

Supplementary Materials

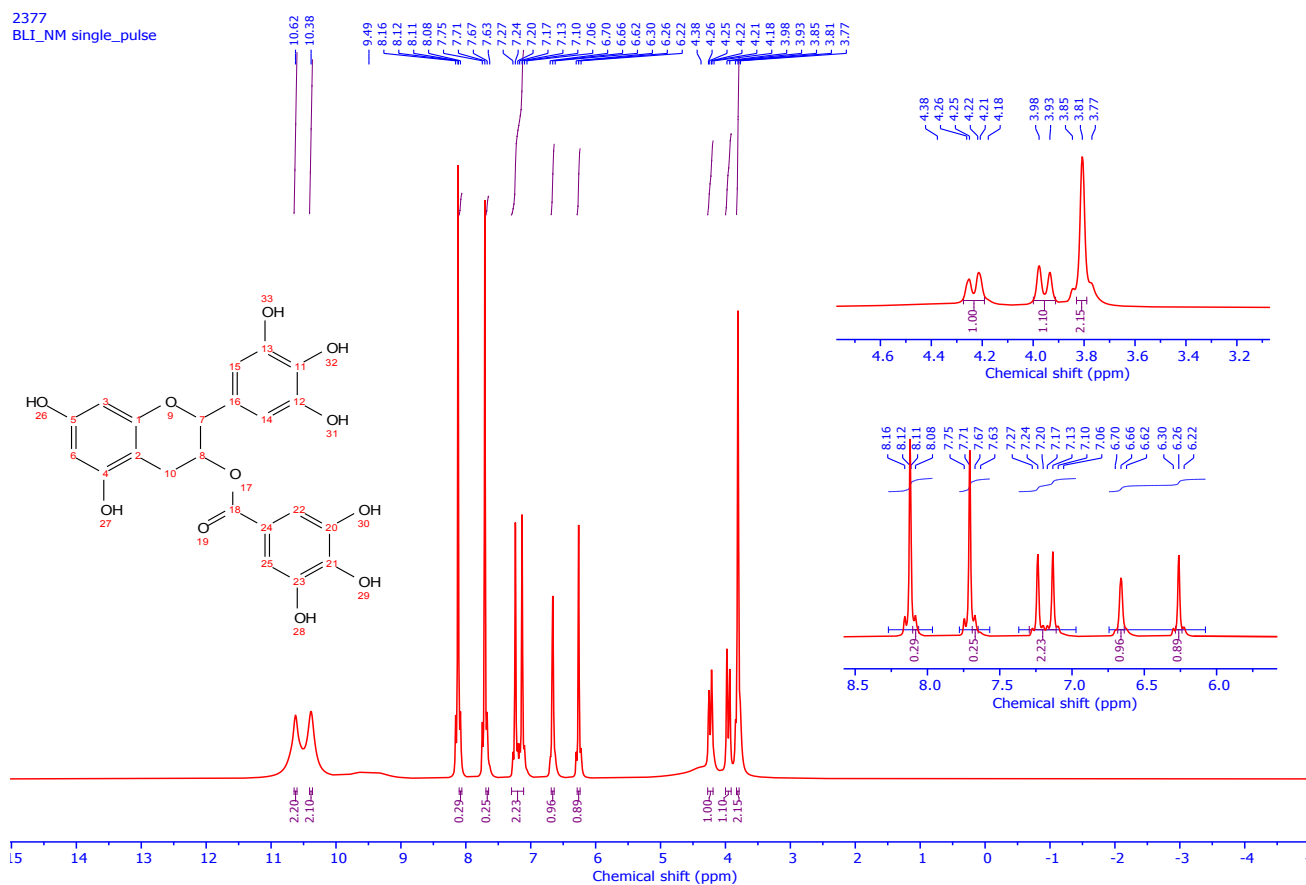
