Supporting information

Understanding the degradation pathway of the pesticide, chlorpyrifos by noble metal nanoparticles

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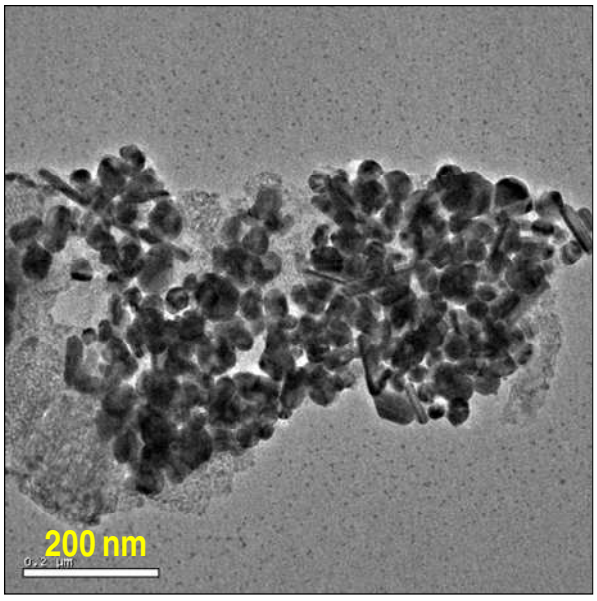

Figure S1. Large area TEM image of Ag@citrate NPs treated with 10 ppm CP for 48 h.

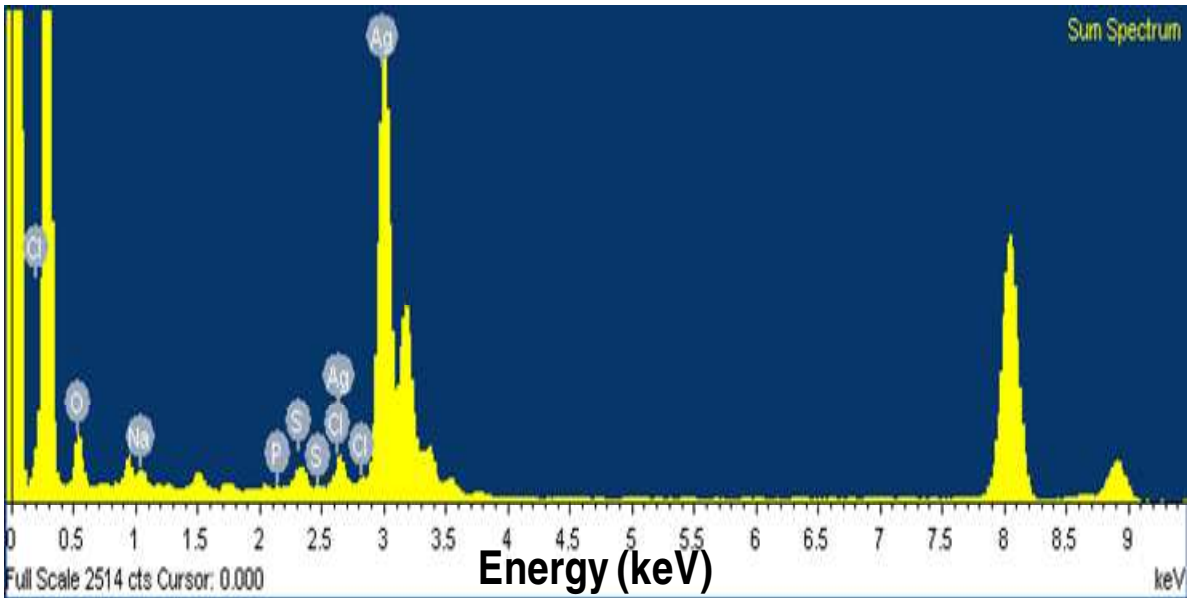

Figure S2. TEM-EDAX spectrum of Ag@citrate NPs treated with 10 ppm CP for 48 h.

