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Appendix:

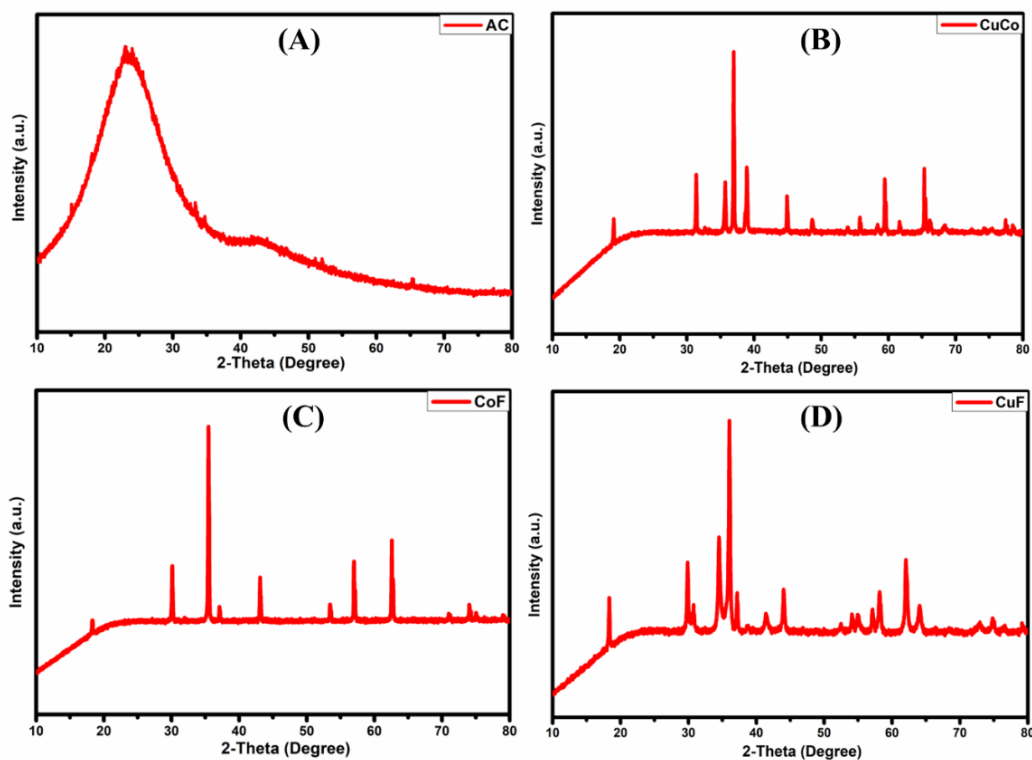


Fig. A1: XRD patterns of (A) Activated carbon (AC), (B) Copper cobaltite (CuCo), (C) Cobalt ferrite (CoF), (D) Copper ferrite (CuF).

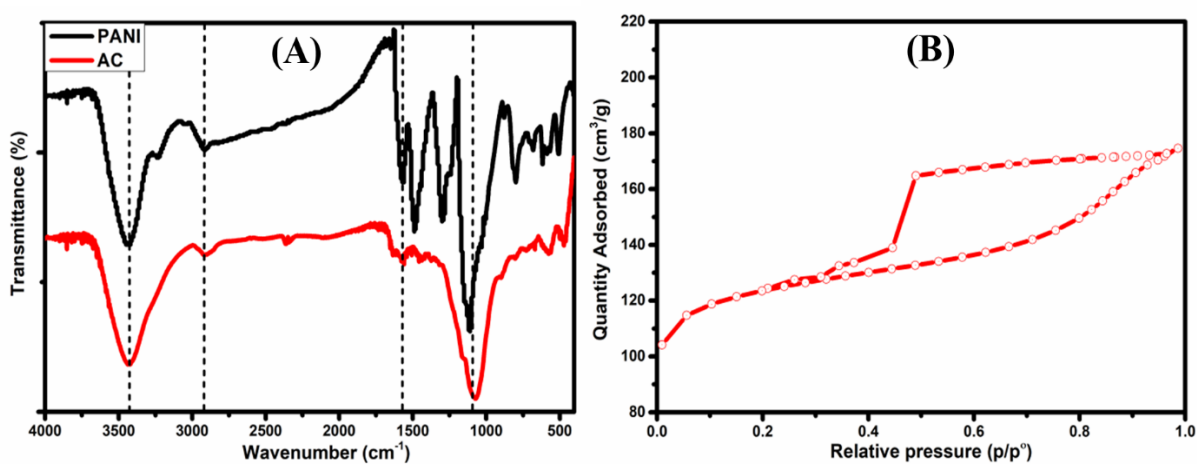


Fig. A2: (A) FTIR spectra showing transmittance peaks of PANI and AC, (B) BET adsorption-desorption curve for AC