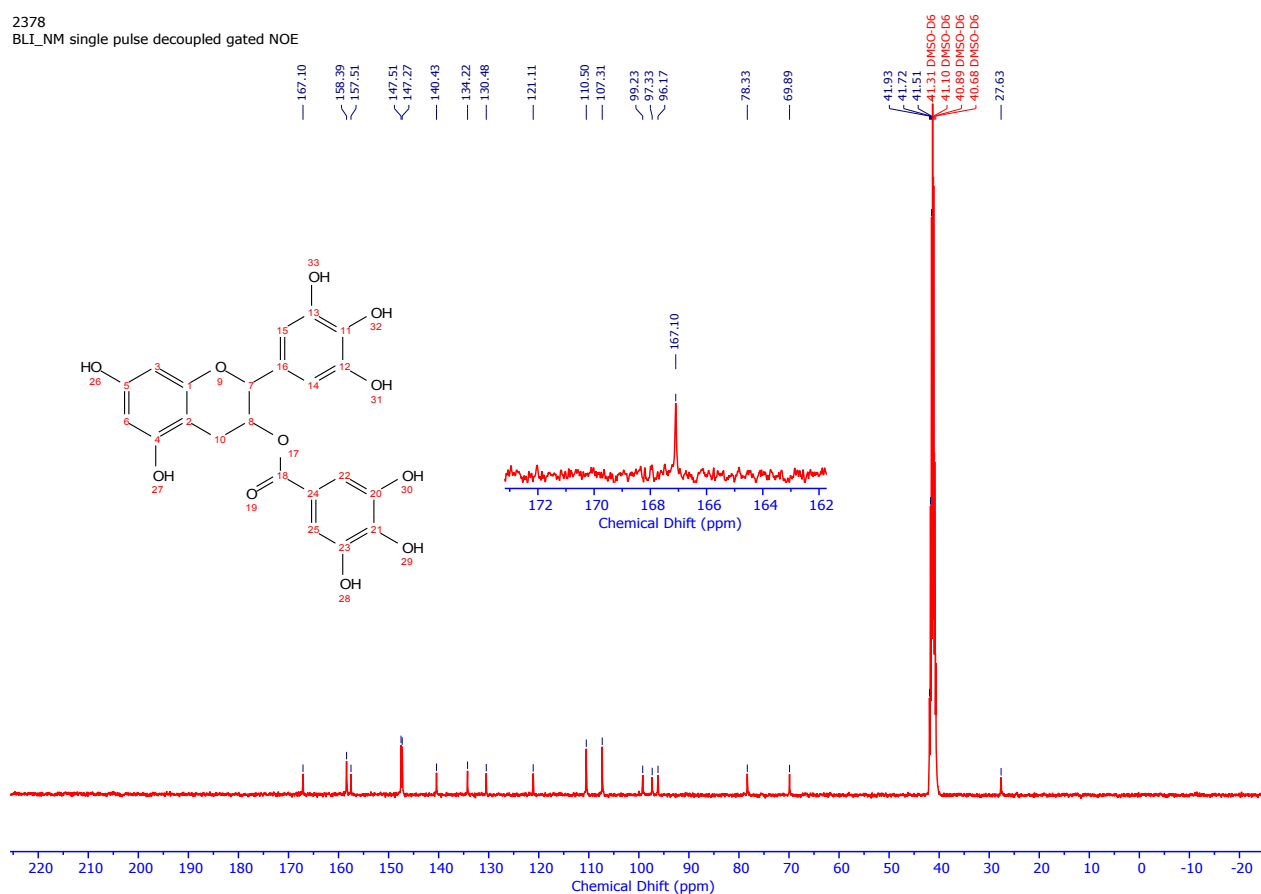