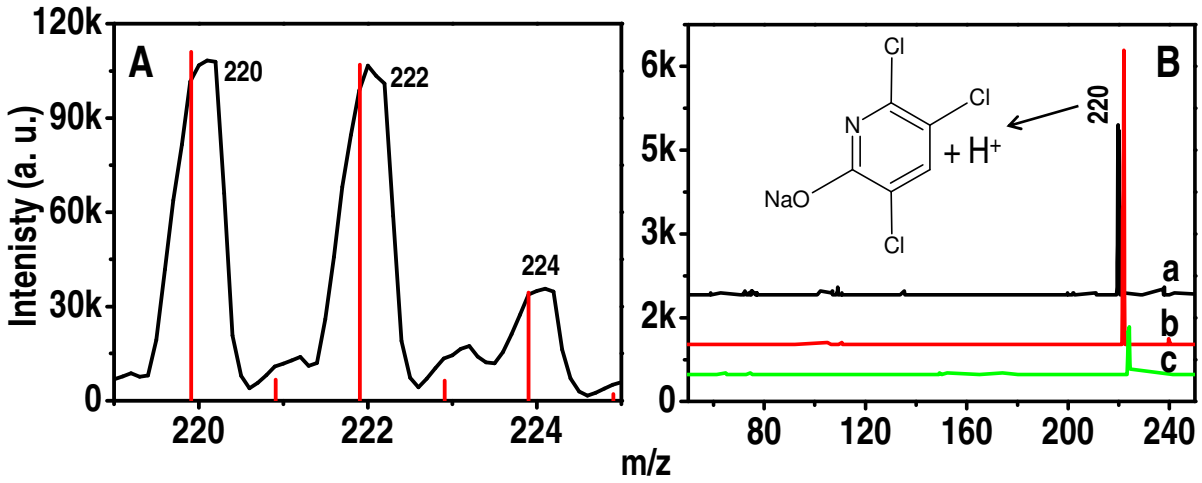

Figure S3. A) Comparison of the calculated mass spectral positions (red trace) of sodium salt of TCP and ESI MS of CP degradation product (black trace) in the m/z 220 region, in positive mode. B) ESI MS^2 of m/z 220, 222 and 224 (traces a, b and c, respectively) of degradation product of CP, in positive mode. The chemical structure of protonated sodium salt of TCP is also seen.

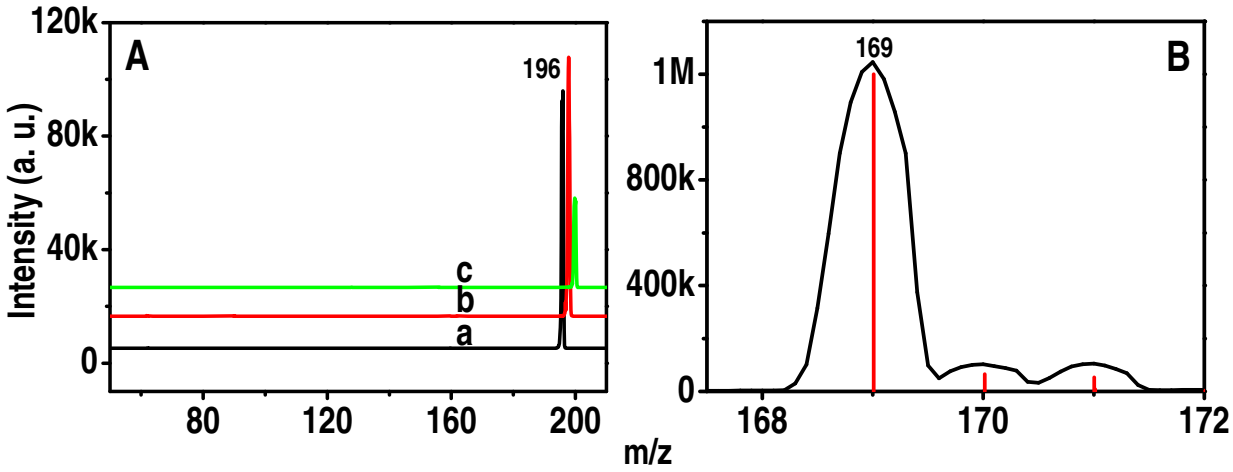

Figure S4. A) ESI MS^2 of m/z 196, 198 and 200 (traces a, b and c, respectively) of degradation product of CP, in negative mode. B) Comparison of the calculated mass spectral positions (red trace) of the anion of DETP and ESI MS of degradation product of CP (black trace) in the m/z 169 region, in negative mode.

