Electronic Supplementary Material (ESI) for RSC Sustainability.

Coumarin Based Composite Material for the Latent Fingerprints Visualization and Electrochemical Sensing of Hydrogen Peroxide

Manjunatha B[1], Yadav D. Bodke[1*], Mounesh[2], Sachin Ashok Bhat.[3]

[1]Department of P.G. Studies and Research in Chemistry, Jnana Sahyadri, Kuvempu University Shankaraghatta- 577451, Shivamogga, Karnataka, India.

[2]Centre for Nano and Material Sciences, Jain (Deemed-to-be University) Jain Global Campus, Jakkasandra, Kanakapura, Bangalore 562112, Karnataka, India.

[3]Centre for Nano and Soft Matter Sciences (CeNS), Jalahalli, Bengaluru 560 013, India.

*[*]Corresponding author: E-mail:**ydbodke@gmail.com***

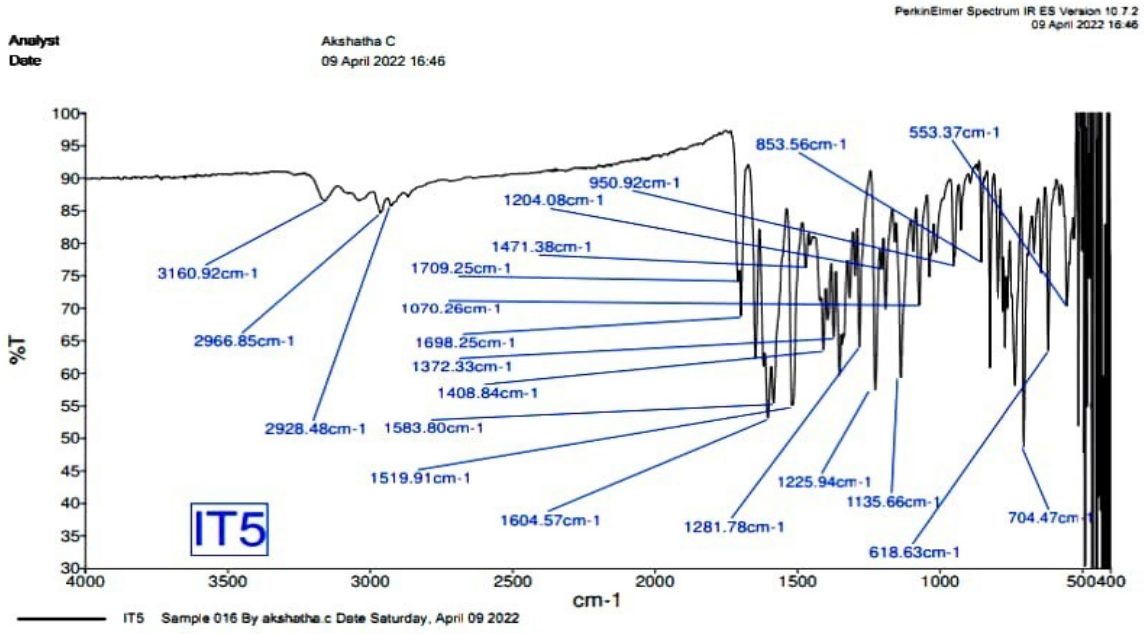

Figure S1: FTIR spectrum of the compound **CTH**

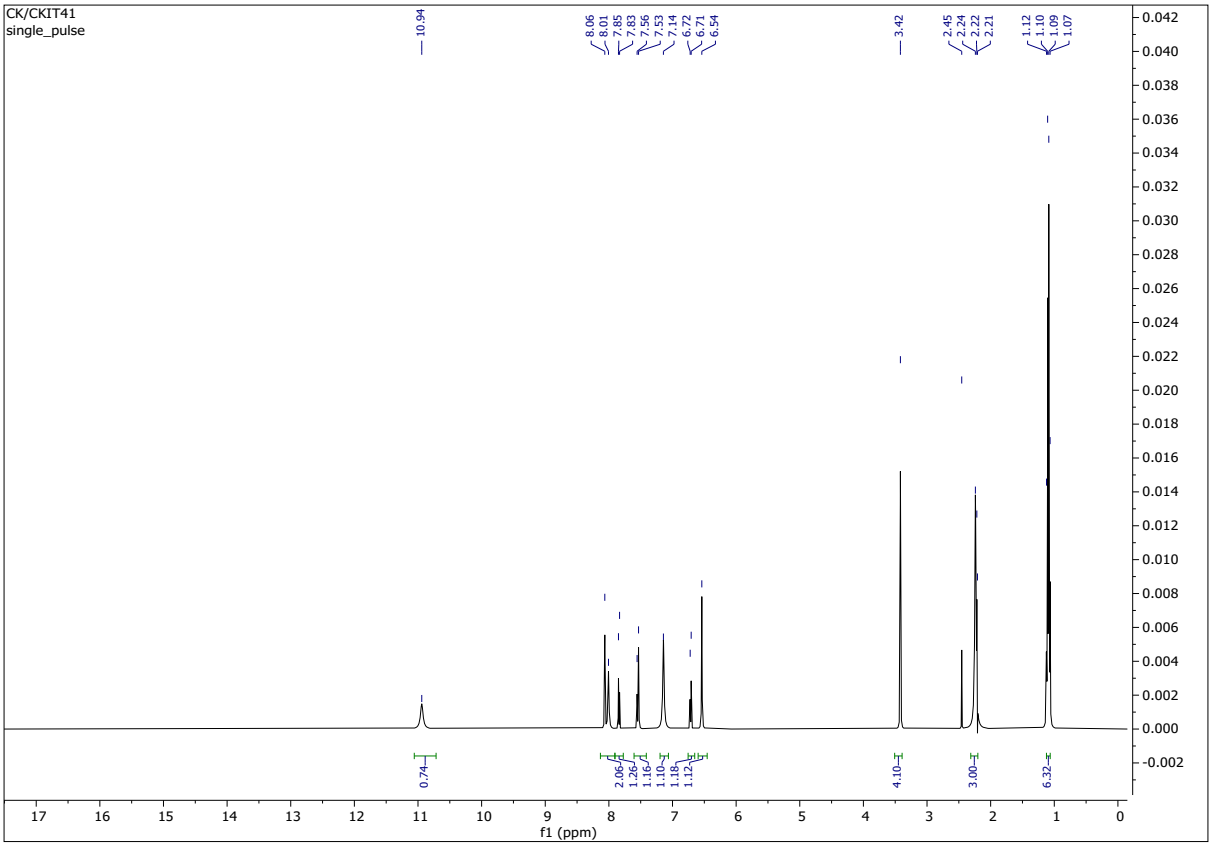

Figure S2: ^{1}H NMR spectrum of the compound **CTH**

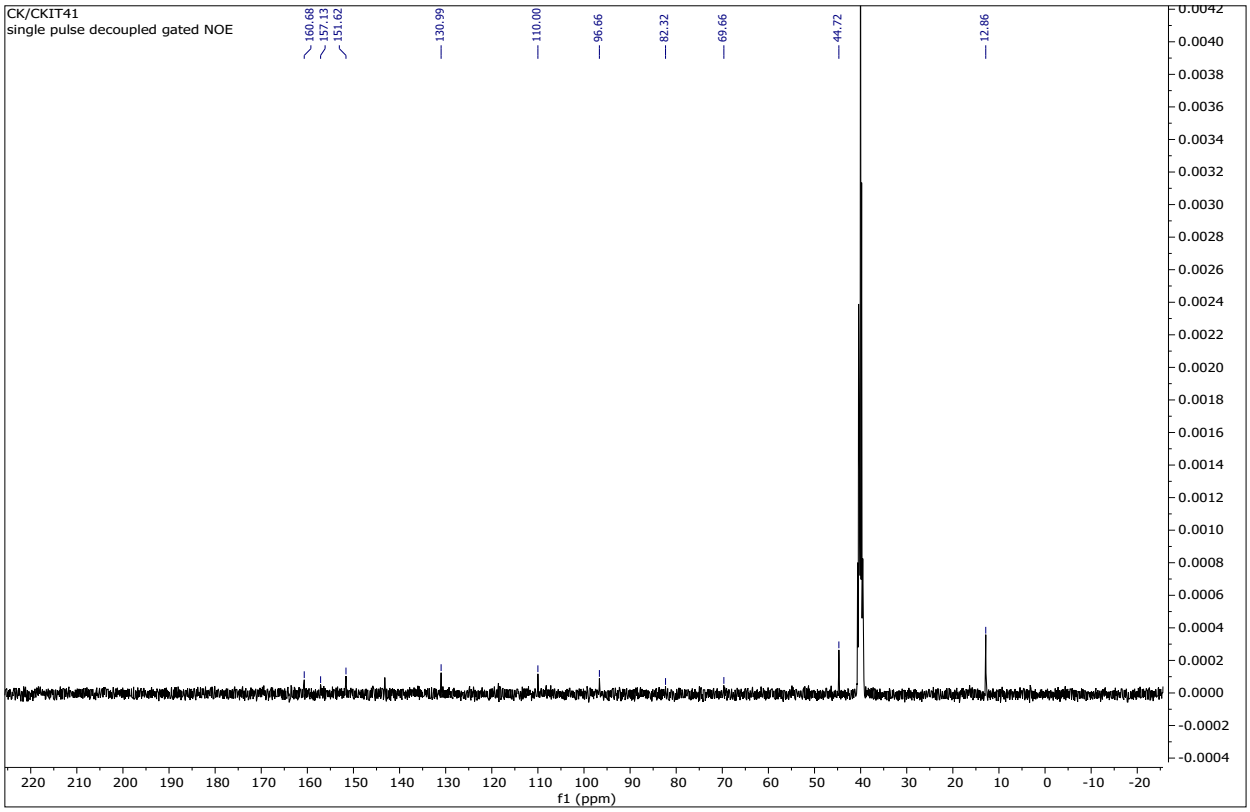

Figure S3: ^{13}C NMR spectrum of the compound **CTH**