Fig 1S: ^1H -NMR of Isolated Epigallocatechin gallate from EBF

2378

BLI_NM single pulse decoupled gated NOE

Fig 2S: ^{13}C -NMR of Isolated Epigallocatechin gallate from EBF

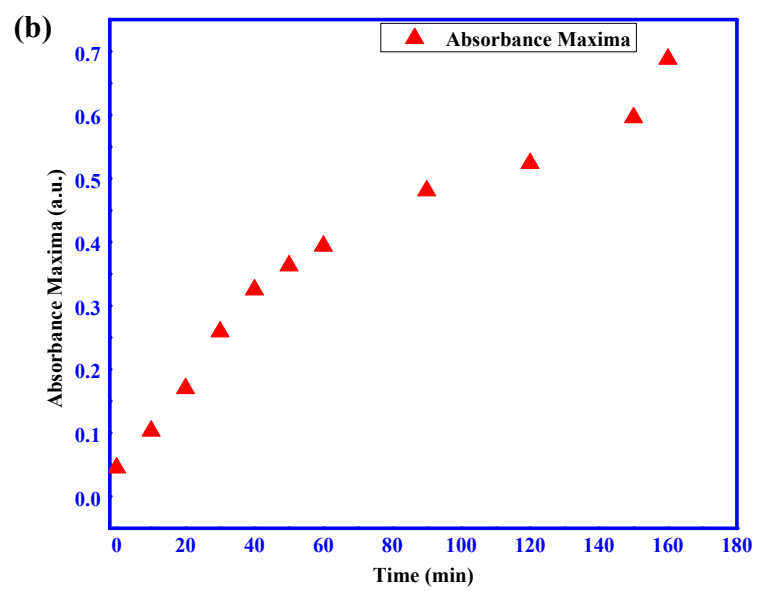


Fig.3S. Increase in absorbance maxima showing formation of AuNP

