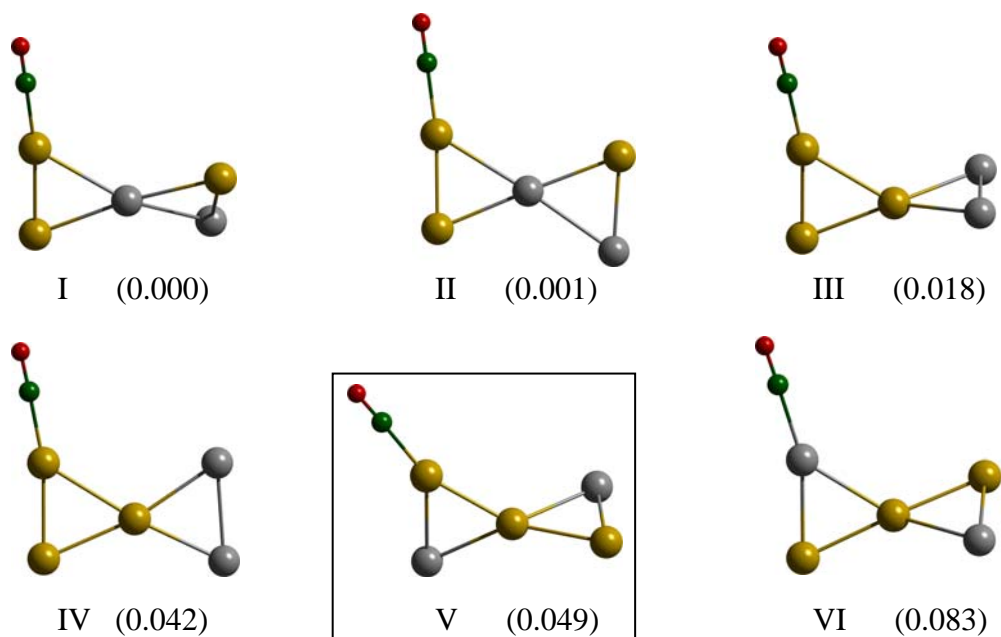
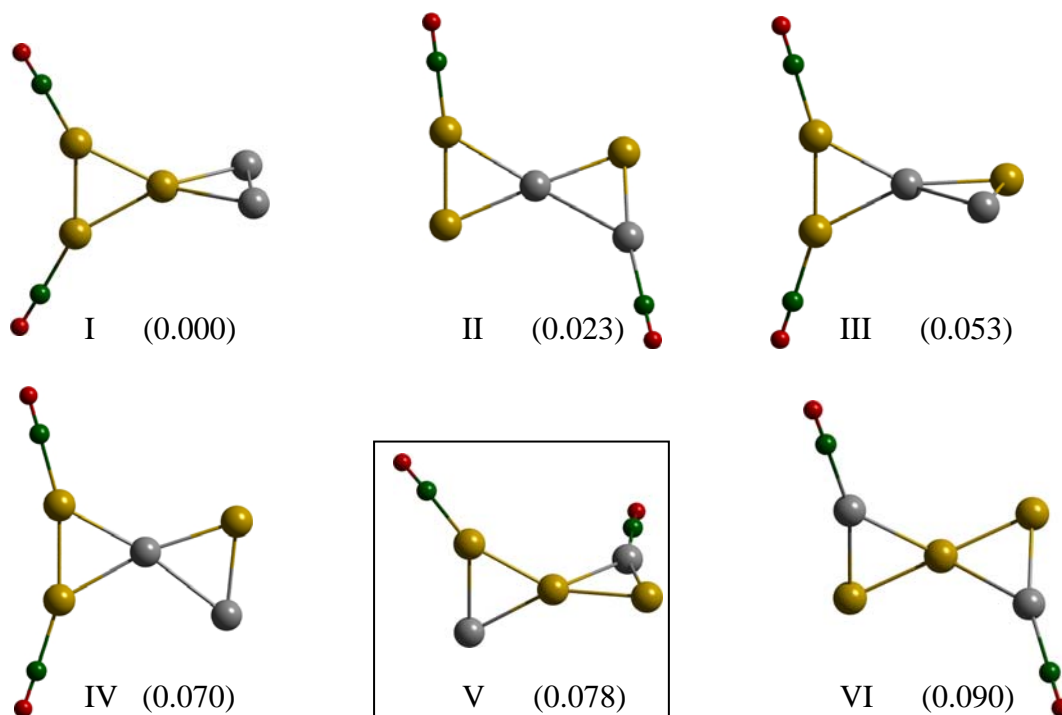


