

## Electronic supplementary information

### Eicosyl ammoniums elicited thermal reduction alleyway towards gold nanoparticles and their chemo-sensor aptitude

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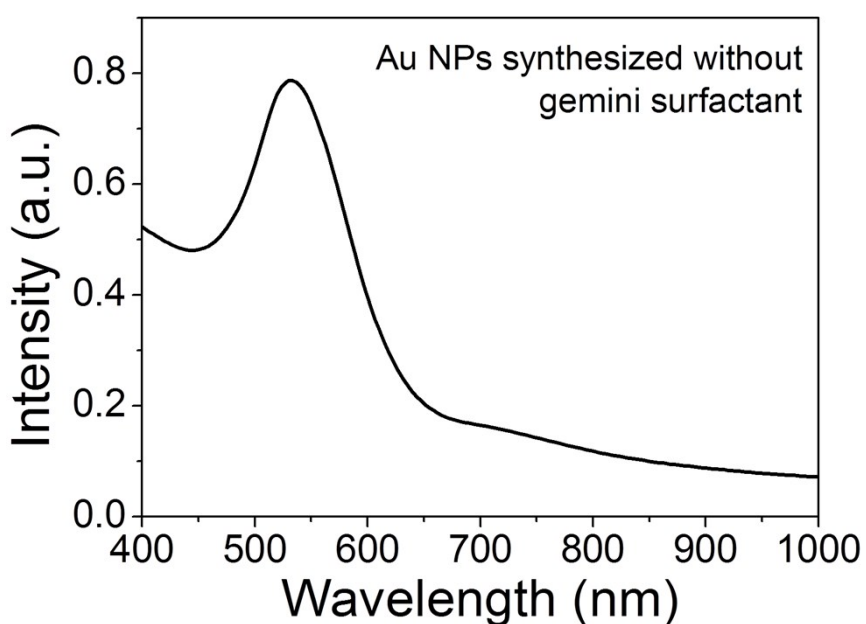
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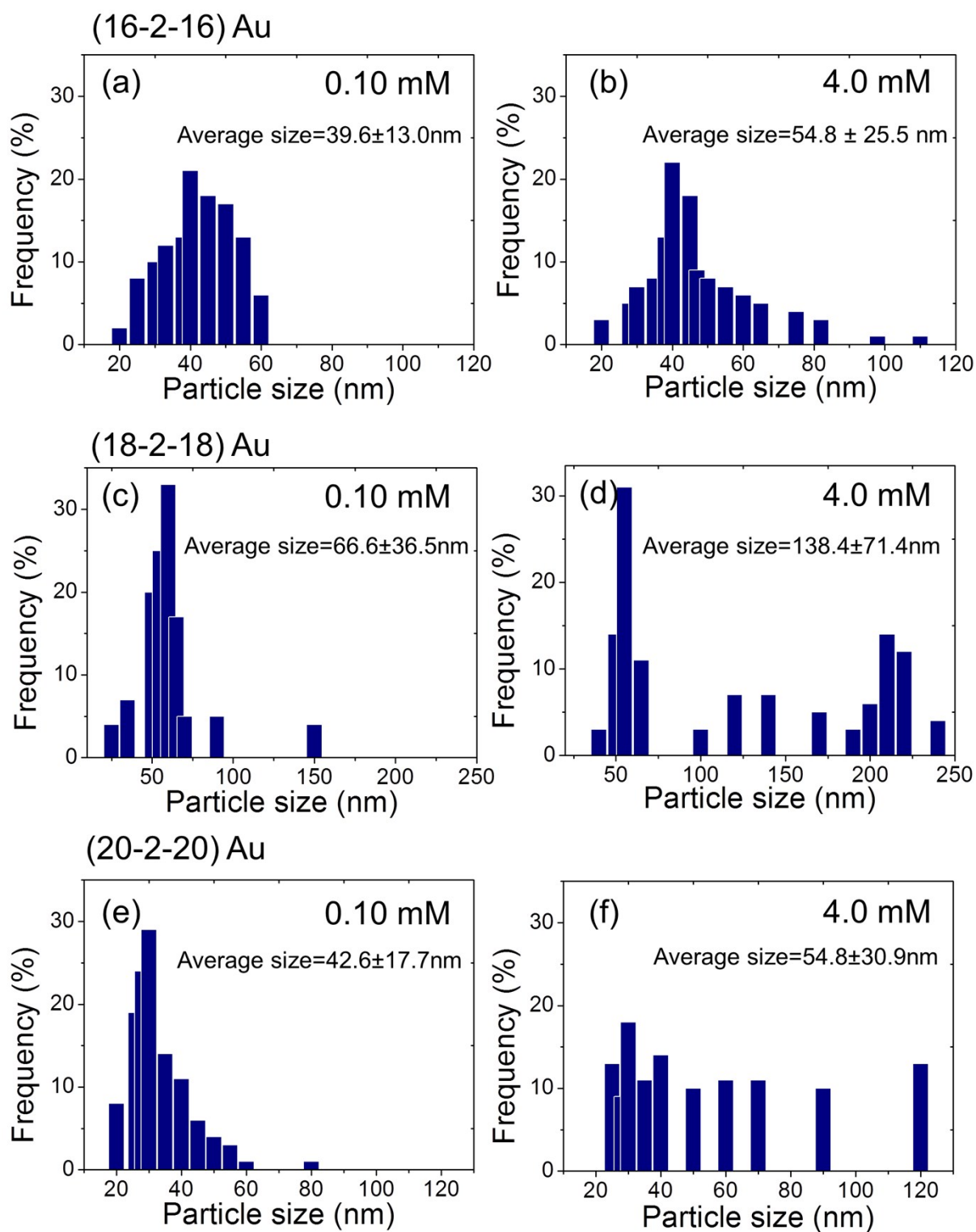
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