Supporting Information for

Facile synthesis of $Au_{23}(SC(CH_3)_3)_{16}$ clusters

Mahdi Hesari* and M.S. Workentin*

Department of Chemistry, The University of Western Ontario, London, N6A 5B7, CANADA
Address correspondence to: mworkent@uwo.ca

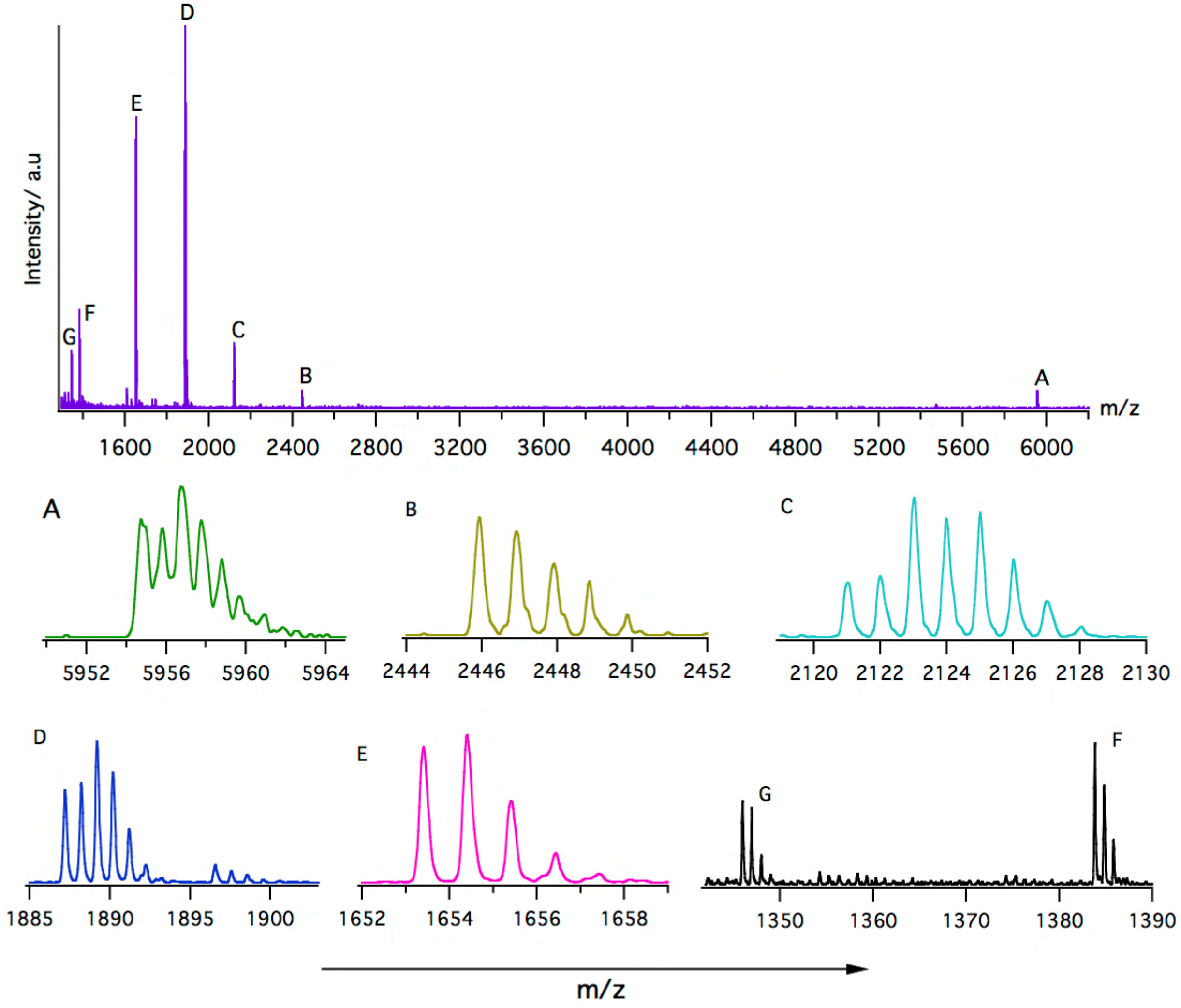

Figure S1 Expanded ESI fragmented peaks. The x- axis indicates m/z values.