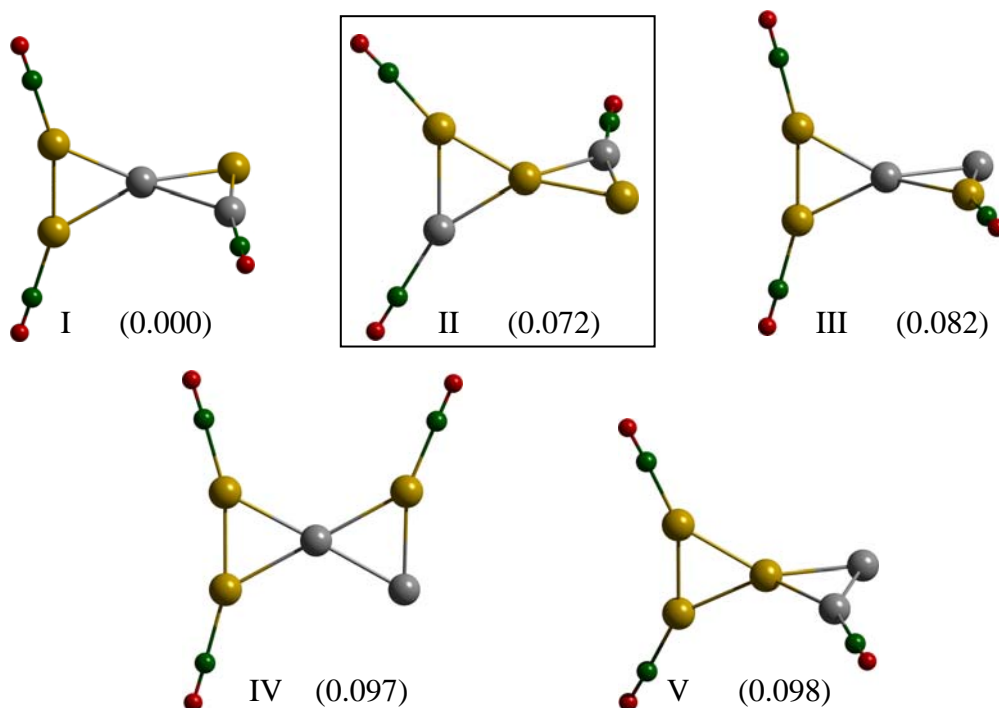
## Supporting Information



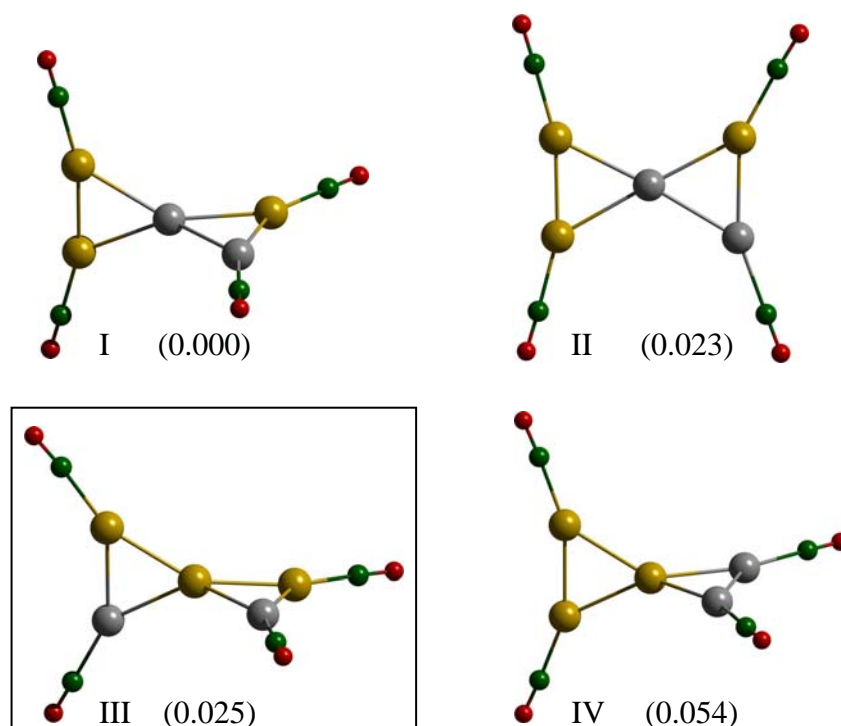
**Figure S1:** The lowest energy isomers of  $\text{Ag}_2\text{Au}_3\text{CO}^+$  within 0.1 eV obtained from DFT with B3LYP functional and TZVP atomic basis set. Notice that isomer V shown in window is used in Fig. 5 to illustrate the sequential adsorption of CO.