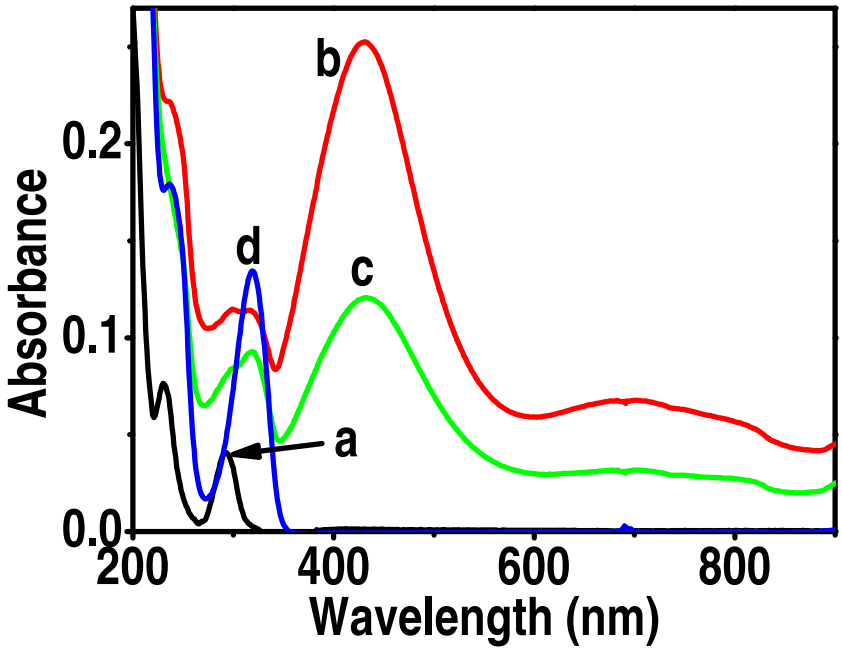

Figure S5. UV-vis absorption spectra Ag@citrate NPs treated with 10 ppm CP at 15, 25 and 35 °C (traces b, c and d, respectively). Absorption spectrum of 2 ppm CP (trace a) is shown for comparison.