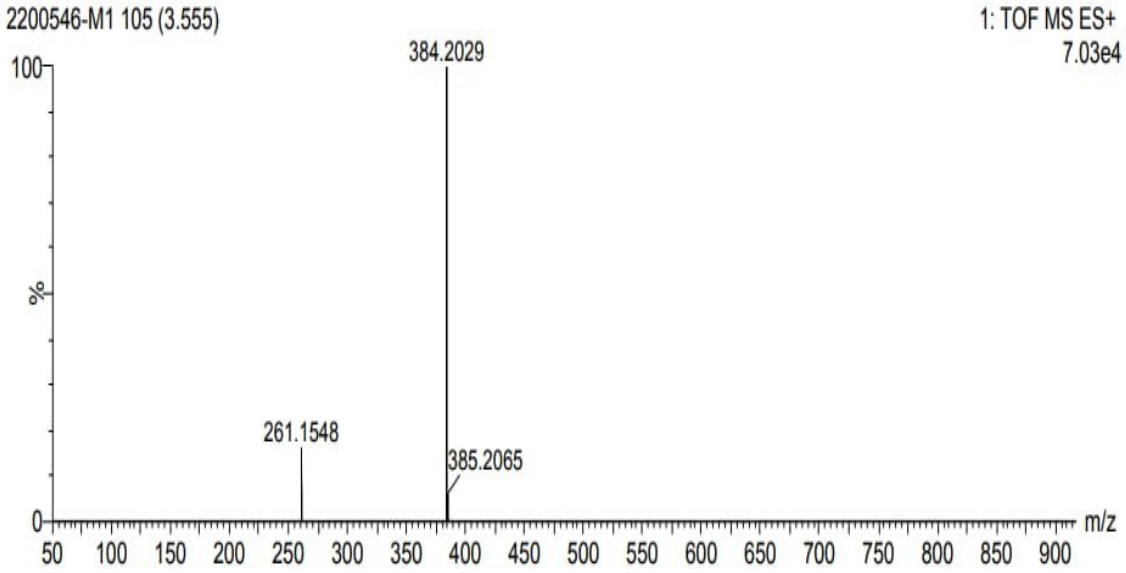

Figure S4: HRMS spectrum of the compound **CTH**

Table S1: Global reactive parameters calculated for synthesized compound **CTH**

Parameters	**CTH**
E_{HOMO} (eV)	-5.598
E_{LUMO} (eV)	-2.147
Energy gap (Δ) (eV)	3.451
Ionization energy (I) (eV)	5.598
Electron affinity (A) (eV)	2.147
Electronegativity (χ) (eV)	3.872
Chemical potential (μ) (eV)	-3.872
Global hardness (η) (eV)	1.725
Global softness (S) (eV-1)	0.289
Electrophilicity index (ω) (eV)	4.345