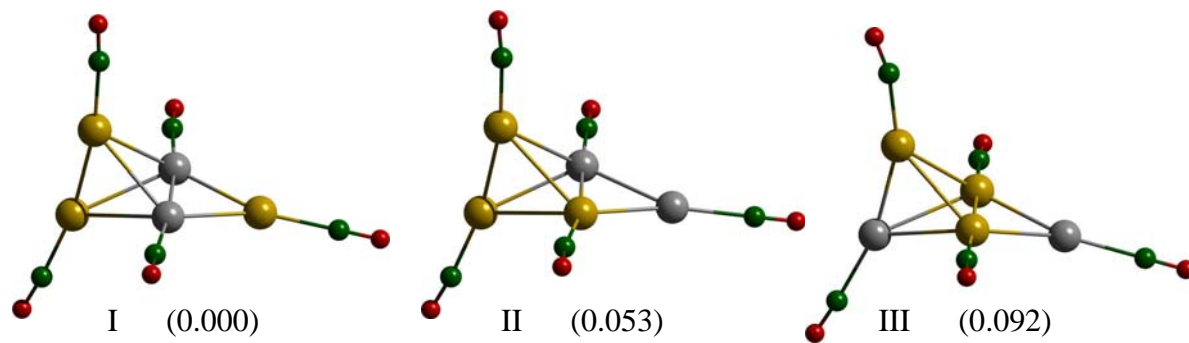
**Figure S2:** The lowest energy isomers of  $\text{Ag}_2\text{Au}_3(\text{CO})_2^+$  within 0.1 eV obtained from DFT with B3LYP functional and TZVP atomic basis set. Notice that isomer V shown in window is used in Fig. 5 to illustrate the sequential adsorption of CO.



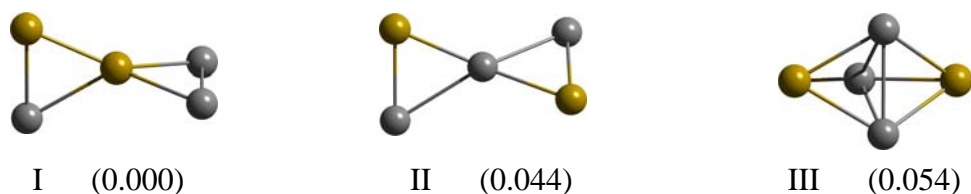
**Figure S3:** The lowest energy isomers of  $\text{Ag}_2\text{Au}_3(\text{CO})_3^+$  within 0.1 eV obtained from DFT with B3LYP functional and TZVP atomic basis set. Notice that isomer II shown in window is used in Fig. 5 to illustrate the sequential adsorption of CO.



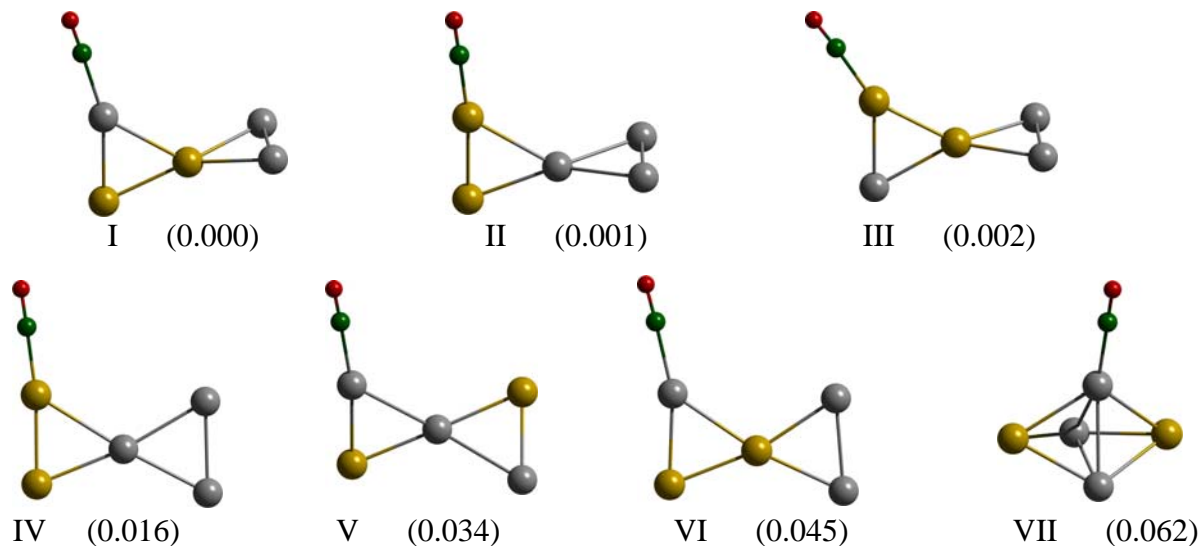
**Figure S4:** The lowest energy isomers of  $\text{Ag}_2\text{Au}_3(\text{CO})_4^+$  within 0.1 eV obtained from DFT with B3LYP functional and TZVP atomic basis set. Notice that isomer III shown in window is used in Fig. 5 to illustrate the sequential adsorption of CO.



