

Supporting Information

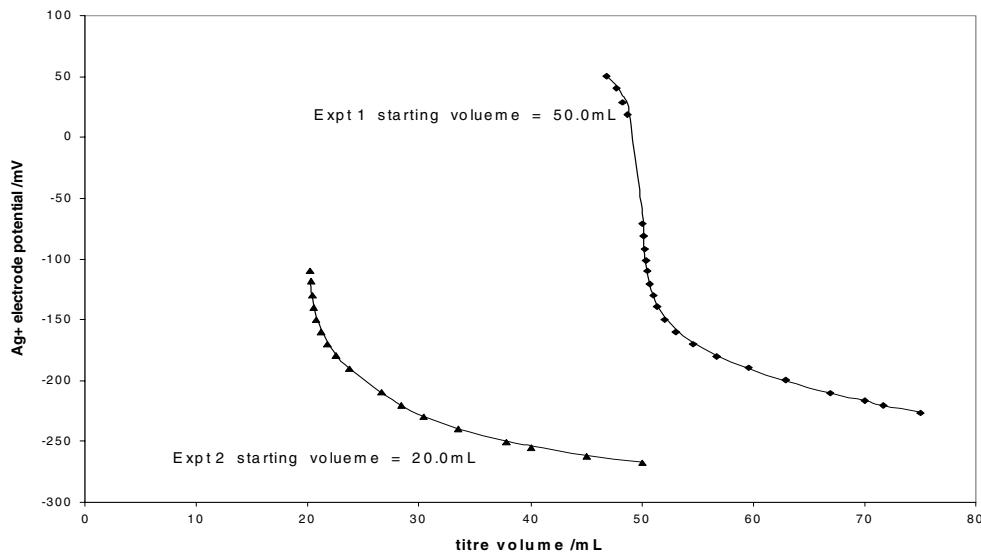


Figure S1 Results of the $\text{Ag(I)}-\text{NH}_3$ potentiometric experiments conducted by titrating $[\text{Ag}^+]_T = 7\text{mM}$, $[\text{NaOH}]_T = 0.01\text{M}$ $[\text{NH}_4\text{ClO}_4]_T = 0.01\text{M}$, into aliquots of $[\text{Ag}^+]_T = 7\text{mM}$, $[\text{HClO}_4]_T = 0.01\text{M}$ $[\text{NH}_4\text{ClO}_4]_T = 0.01\text{M}$. Markers are the raw data points while the lines are the fits from the ESTA calculations, assuming AgNH_3^+ and $\text{Ag}(\text{NH}_3)_2^+$.

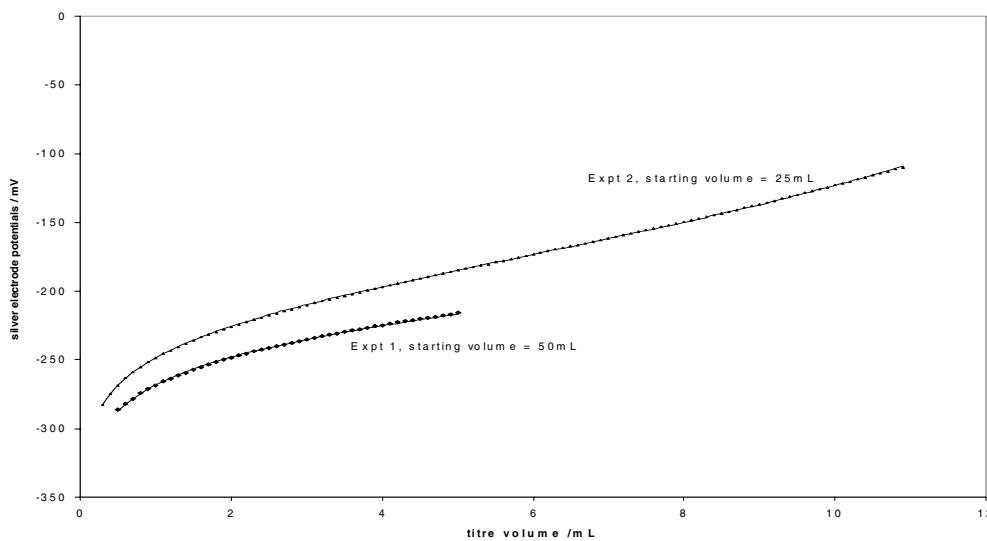


Figure S2 Results of the $\text{Ag(I)}-\text{S}_2\text{O}_3^{2-}$ potentiometric experiments conducted by titrating $[\text{Ag}^+]_{\text{T}} = 0.01\text{M}$, $\text{I} = 0.1\text{M}$ (NaClO_4) into aliquots of $[\text{Na}_2\text{S}_2\text{O}_3]_{\text{T}} = 0.01\text{M}$. Markers are the raw data points while the lines are the fits from ESTA, assuming AgS_2O_3^- and $\text{Ag}(\text{S}_2\text{O}_3)_2^{3-}$.