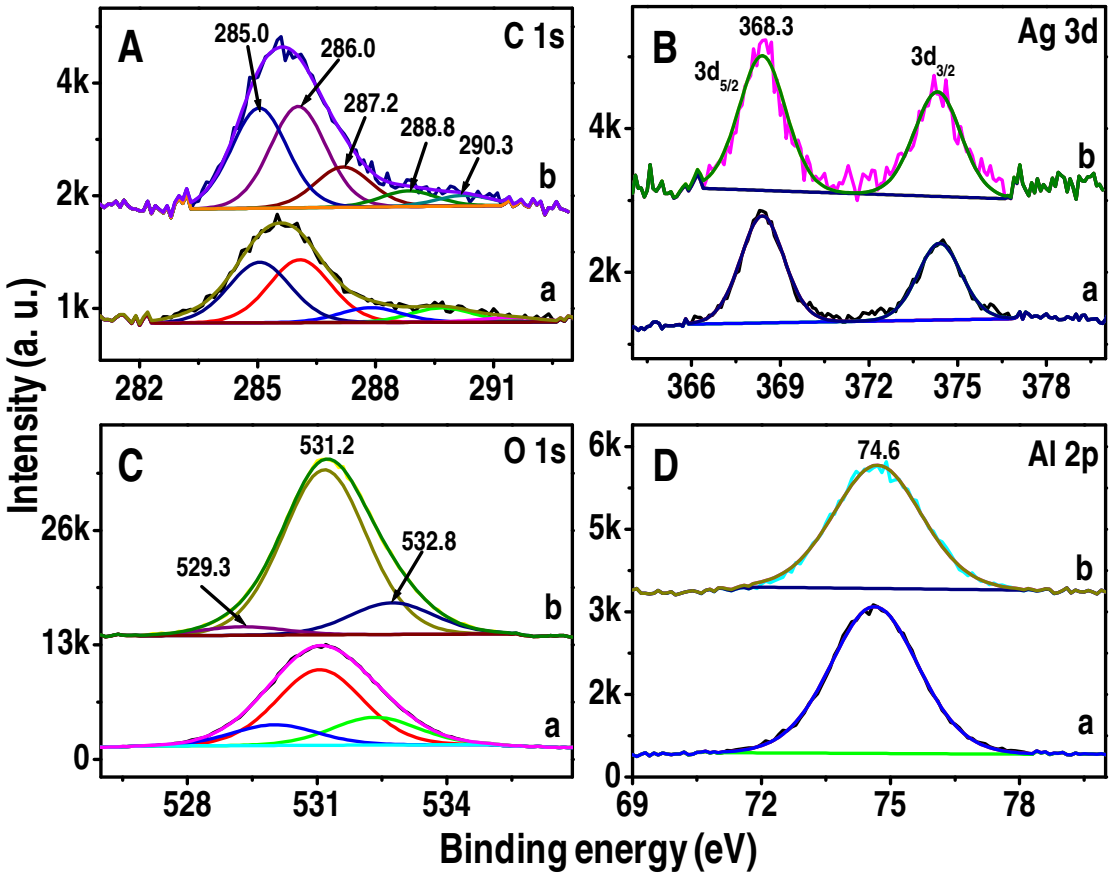

Figure S6. XPS spectra of alumina supported Ag@citrate NPs treated for 4 h with 2 ppm CP (traces b) in C 1s, Ag 3d, O 1s and Al 2p regions (A, B, C and D, respectively). Traces a correspond to parent alumina supported Ag@citrate NPs.

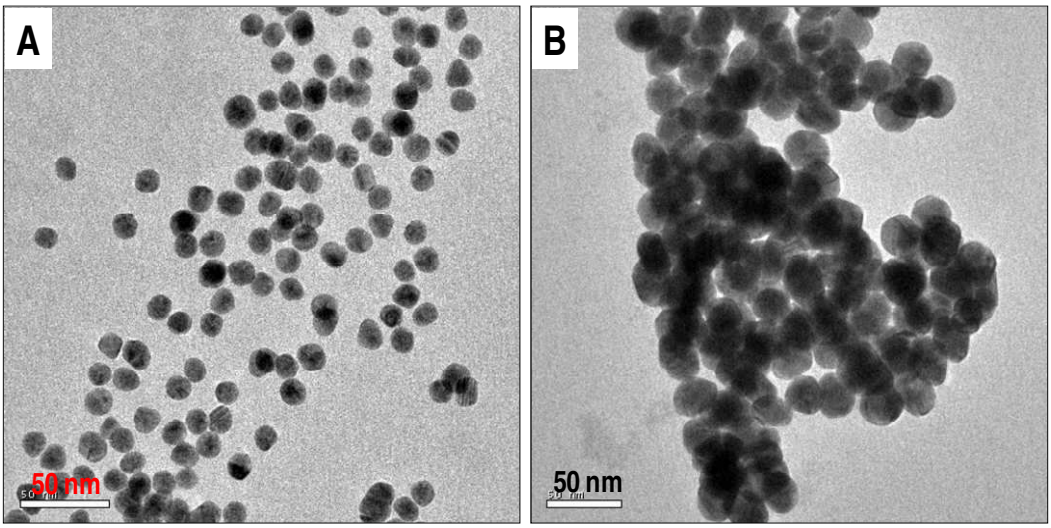

Figure S7. TEM images of as-synthesized Au@citrate (A) and reaction mixture of Au@citrate NPs and 10 ppm CP after 7 h (B).