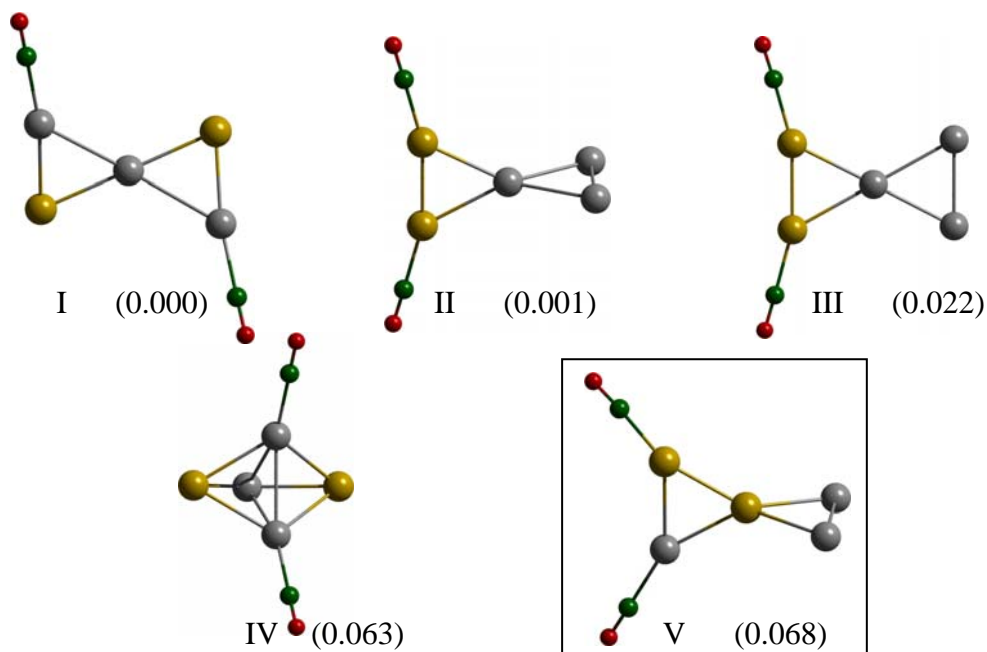
**Figure S5:** The lowest energy isomers of  $\text{Ag}_2\text{Au}_3(\text{CO})_5^+$  within 0.1 eV obtained from DFT with B3LYP functional and TZVP atomic basis set.



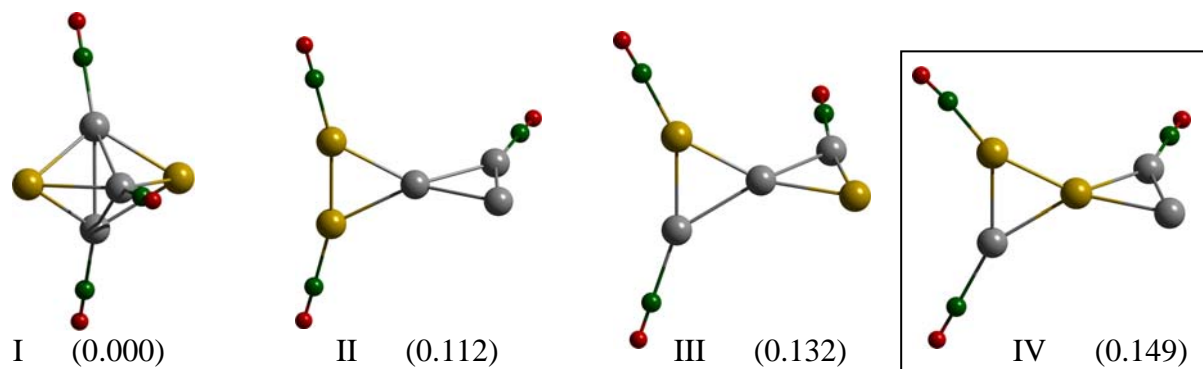
**Figure S6:** The lowest energy isomers of  $\text{Ag}_3\text{Au}_2^+$  obtained from DFT with B3LYP functional and TZVP atomic basis set. All other isomers are more than 0.2 eV less stable.



