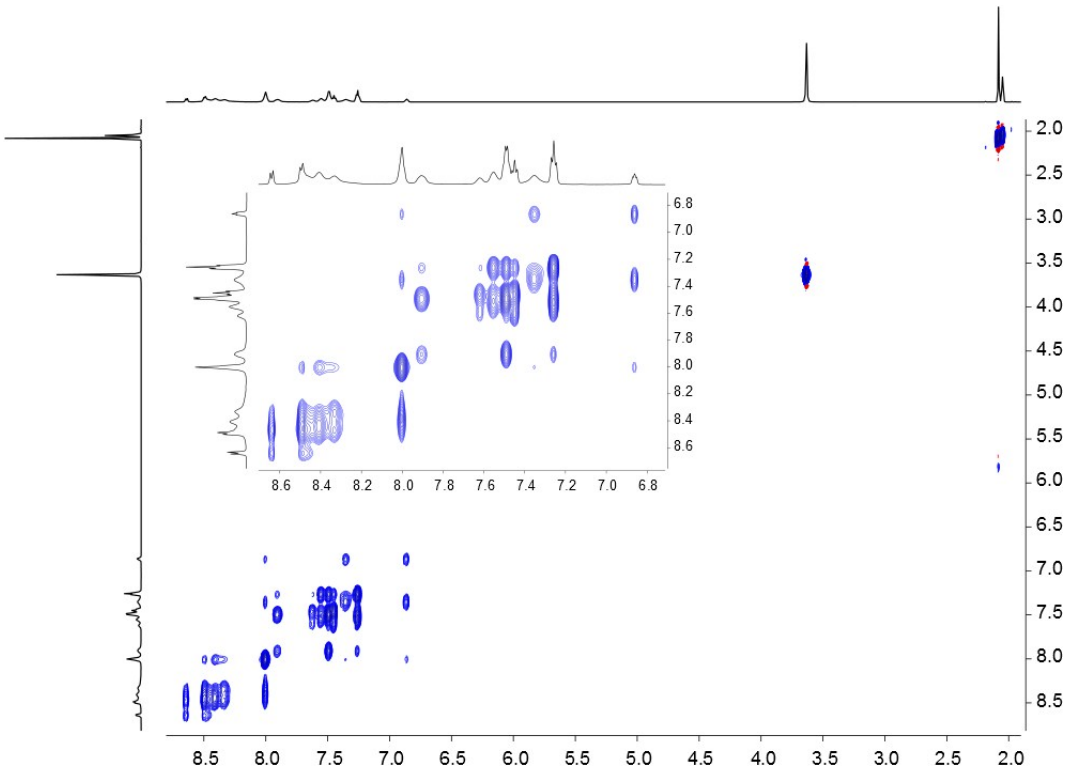

Fig. S12: NOESY spectrum of a 2:2:1 mixture of [Ag][PF_6], tpy and dppa in $(CD_3)_2CO$ at 208 K, 600 MHz.