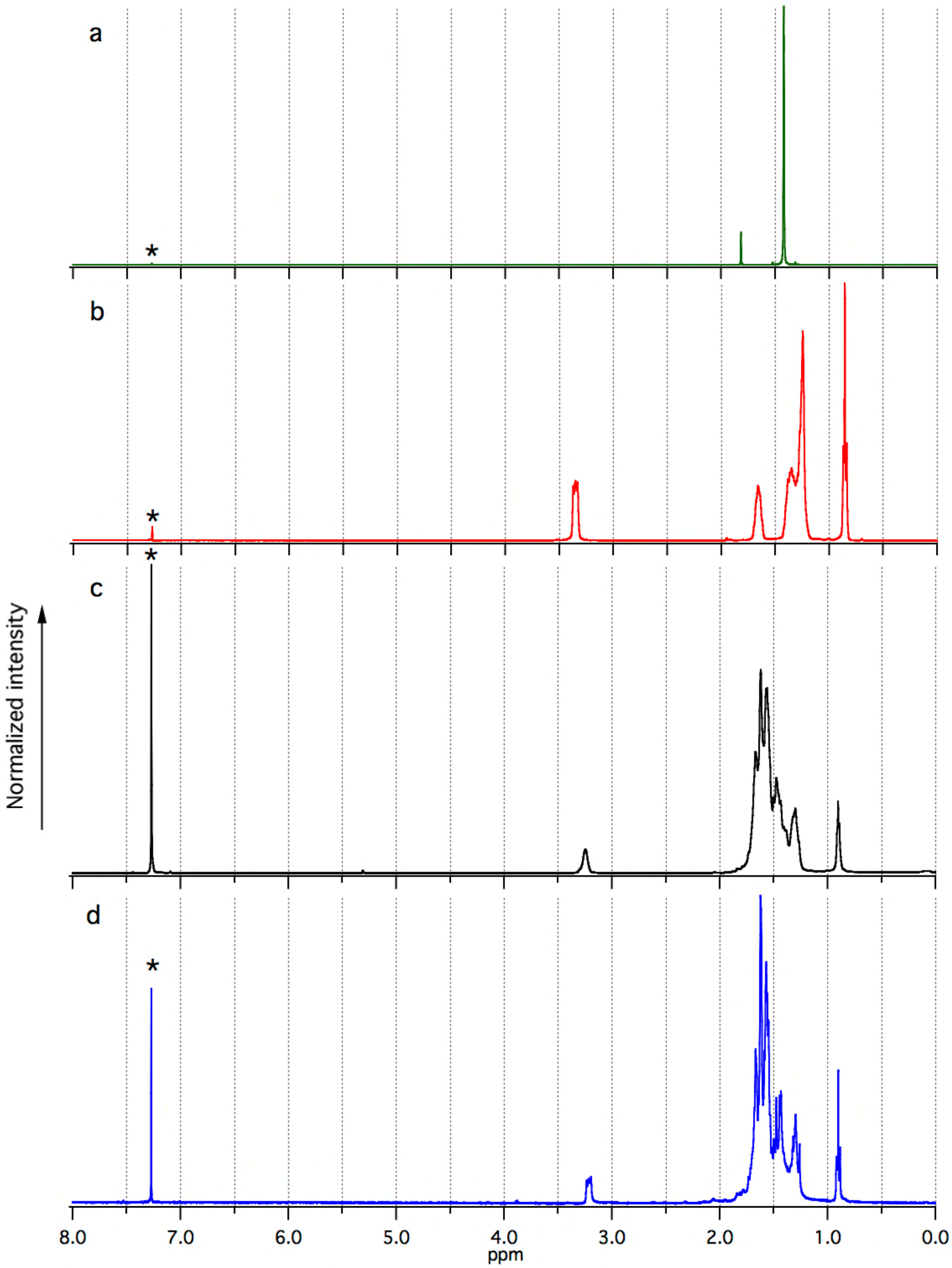

Figure S2 ^{1}HNMR spectra of (a) tert-butyl thiol, (b) tetra-*n*-octylammonium bromide, (c) acetonitrile fraction, and (d) dichloromethane fraction, recorded in $CDCl_3$. The asterisk indicates residual $CHCl_3$ solvent peak.