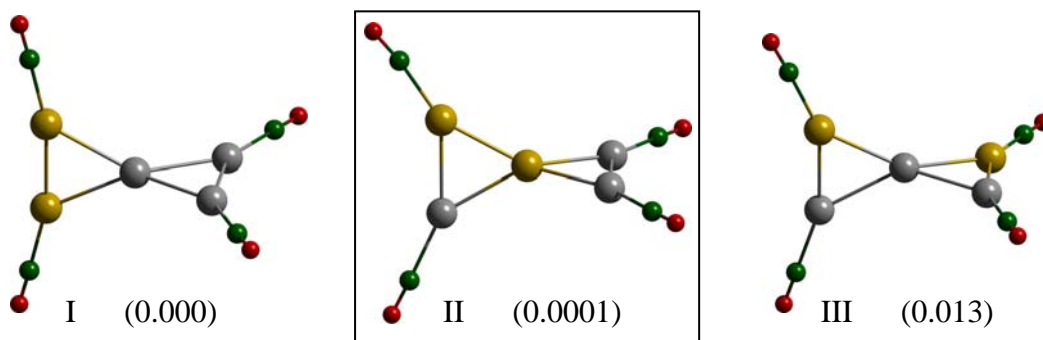
**Figure S7:** The lowest energy isomers of  $\text{Ag}_3\text{Au}_2\text{CO}^+$  within 0.1 eV obtained from DFT with B3LYP functional and TZVP atomic basis set.



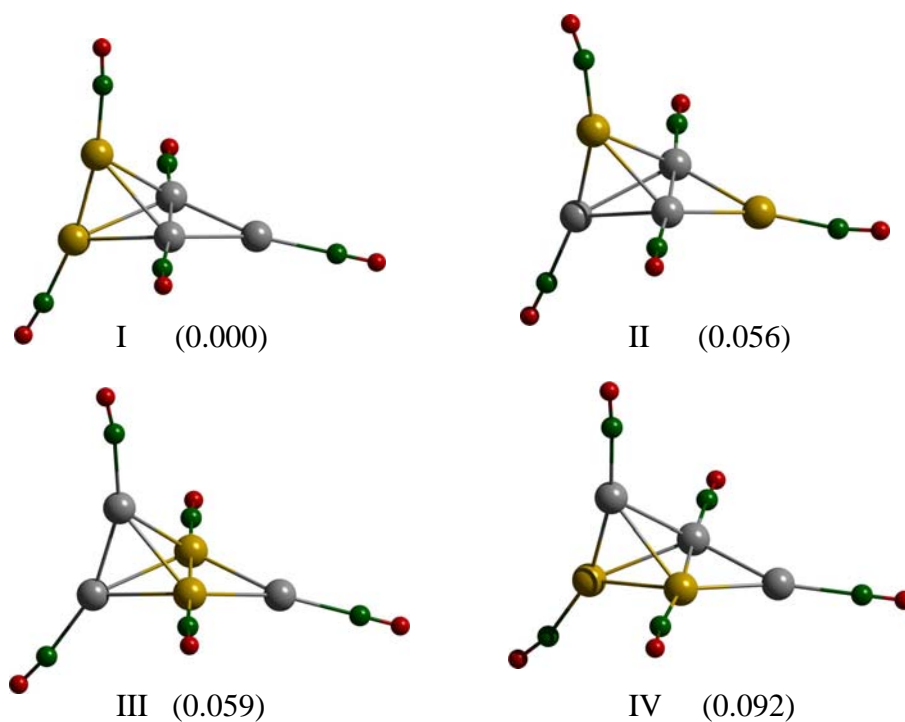
**Figure S8:** The lowest energy isomers of  $\text{Ag}_3\text{Au}_2(\text{CO})_2^+$  within 0.1 eV obtained from DFT with B3LYP functional and TZVP atomic basis set. Notice that isomer V shown in window is used in Fig. 5 to illustrate the sequential adsorption of CO.



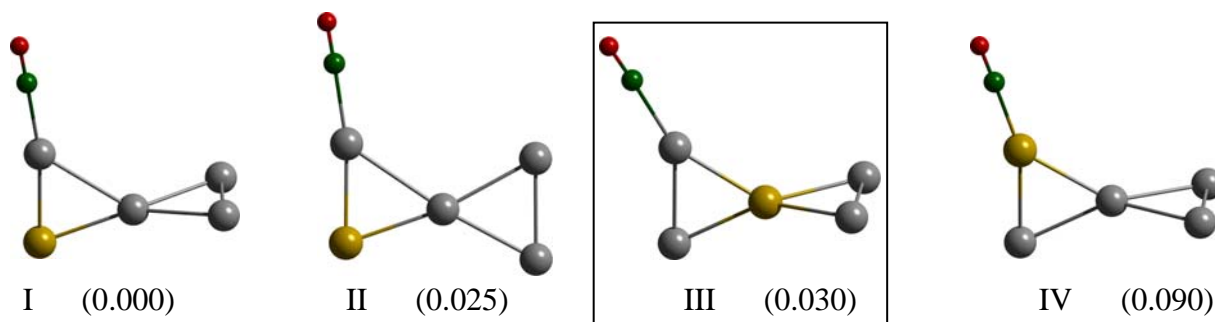
**Figure S9:** The lowest energy isomers of  $\text{Ag}_3\text{Au}_2(\text{CO})_3^+$  within 0.15 eV obtained from DFT with B3LYP functional and TZVP atomic basis set. Notice that isomer IV shown in window is used in Fig. 5 to illustrate the sequential adsorption of CO.