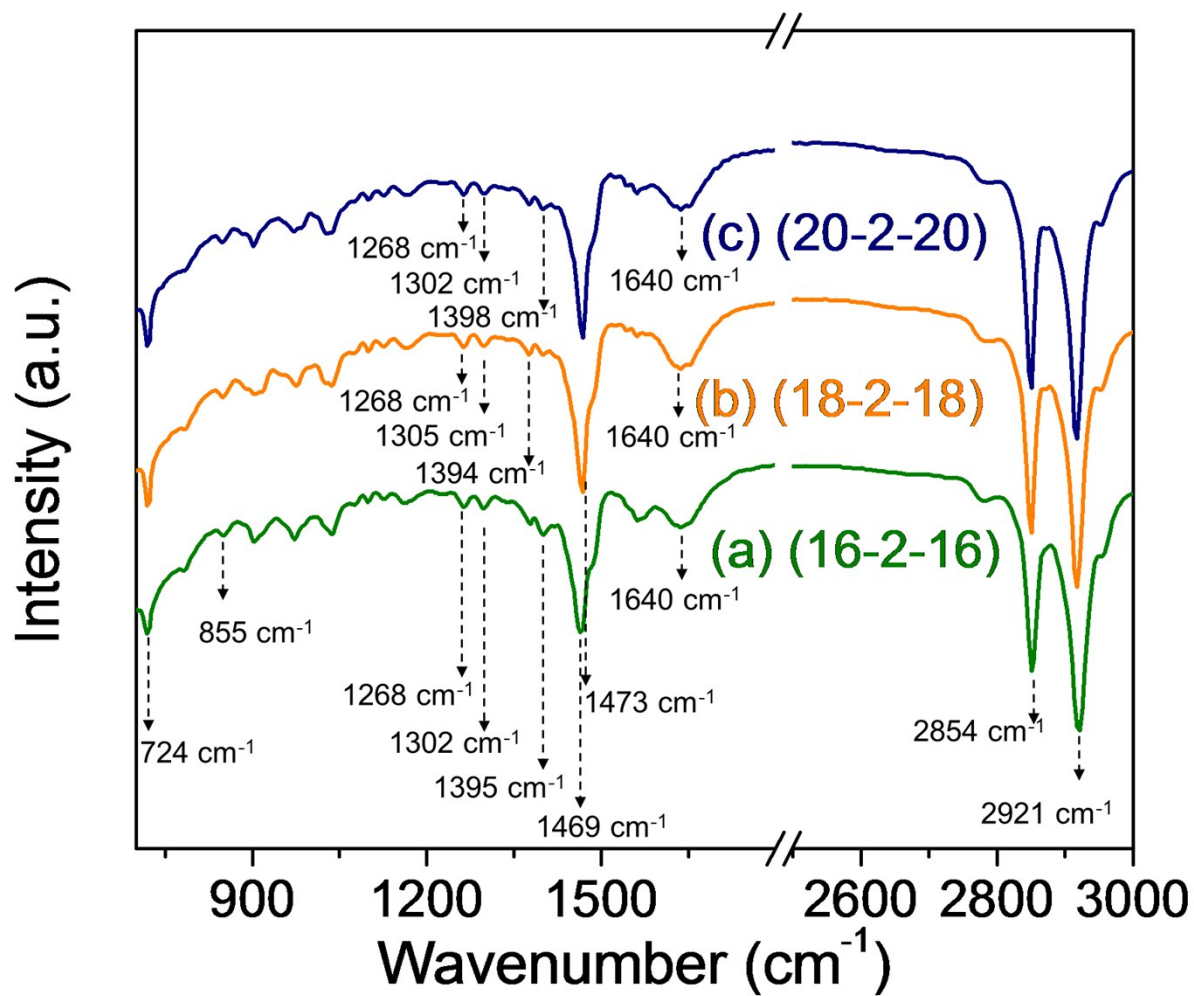
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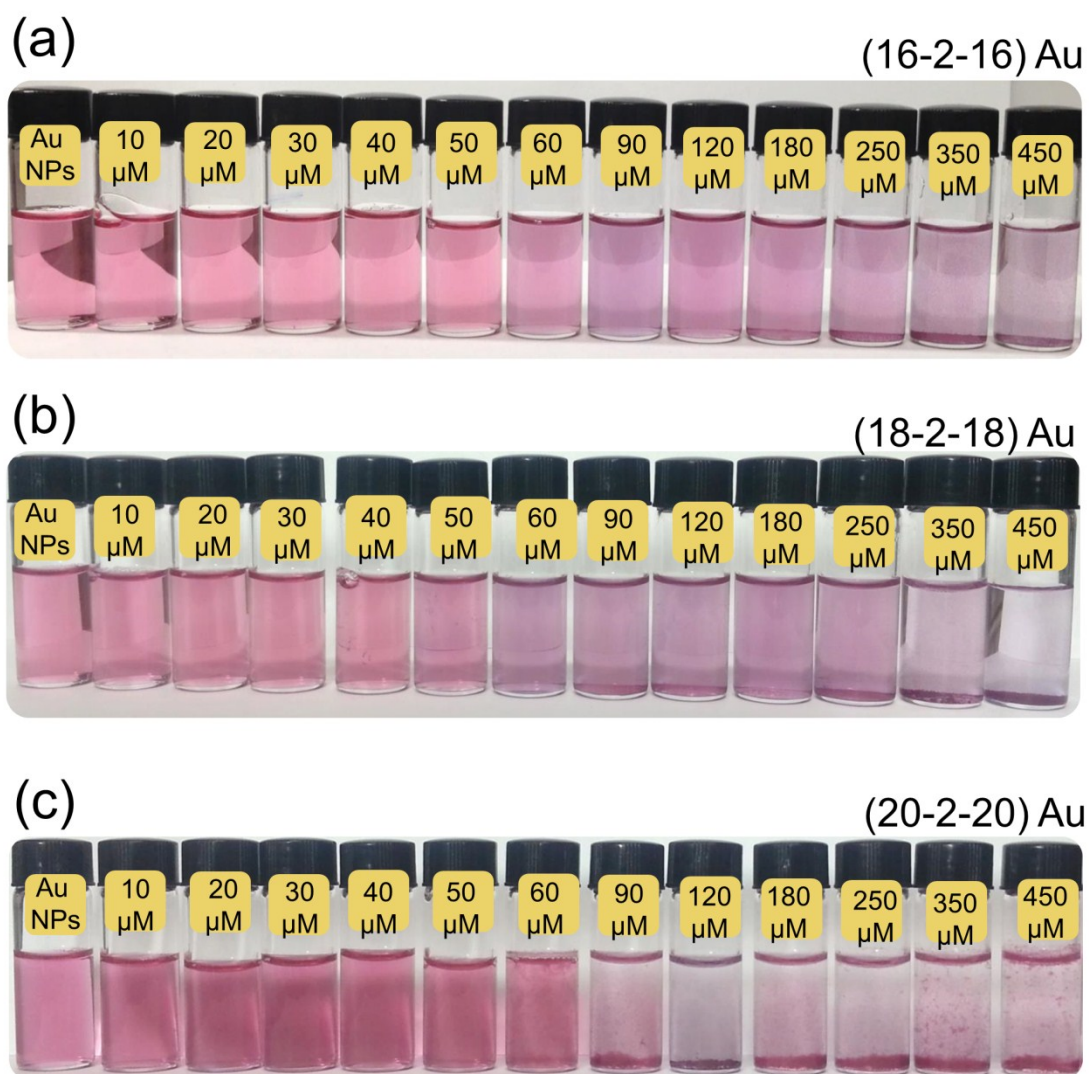
**Fig. S1** UV-Vis absorption spectra of Au NPs synthesized without TTS.