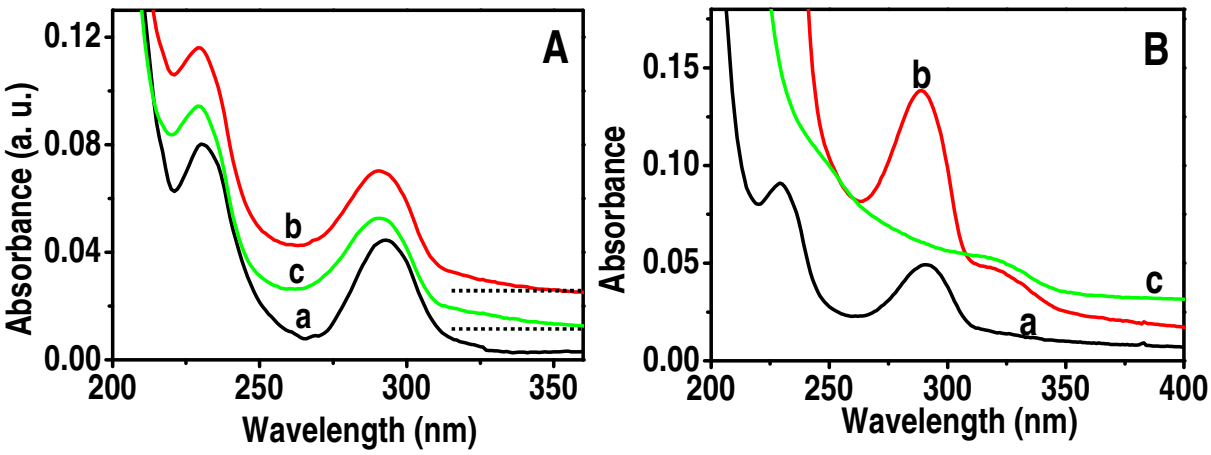

Figure S8. A) UV-vis absorption spectra of 1 ppm CP in 1:1 water + methanol mixture after 1, 3 and 5 days (traces a, b and c, respectively) at room temperature. Traces b and c are vertically shifted for clarity. B) UV-vis absorption spectra of 1 ppm CP and 1 ppm CP treated with unprotected Ag NPs supported on alumina (traces a and c, respectively). Trace b is the absorption spectrum of 3 ppm CP treated with alumina. In B all measurements were done after 24 hours.

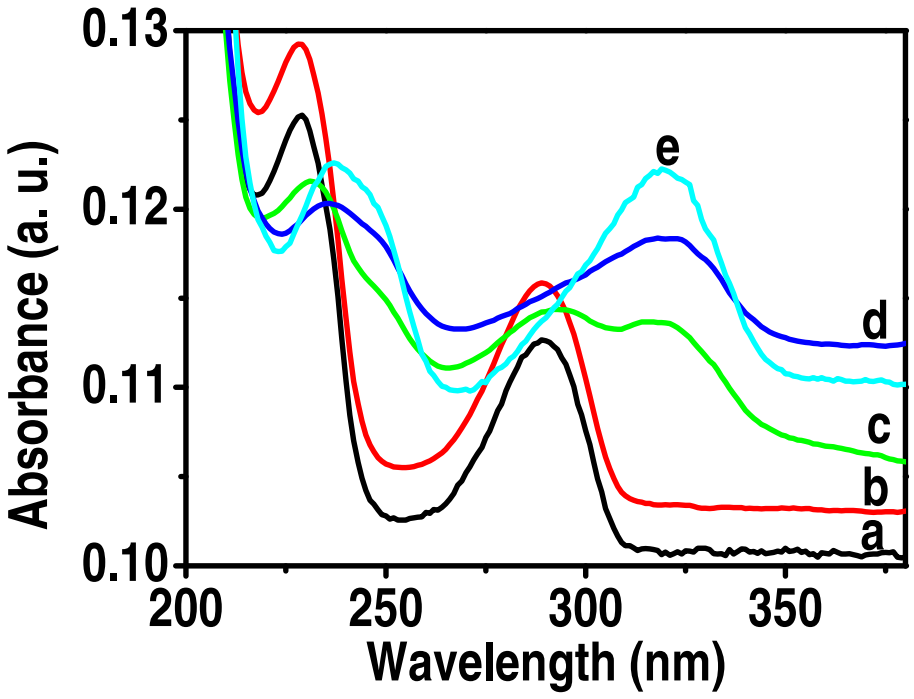

Figure S9. Absorption spectra of 2 ppm CP treated with Ag@MSA NPs loaded on alumina after 1, 2, 3, 4 and 5 hours (traces a, b, c, d and e, respectively). The rise in background of absorption spectrum in trace c is due to the presence of alumina particulates.