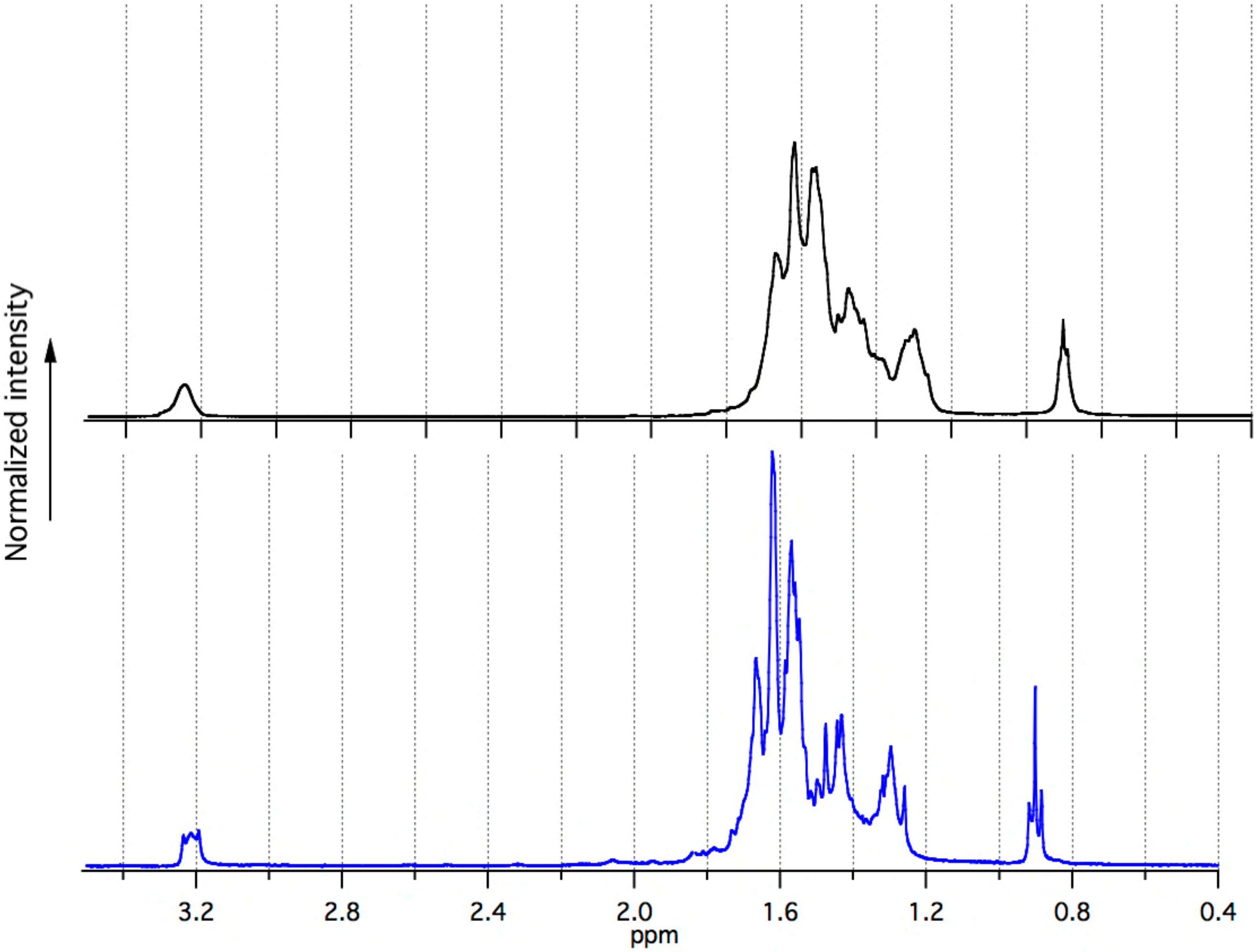

Figure S3 Expanded ^{1}HNMR of (top) acetonitrile fraction and (bottom) dichloromethane fraction recorded in $CDCl_3$.