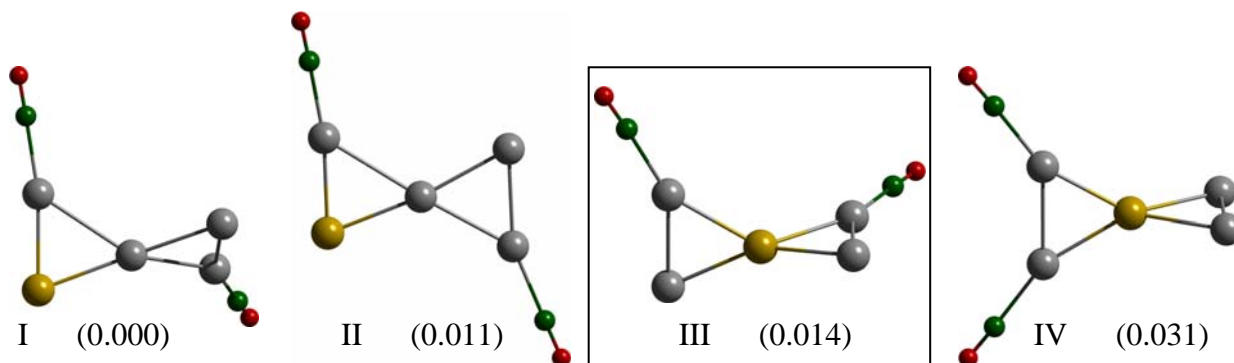
**Figure S10:** The lowest energy isomers of  $\text{Ag}_3\text{Au}_2(\text{CO})_4^+$  within 0.1 eV obtained from DFT with B3LYP functional and TZVP atomic basis set. Notice that isomer II shown in window is used in Fig. 5 to illustrate the sequential adsorption of CO.



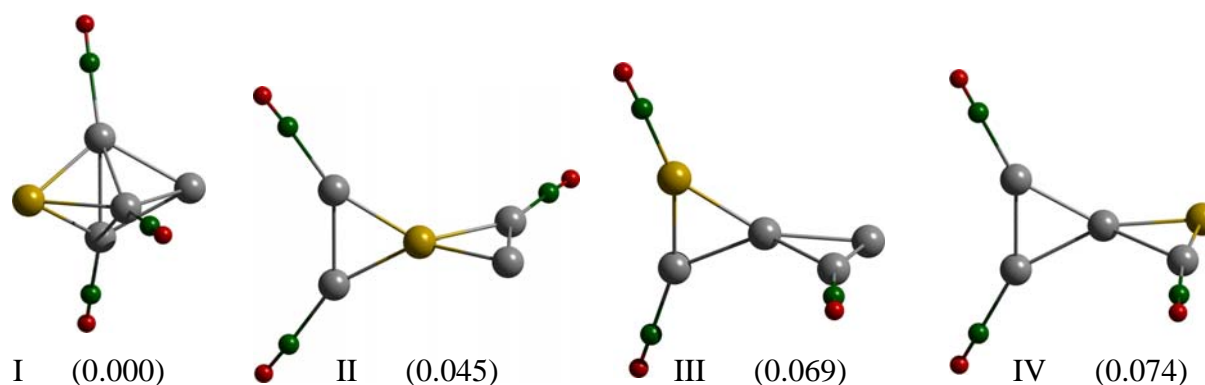
**Figure S11:** The lowest energy isomers of  $\text{Ag}_3\text{Au}_2(\text{CO})_5^+$  within 0.1 eV obtained from DFT with B3LYP functional and TZVP atomic basis set.