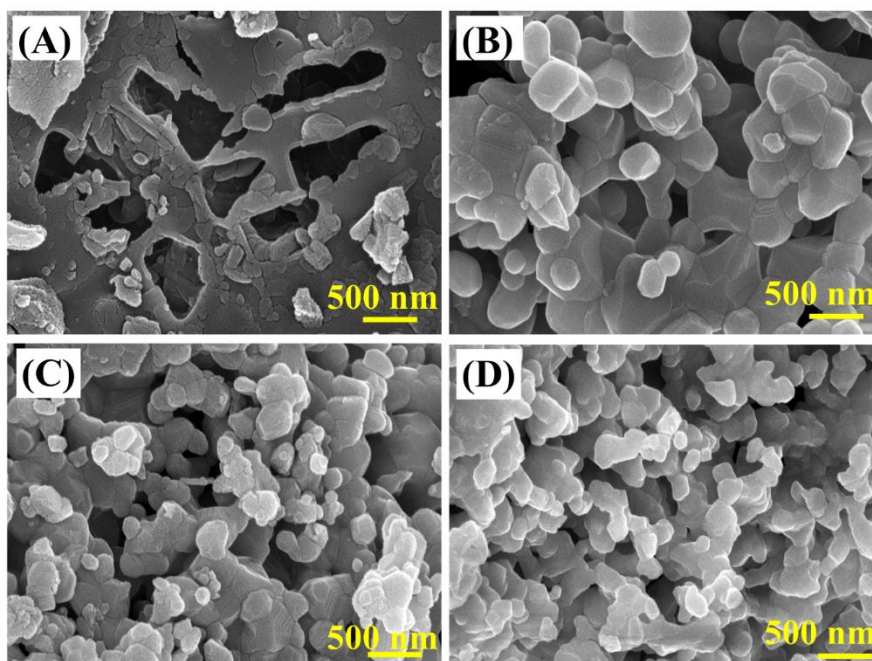


Fig. A3: FESEM micrographs of (A) Activated carbon (AC), (B) Copper cobaltite (CuCo), (C) Cobalt ferrite (CoF), (D) Copper ferrite (CuF) at a resolution of 500 nm.

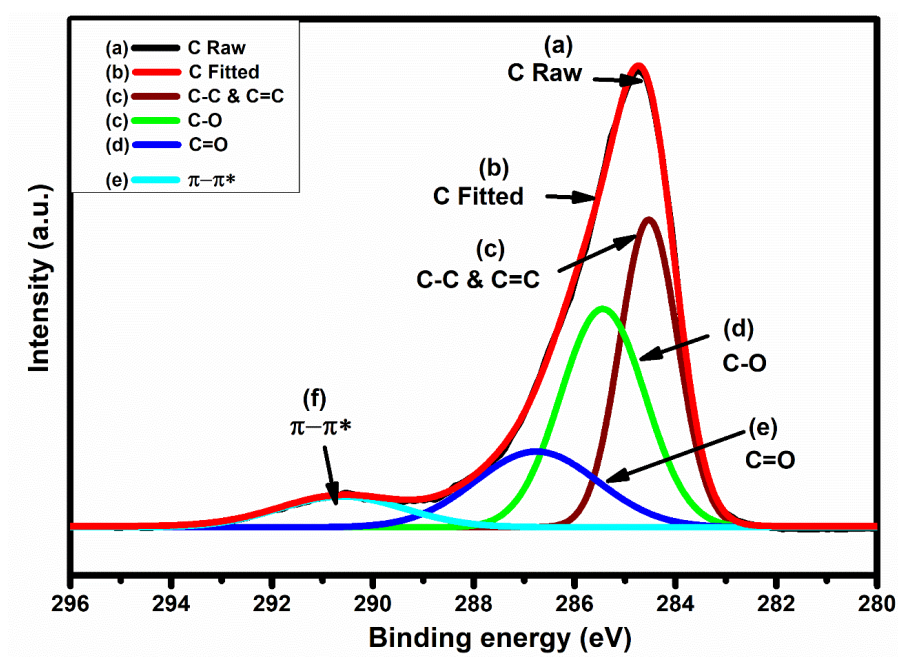


Fig. A4: High resolution fitted XPS spectra of PANI/AC indicating various peaks for carbon bonds and π - π^* interactions.