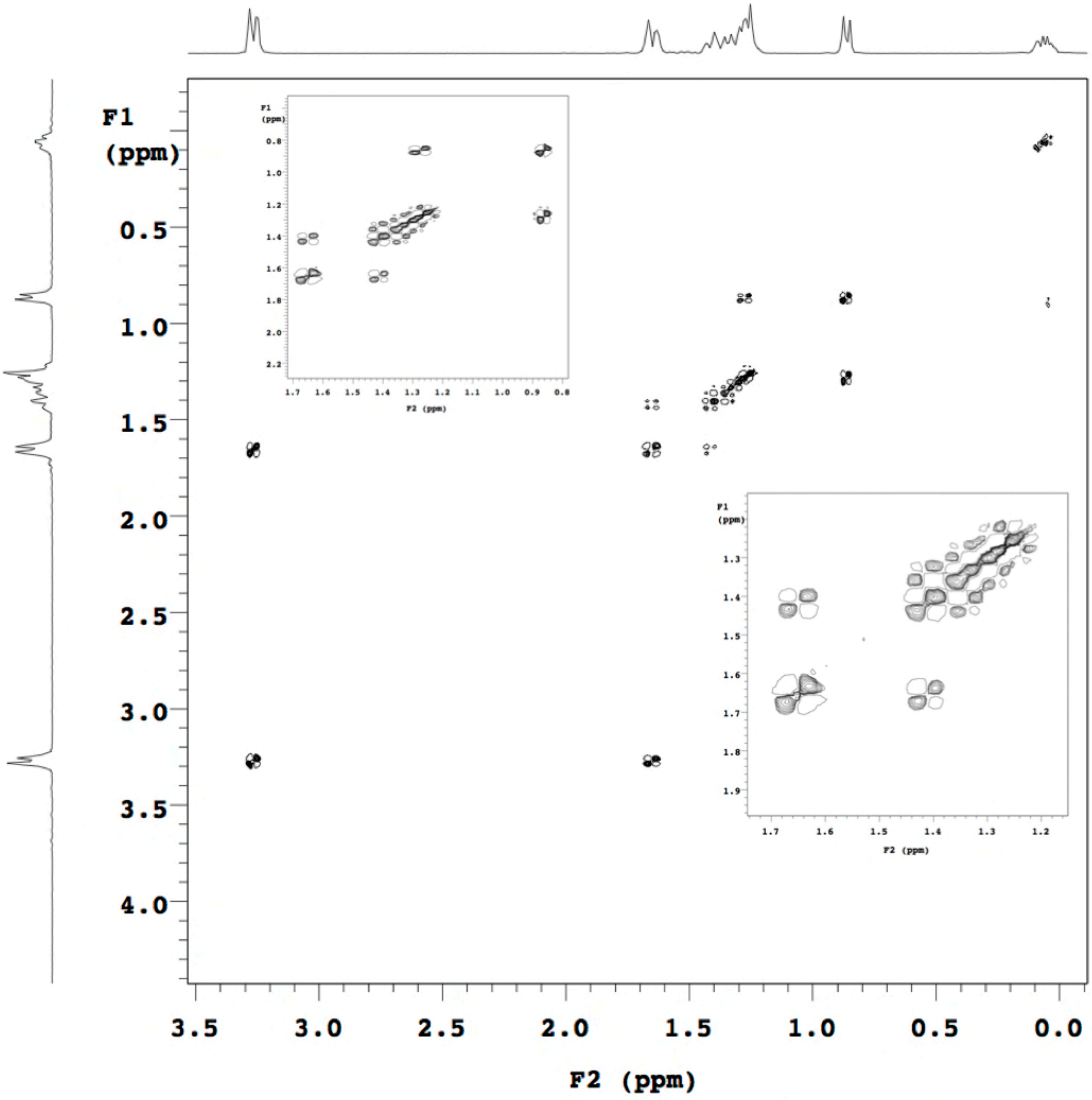

Figure S4 2D-gDQCOSY NMR spectrum of the purified dichloromethane fraction in $CDCl_3$.