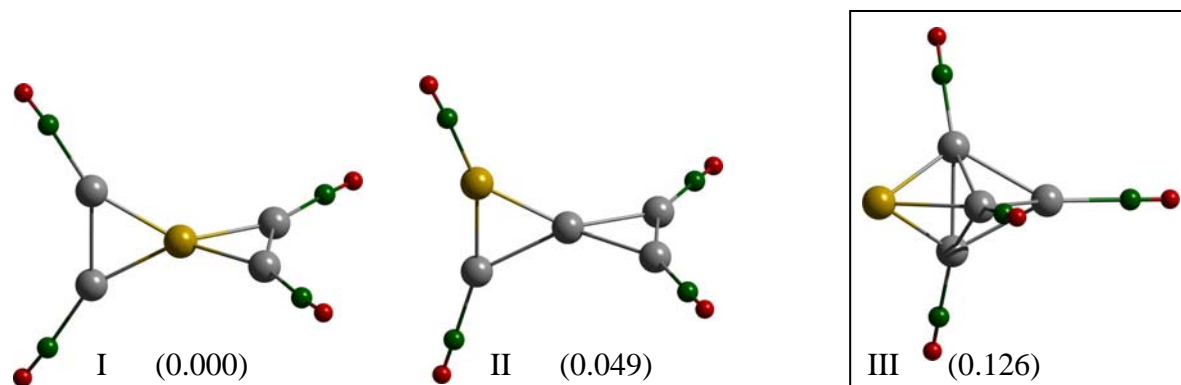
**Figure S12:** The lowest energy isomers of  $\text{Ag}_4\text{AuCO}^+$  within 0.1 eV obtained from DFT with B3LYP functional and TZVP atomic basis set. Notice that isomer III shown in window is used in Fig. 5 to illustrate the sequential adsorption of CO.



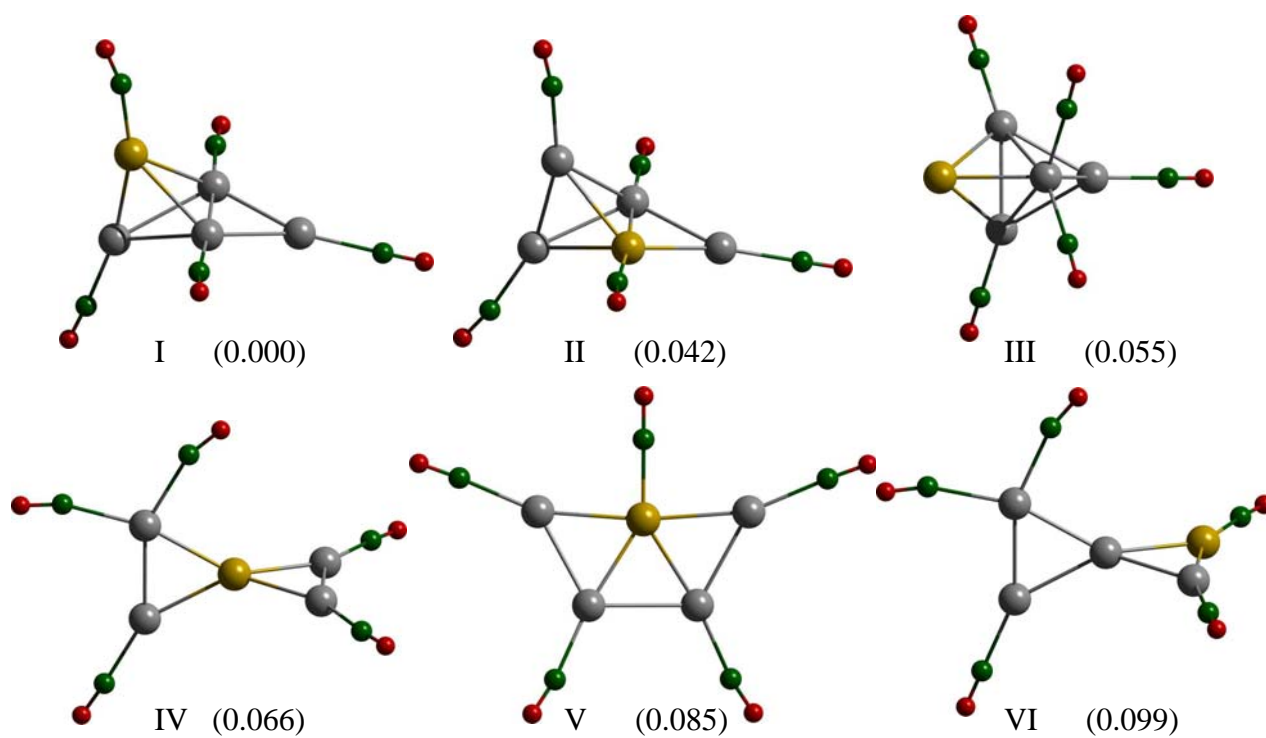
**Figure S13:** The lowest energy isomers of  $\text{Ag}_4\text{Au}(\text{CO})_2^+$  within 0.1 eV obtained from DFT with B3LYP functional and TZVP atomic basis set. Notice that isomer III shown in window is used in Fig. 5 to illustrate the sequential adsorption of CO.