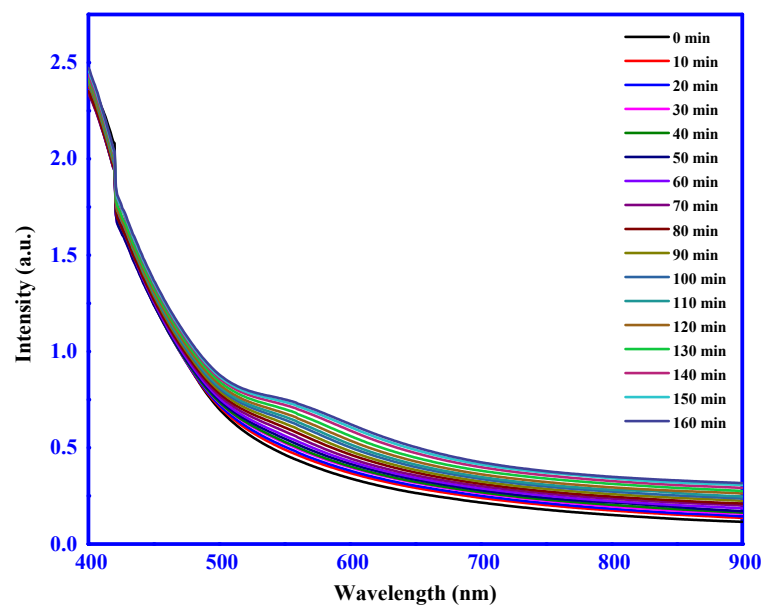


Fig.4S. Formation of EBF-AuNP with 12 mM CTAB

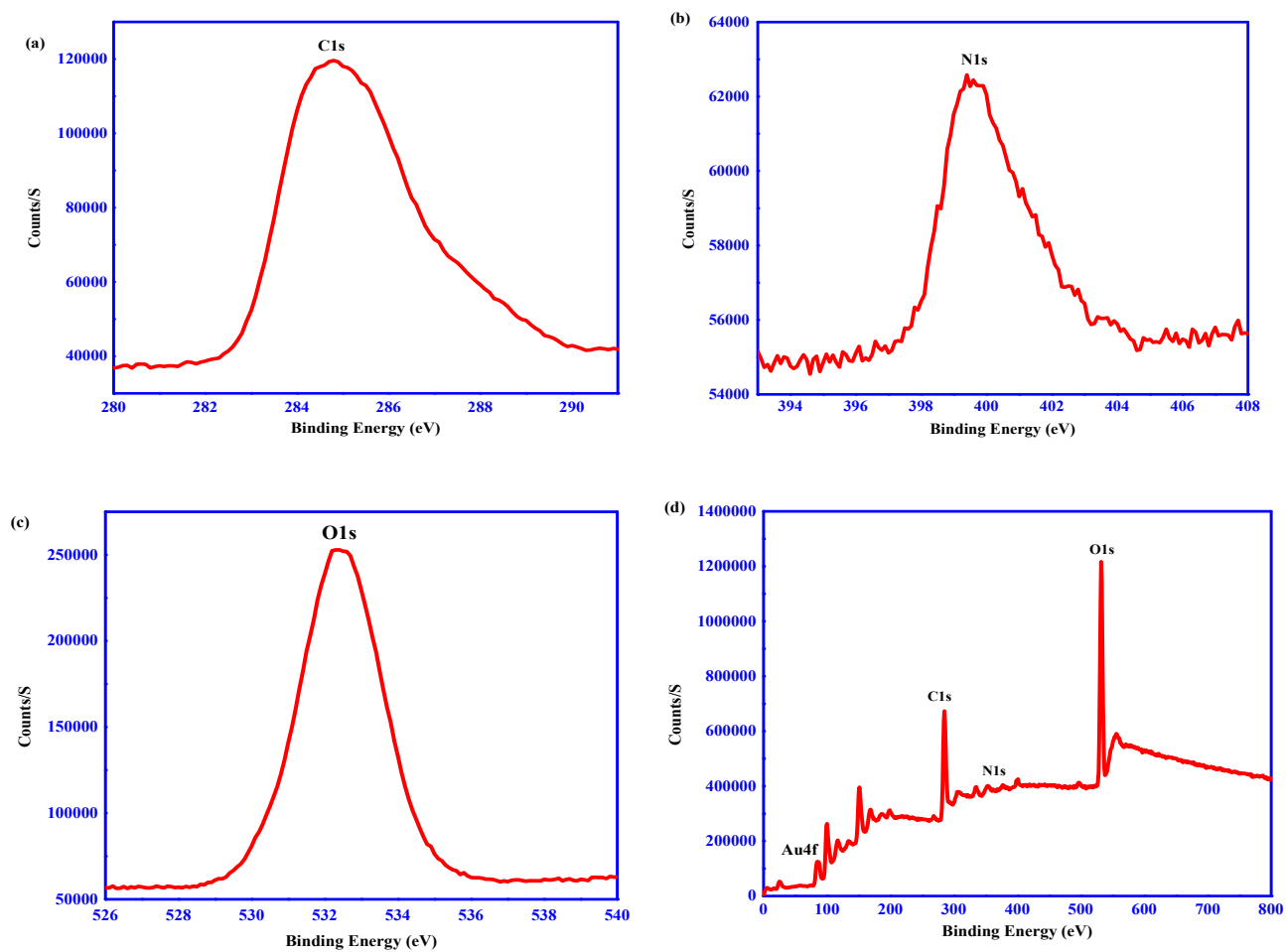


Fig.5S. XPS Spectra of (a) C1s (b) N1s (c) O1s and (d) XPS Survey Spectra

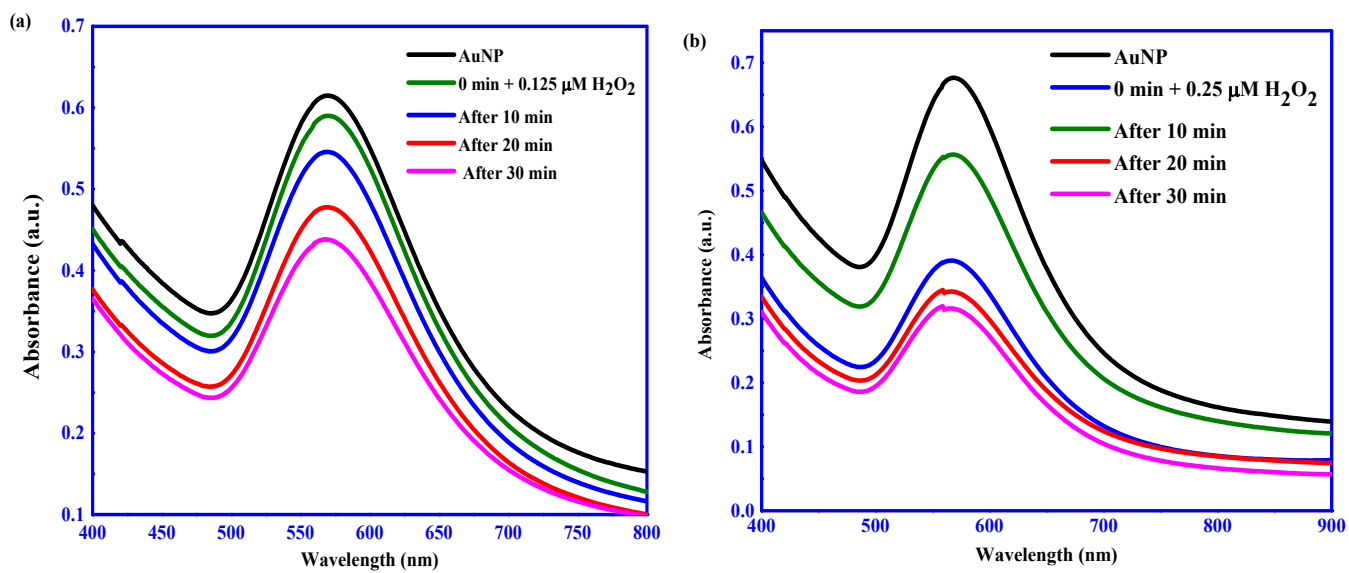