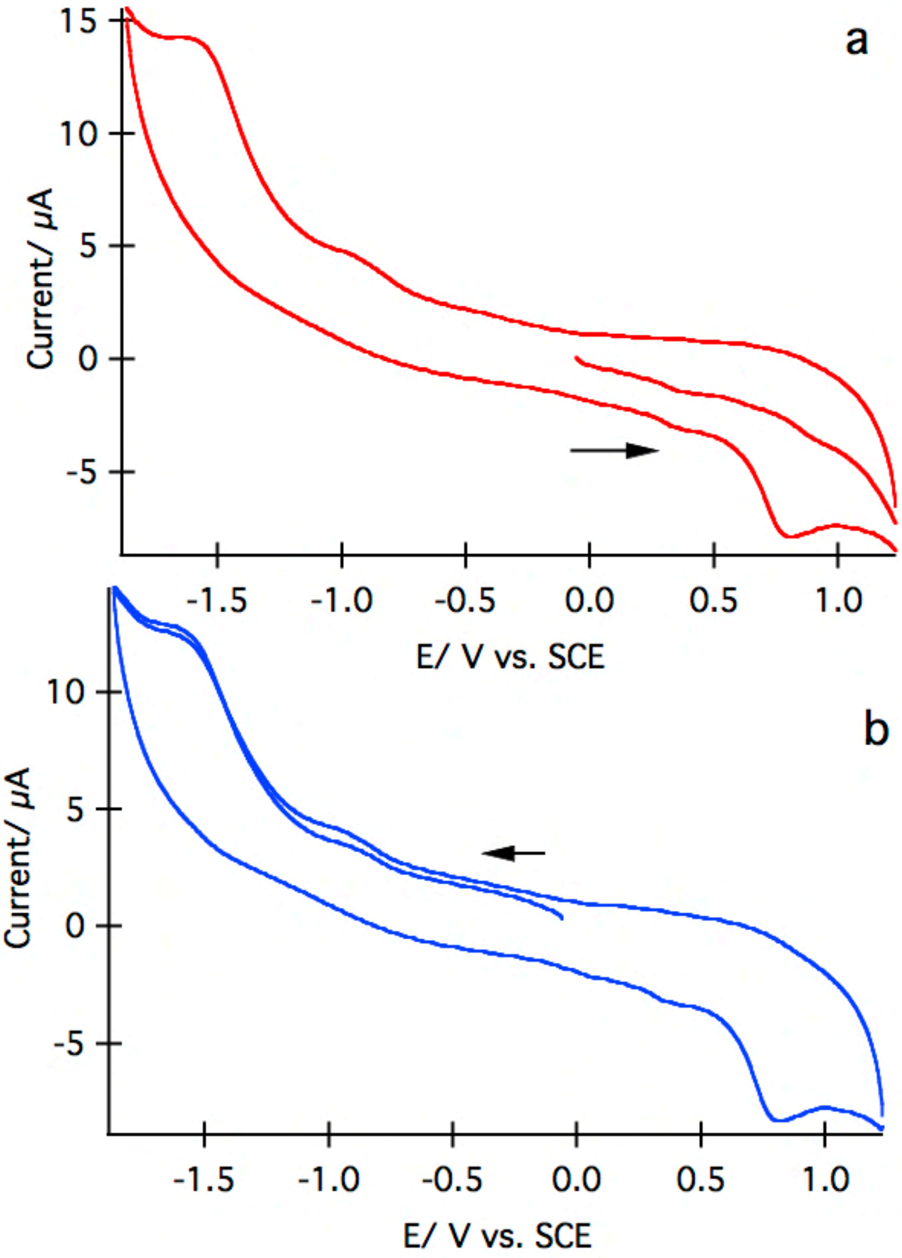

Figure S5 Cyclic voltammograms (CVs) of acetonitrile fraction obtained in dichloromethane containing 0.1 M tetra-*n*-butylammonium hexaflourophosphate (TBAPF$_6$) as supporting electrolyte. (a) and (b) show scanning potential towards the positive and negative values. Scan rate: 100 mV/s, T=25oC.