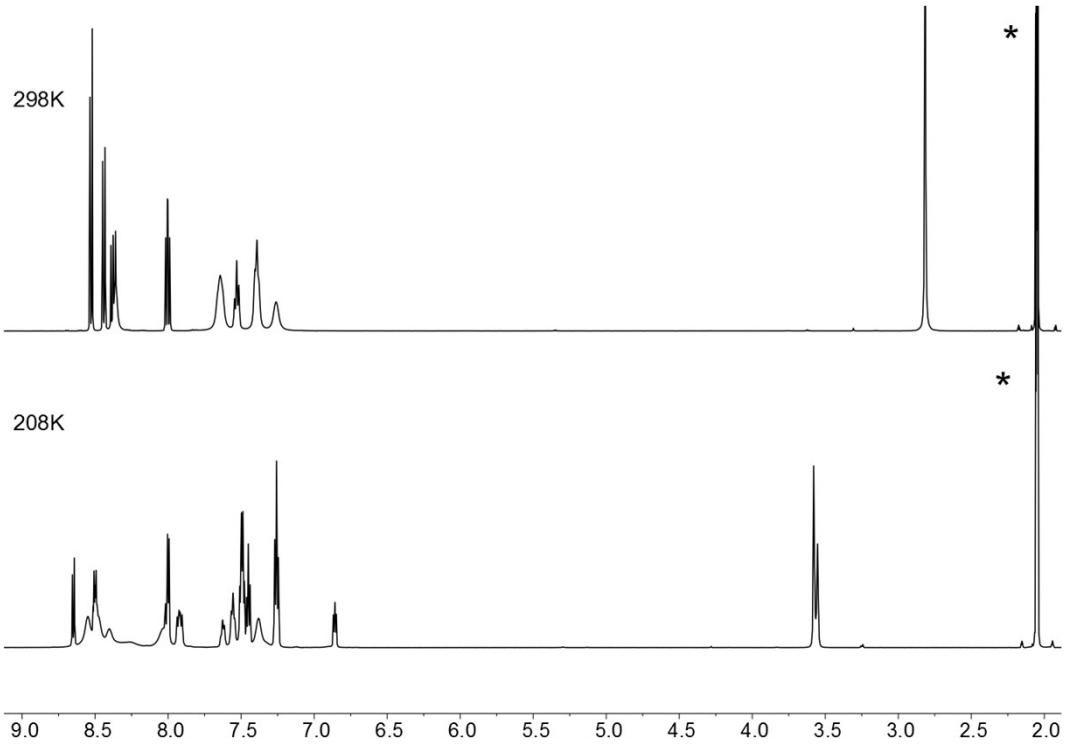

Fig. S13: ^{1}H NMR spectra of a 2:2:1 mixture of [Ag][PF_6], tpy and dppa in $(CD_3)_2CO$ at 298 K, 500 MHz (top) and 208 K, 600 MHz (bottom). Signals marked with an asterisk indicate residual CD_3CD_2HCO.

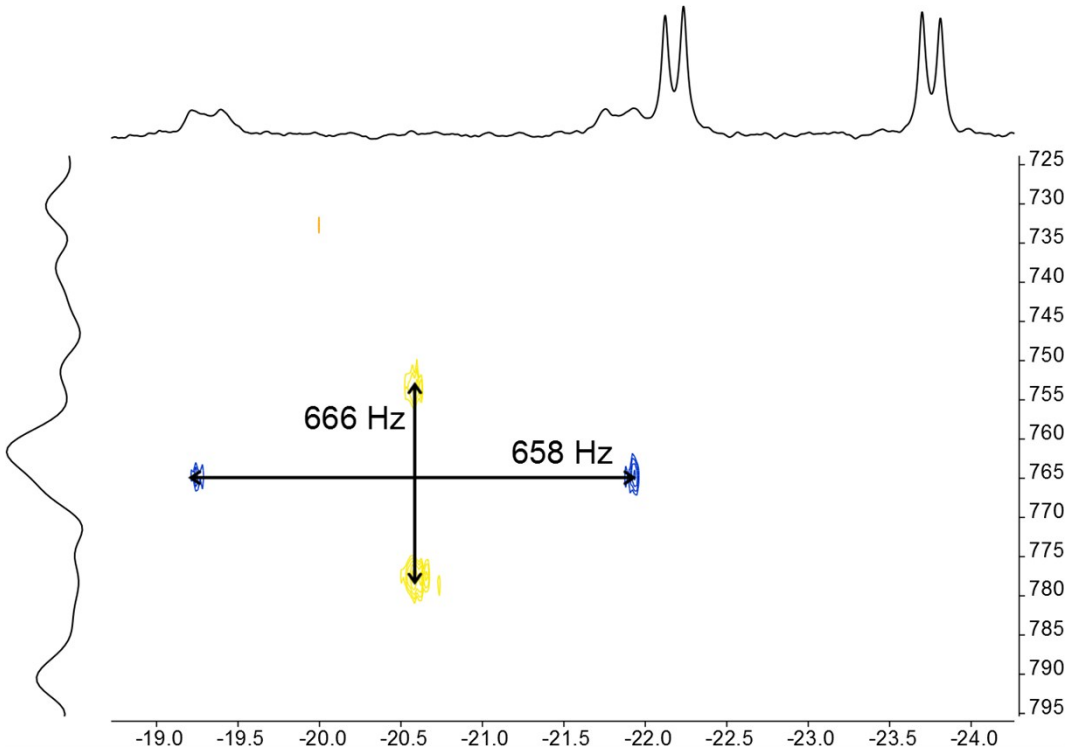

Fig. S14: $^{31}P\{^{1}H\}$-^{109}Ag HSQC spectrum of a 2:2:1 mixture of $Ag[PF_6]$, tpy and dppa in $(CD_3)_2CO$ at 208 K, 14.1 T. Cross peaks with $\{^{31}P\}$ decoupling are coloured in blue and with $\{^{109}Ag\}$ decoupling in yellow. The spectra without decoupling and with both $\{^{31}P\}$ and $\{^{109}Ag\}$ decoupling are not shown due to weak signal to noise ratio.