Fig. 6S. Absorption spectra with addition of (a) $0.125 \mu\text{M}$ of H_2O_2 (b) $0.25 \mu\text{M}$ of H_2O_2 .

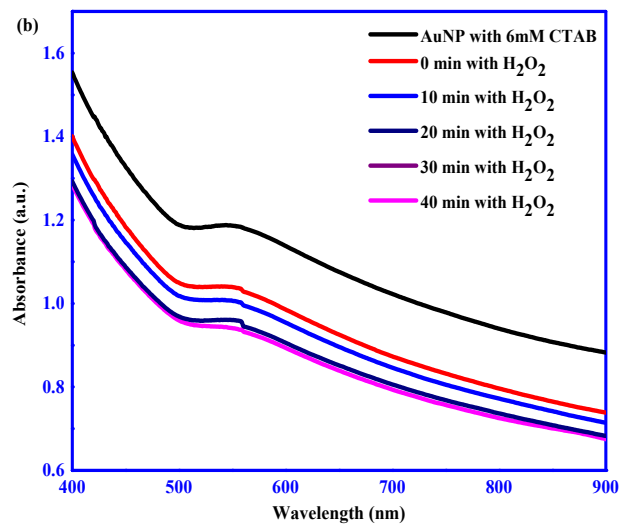
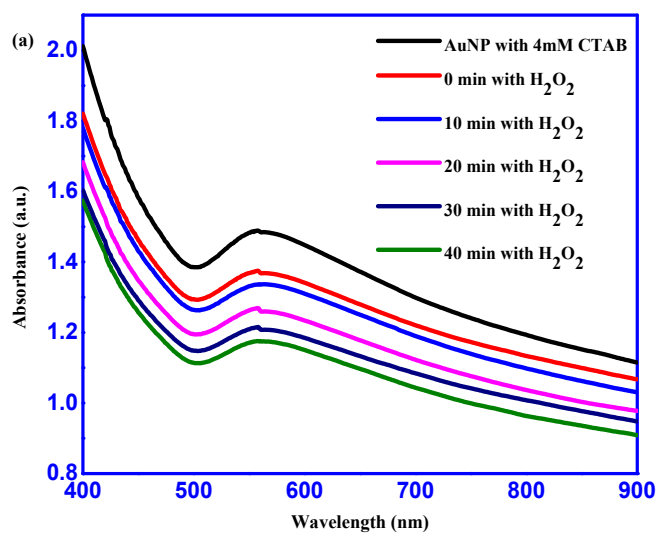


Fig. 7S. Absorption spectra with addition of (a) 0.125 μM of H_2O_2 (b) 0.25 μM of H_2O_2 .