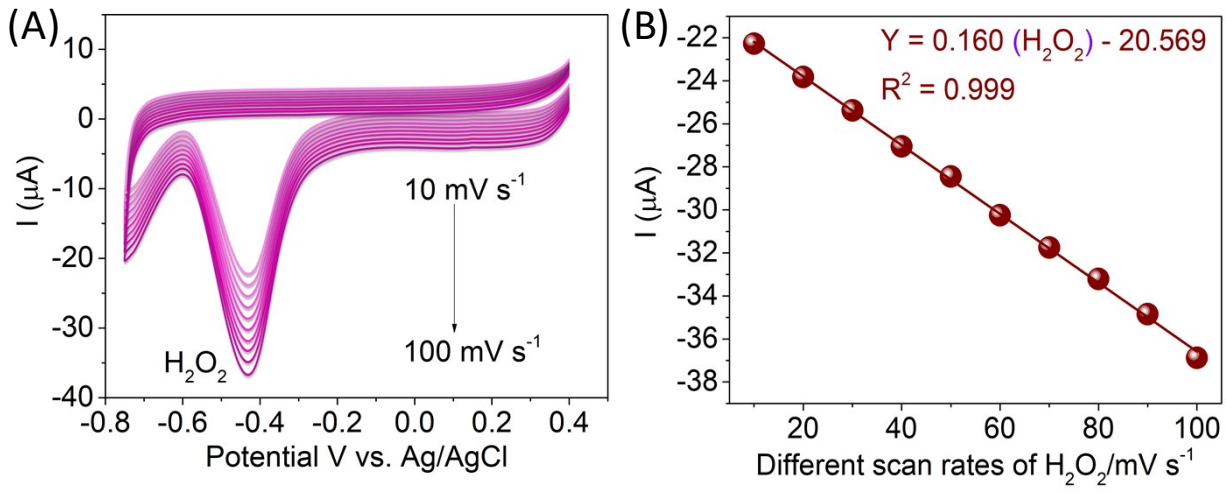

Figure. S5: Cyclic voltammogram in 100 nM H2O2 at: (A) various scan rate (10-100 mV s^{-1}) by **CTH**/MWCNTs modified GC electrode in PBS (pH 7) electrolyte. (B) Linear graph of various scan rates vs. reduction peak currents.

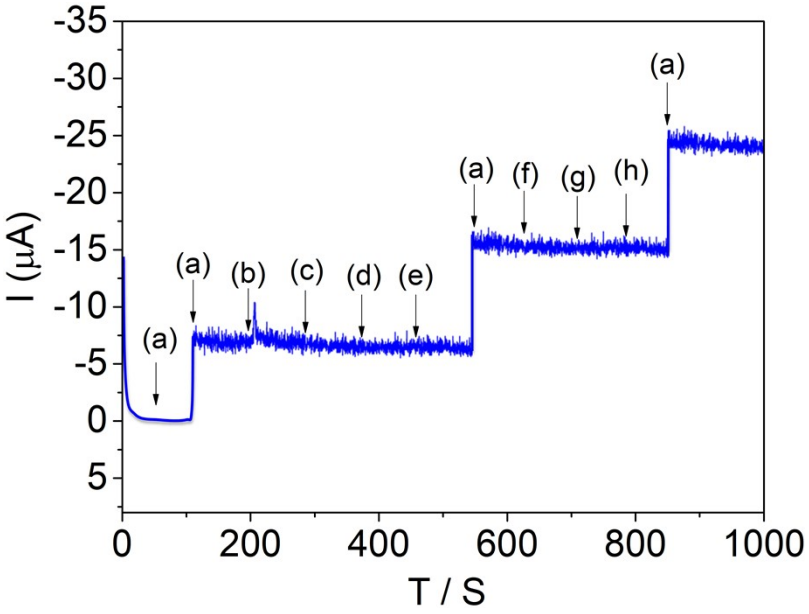

Figure S6: Selectivity studies of **CTH**/MWCNTs modified GC electrode by H2O2 detection (inset (a)) with various biochemical's (inset (b, c, d, e, f, g, h)): At applied potential for 400 mVs^{-1}.