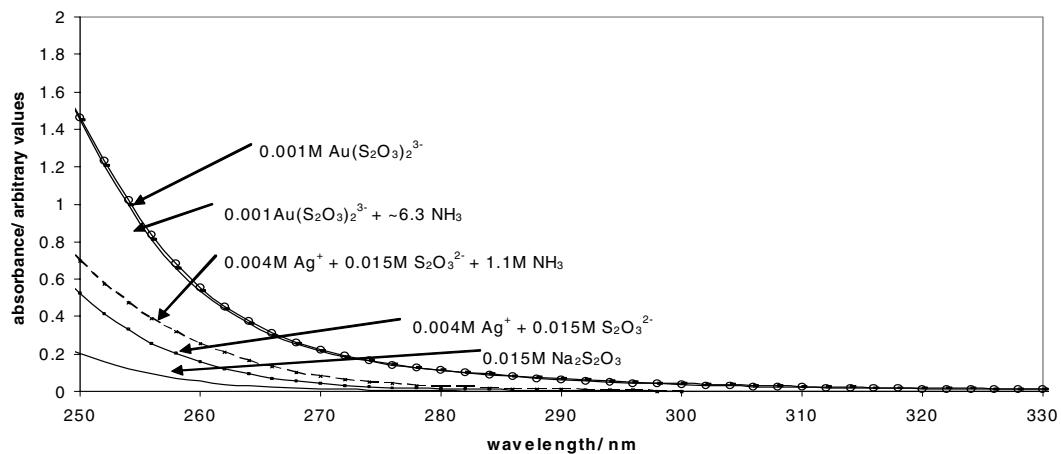


Figure S3 Spectra of the mixed $\text{Au}(\text{I})-\text{NH}_3-\text{S}_2\text{O}_3^{2-}$ system at relatively high $[\text{Au}(\text{I})]_{\text{T}} = 1\text{mM}$ compared with the spectra seen in the $\text{Ag}(\text{I})-\text{NH}_3-\text{S}_2\text{O}_3^{2-}$ system, $[\text{NH}_3] = 16.3 \text{ M}$, $\text{pH} = 12$.

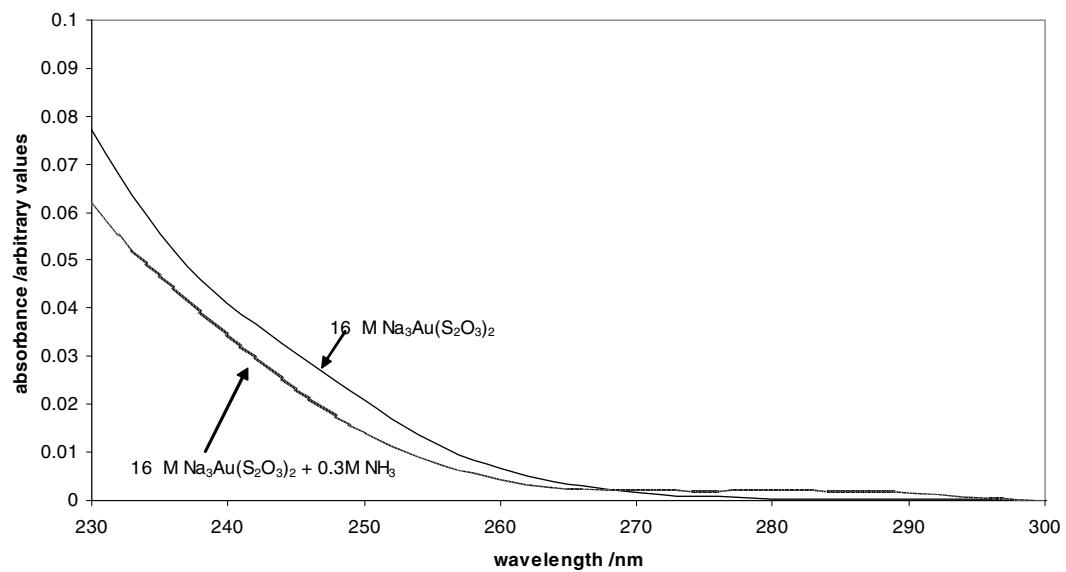


Figure S4 Spectra of the mixed Au(I)–NH₃–S₂O₃²⁻ system at relatively low [Au(I)]_T.