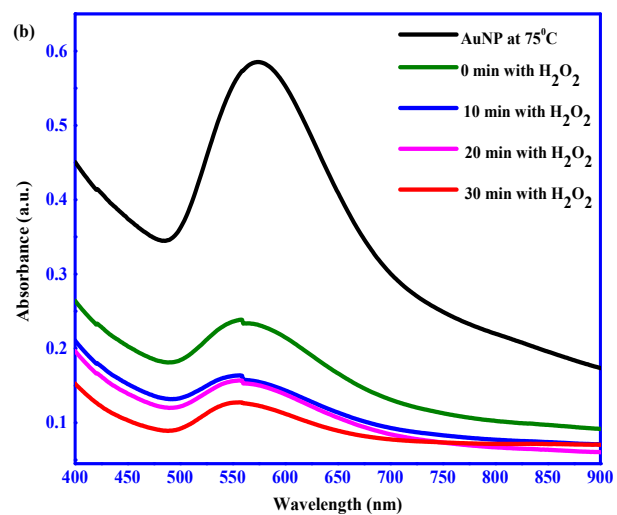
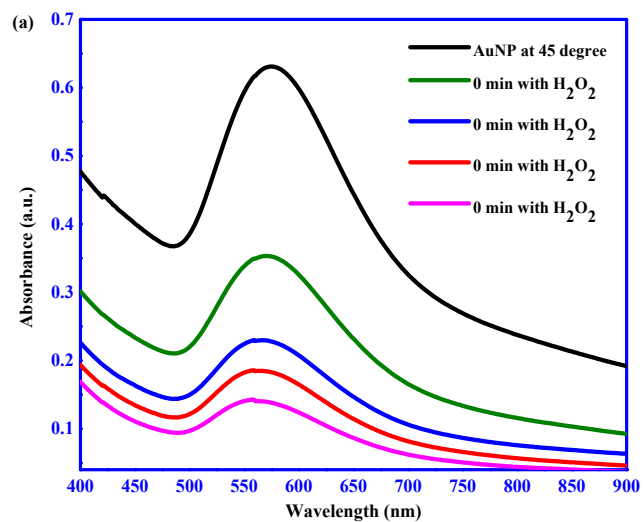


Fig. 8S. Absorption spectra with addition of peroxide at (a) 45°C and (b) 75°C.

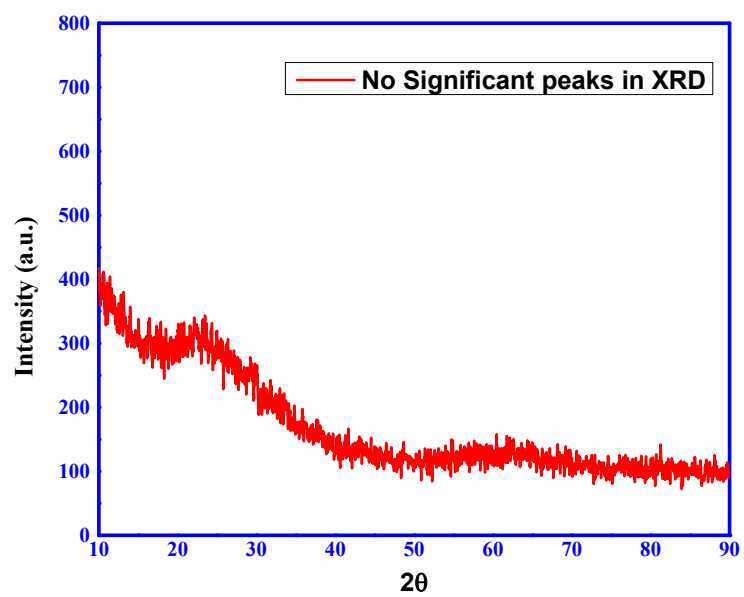


Fig.9S. XRD analysis after addition of peroxide in the AuNP suggesting degradation/oxidation of the Nanoparticle