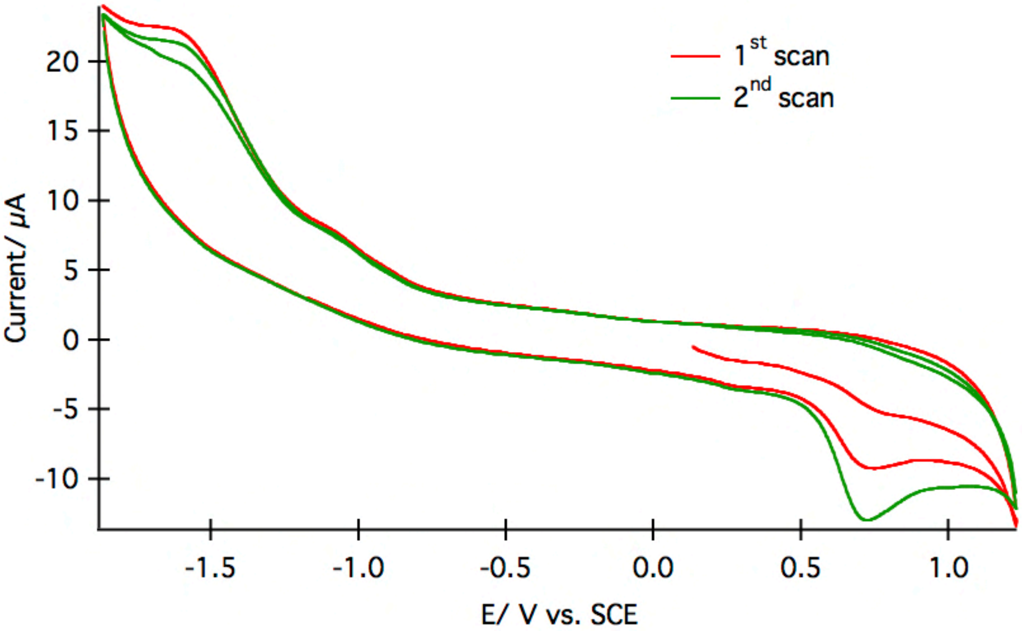

Figure S6 Cyclic voltammograms (CVs) of dichloromethane fraction recorded in dichloromethane containing 0.1 M tetra-*n*-butylammonium hexaflourophosphate (TBAPF$_6$) as supporting electrolyte. The red curves and green cycles, scan rate was 100 mV/s, T=25oC.

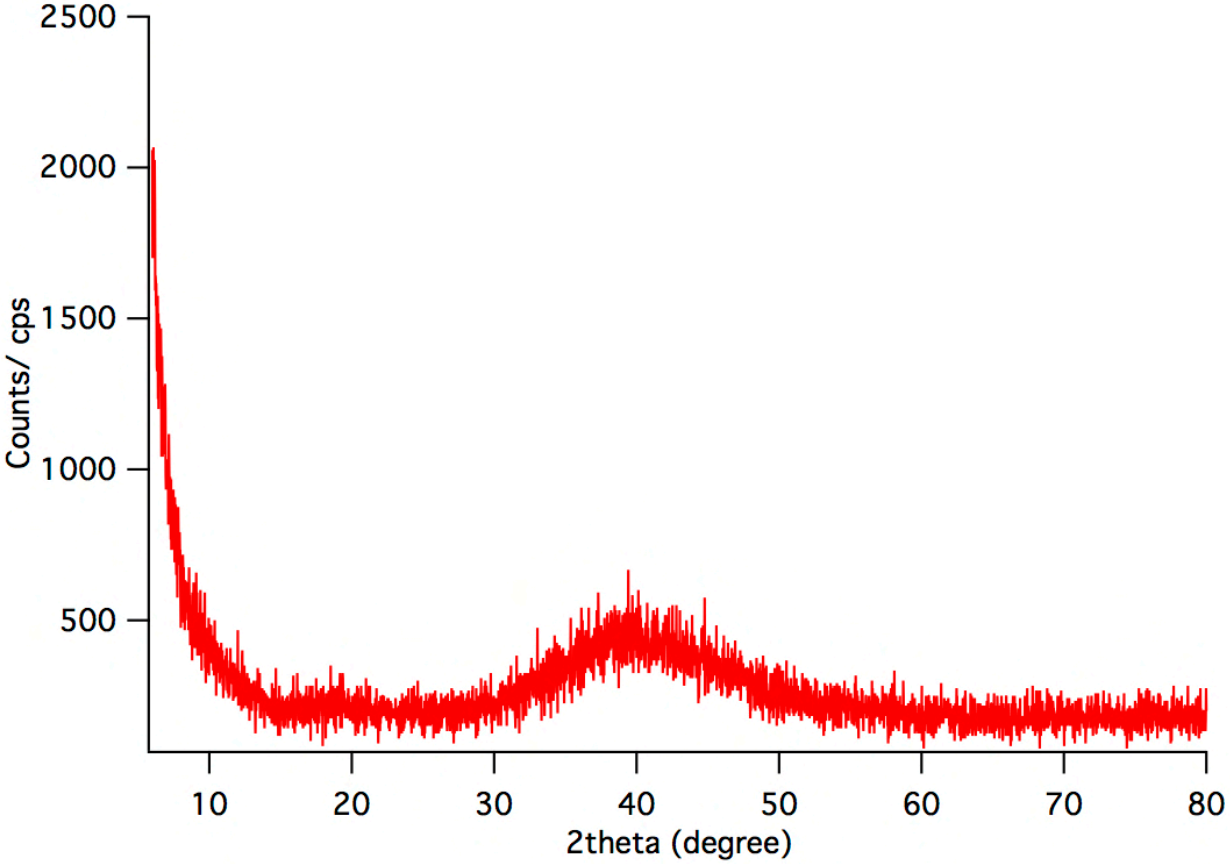

Figure S7 Powder X-ray diffraction (PXRD) spectrum of the purified $Au_{23}(SC_4H_9)_{16}$.TOA, dichloromethane fraction.