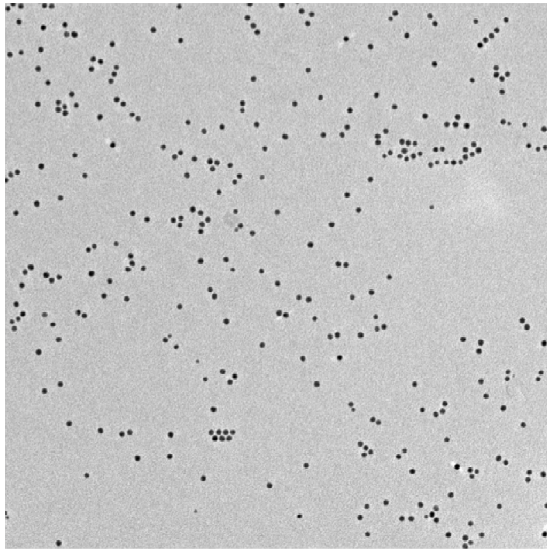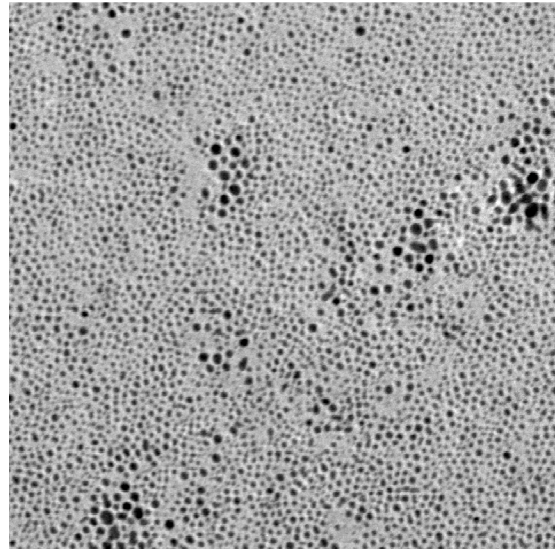Supplementary Figure S1: 2D SEDFIT screen capture. The c(*s*, *f/f₀*) model was applied to fit ~70 AUC scans for $Au_{144}(SR)_{60}$.
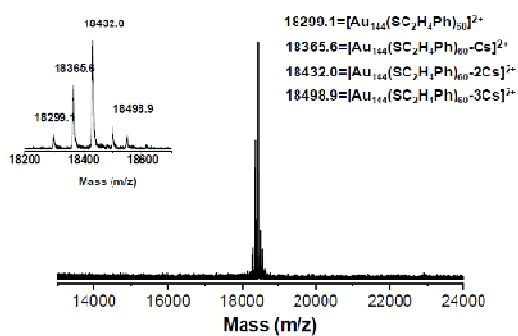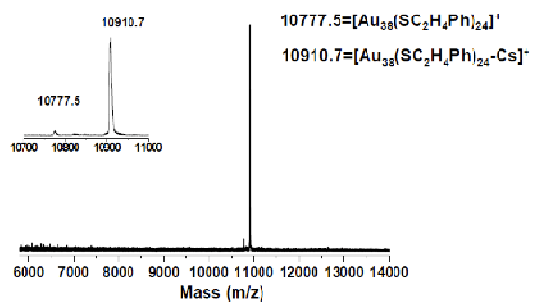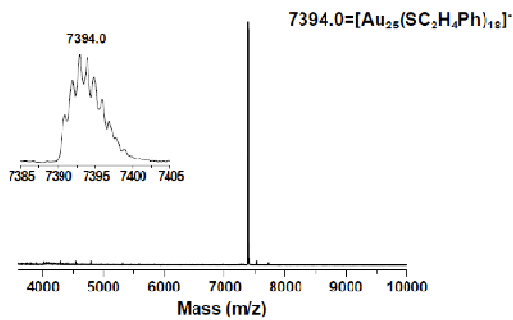
100 nm
HV=120.0kV
Direct Mag: 27000x
AMT Camera System

20 nm
HV=200.0kV
Direct Mag: 50000x
AMT Camera System

Supplementary Figure S2: TEM micrographs of PDT-NPs and MUS-NPs.
Transmission electron microscope (TEM) images illustrating the availability of information by this method.

Supplementary Figure S3: ESI-MS time-of-flight (TOF) spectra. ESI-MS TOF for $Au_{25}(SCH_2CH_2Ph)_{18}^-$, $Au_{38}(SCH_2CH_2Ph)_{24}$, and $Au_{144}(SCH_2CH_2Ph)_{60}$ nanoclusters.