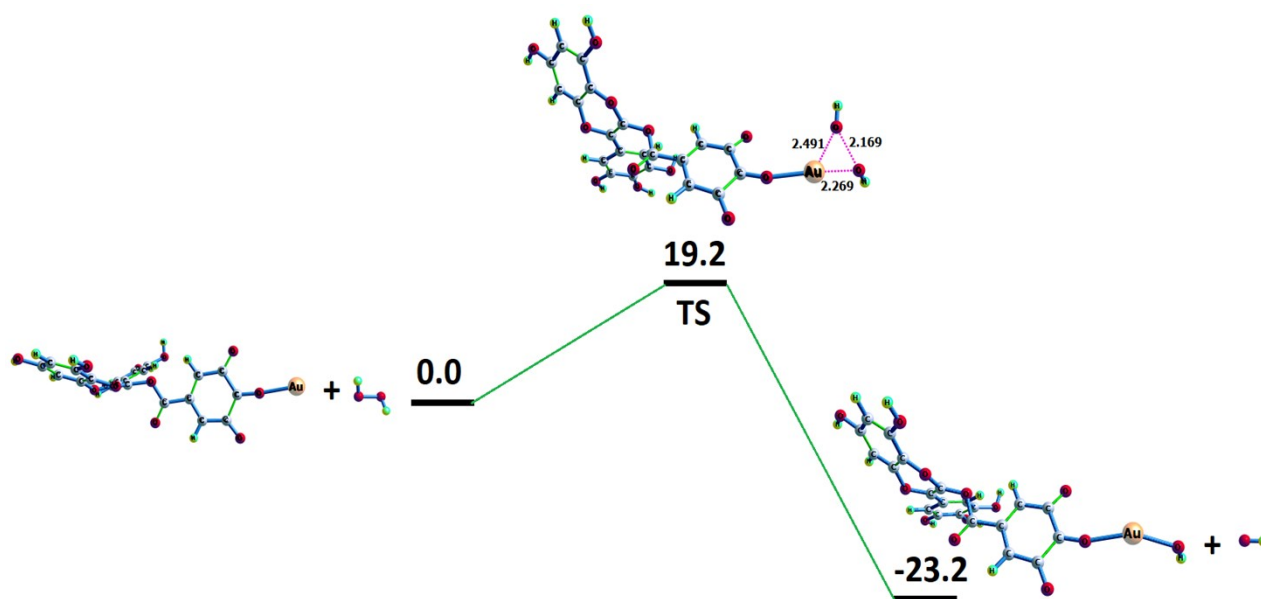


Fig. 10S. Energy profile for the activation of H_2O_2 molecule. Energies are in kcal/mol and bond lengths are in Å.

Section 11S: Determination of peroxide concentration through Titration with KMnO_4

Hydrogen peroxide in a diluted sample can be quantitatively oxidized by taking known concentration of KMnO_4 according to Solvay & Cie Method. About 10 ml of the sample solution spiked with $0.5 \mu\text{M}$ H_2O_2 was titrated against KMnO_4 under acidic condition. The found concentration of peroxide in the samples were given in the supplementary table-1:

Table-1: Determination of peroxide concentration by titration

Samples	Spiked peroxide (μM)	Concentration of Peroxide (μM)
River Water	0.5	0.41
Pond Water -1	0.5	0.74
Pond Water -2	0.5	0.69

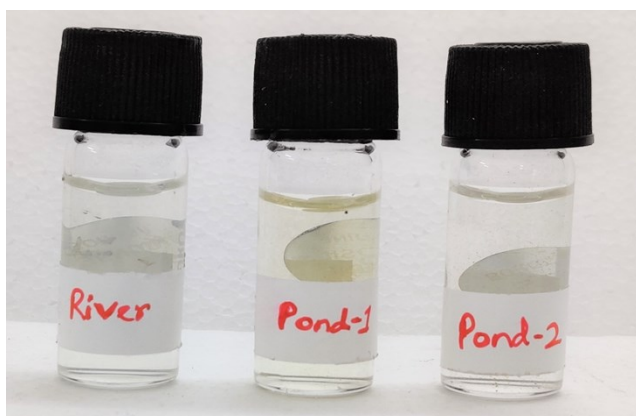


Fig.11S. Samples from River, Pond-1 and Pond-2

Reference: Solvay Chemicals Inc. (2008) Determination of hydrogen peroxide concentration (20% to 70%)—Technical Data Sheet. Solvay & Cie., Method FN 1167/01. Solvay Chemicals Inc. Available at: www.solvaychemicals.us/SiteCollectionDocuments/tds/HH-121.pdf