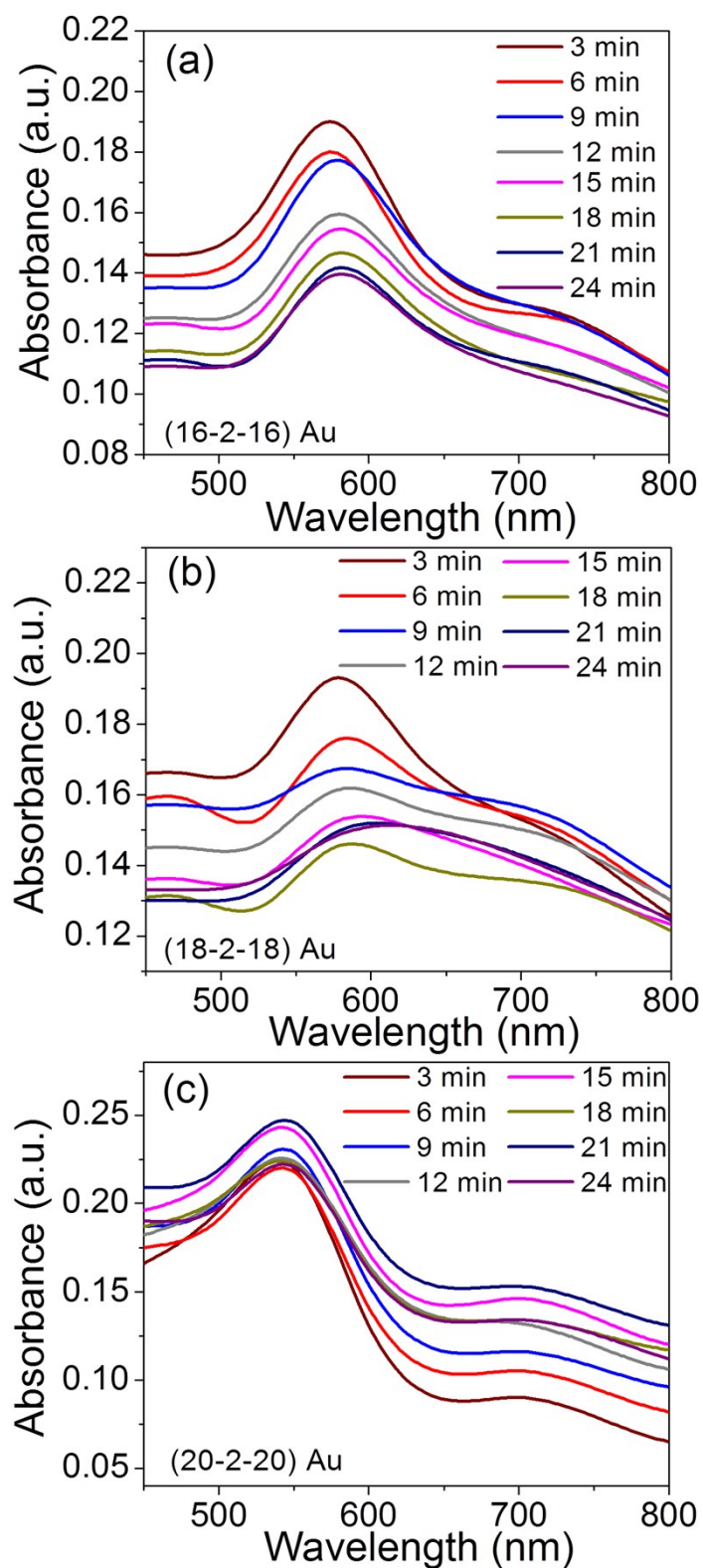
**Fig. S2** Histograms showing size distribution of Au NPs synthesized with 0.10 mM and 4 mM of different TTSs: (a), (b) (16-2-16), (c), (d) (18-2-18) and (e), (f) (20-2-20).



**Fig. S3** FTIR spectra of pure TTSs ( $m = 16, 18, 20$ ).



**Fig. S4** Photographs of all three kinds of Au NPs with different concentrations of Hg<sup>2+</sup> range from 0 to 450 μM.



**Fig. S5** Time dependent UV-Vis spectra of Au NPs synthesized with different TTSs in presence of  $\text{Hg}^{2+}$ : (a) (16-2-16) Au NPs, (b) (18-2-18) Au NPs and (c) (20-2-20) Au NPs.