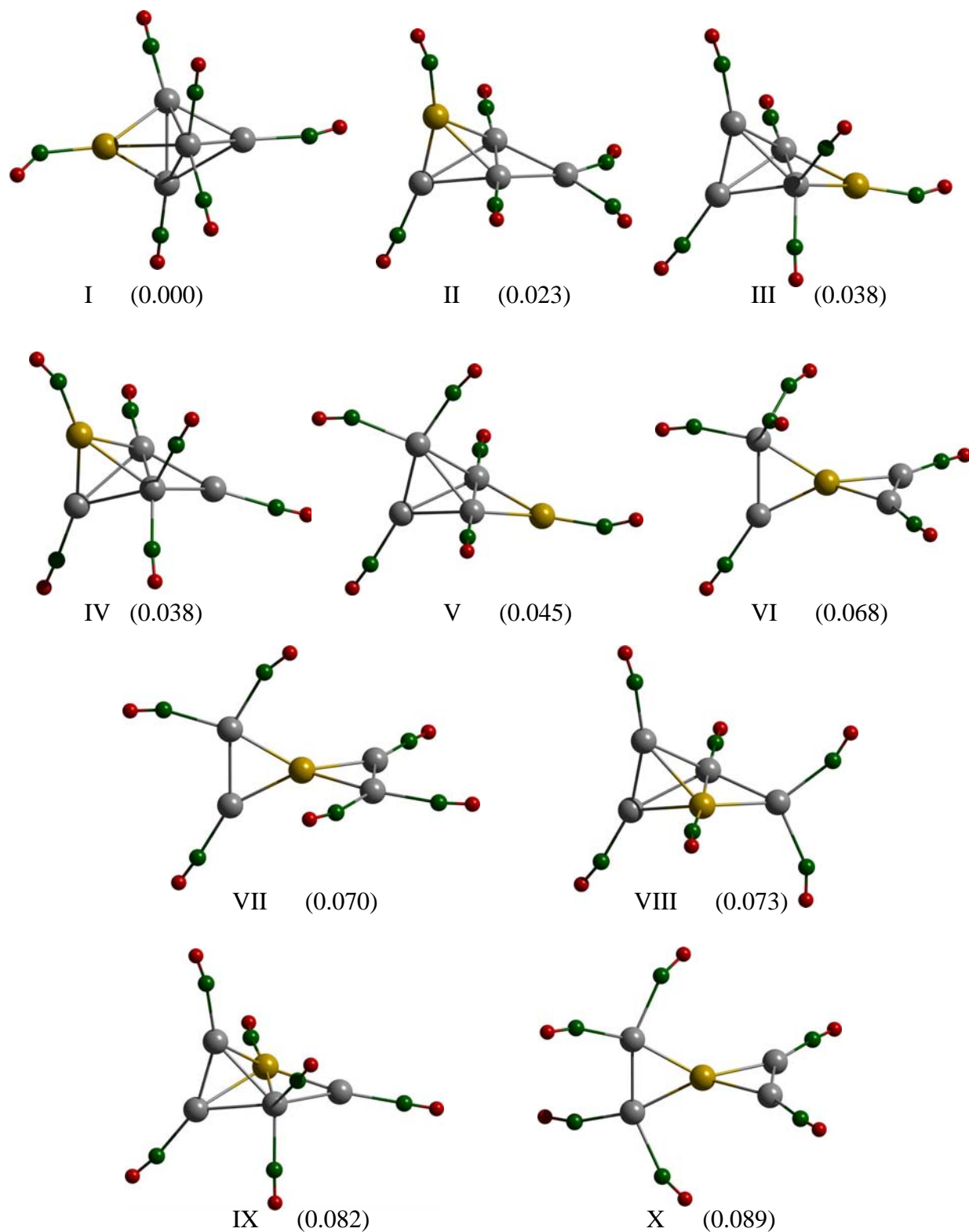
**Figure S14:** The lowest energy isomers of  $\text{Ag}_4\text{Au}(\text{CO})_3^+$  within 0.1 eV obtained from DFT with B3LYP functional and TZVP atomic basis set.



**Figure S15:** The lowest energy isomers of  $\text{Ag}_4\text{Au}(\text{CO})_4^+$  within 0.13 eV obtained from DFT with B3LYP functional and TZVP atomic basis set. Notice that isomer III shown in window is used in Fig. 5 to illustrate the sequential adsorption of CO.



**Figure S16:** The lowest energy isomers of  $\text{Ag}_4\text{Au}(\text{CO})_5^+$  within 0.1 eV obtained from DFT with B3LYP functional and TZVP atomic basis set.



**Figure S17:** The lowest energy isomers of  $\text{Ag}_4\text{Au}(\text{CO})_6^+$  within 0.1 eV obtained from DFT with B3LYP functional and TZVP atomic basis set.