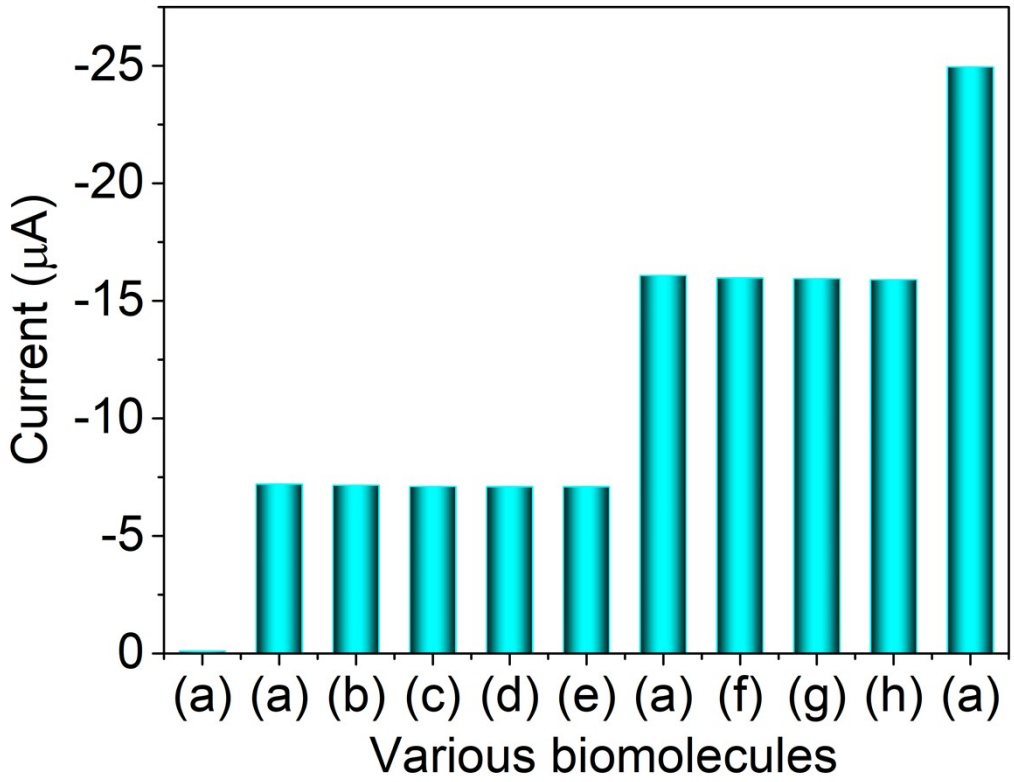

Figure S7: Bar graph depicting the sensitivity of H_2O_2 sensing in the presence of other interfering agents

Table S2: Comparison of the linear range and detection limit of various H_2O_2 sensors

Electrodes	Method	LOD	Linear range	Ref.
CoNP/Au (seed)/CNT/GC	DPV	0.5 µmol L^{-1}	5–2000 µmol L^{-1}	[1]
Hb/SA–MWCNT	CV	16.41 µmol L^{-1}	40–200 µmol L^{-1}	[2]
Nafion/Mb/CGN/GCE	DPV	0.5 µmol L^{-1}	1.5–90 µmol L^{-1}	[3]
MoS2/graphene/CNTs	CV	0.83 µmol L^{-1}	5–145 µmol L^{-1}	[4]
MWCNTs/cysteamine/nafion	DPV	0.01 µmol L^{-1}	0.1–70.0 µmol L^{-1}	[5]
CTH/MWCNTs/GCE	**CV (415 mV) DPV(418 mV) CA (415 mV)***	**12 nmol L^{-1} 5 nmol L^{-1} 9 nmol L^{-1}**	**50-400 nmol L^{-1} 50-500 nmol L^{-1} 50-500 nmol L^{-1}**	**This Work**

References

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