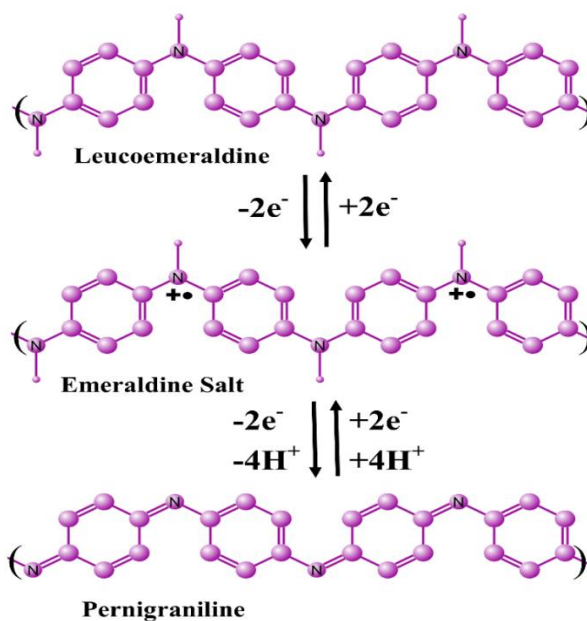


Fig. A5: Different redox transition states of polyaniline (PANI).

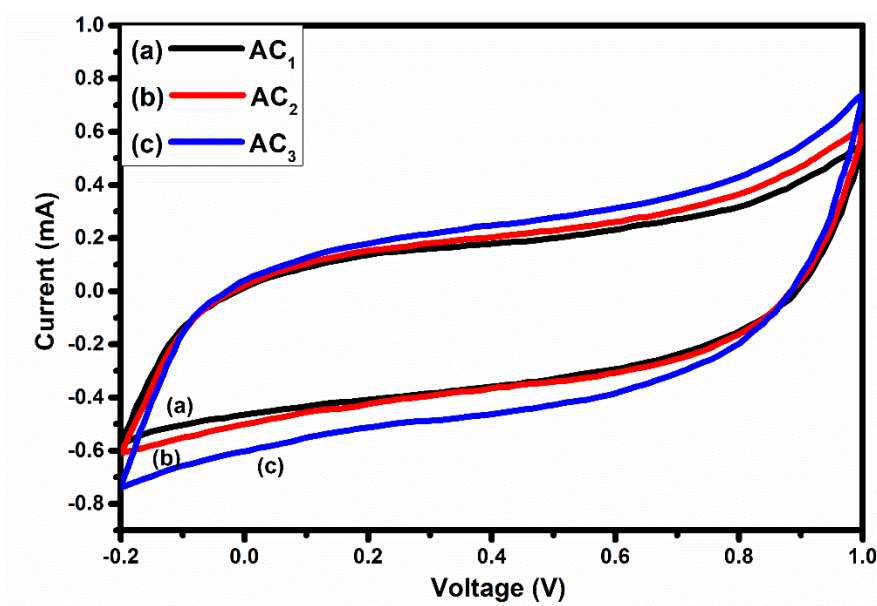
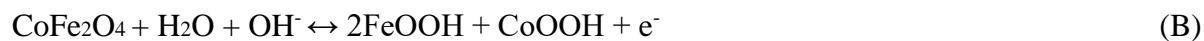
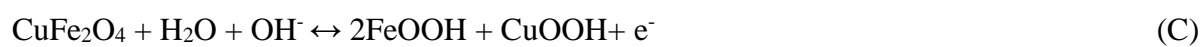


Fig. A6: Cyclic voltammety curves of AC₁, AC₂ and AC₃.

Redox reaction mechanism of copper cobaltite (CuCo)



**Redox reaction mechanism of cobalt ferrite (CoF)****Redox reaction mechanism of copper ferrite (CuF)**

List of publications:

- **Vikas K Pandey**, Sanjeev Verma, Tapas Das, Bhawna Verma, Supercapacitive behavior of polyaniline-waste derived carbon-copper cobaltite based ternary composite, Bioresource Technology Reports, Volume 20, 2022, 101255, doi.org/10.1016/j.biteb.2022.101255
- **Vikas K Pandey**, Sanjeev Verma, Bhawna Verma, Polyaniline/ activated carbon/copper ferrite (PANI/AC/CuF) based ternary composite as an efficient electrode material for supercapacitor, Chemical Physics Letters, Volume 802, 2022, 139780, doi.org/10.1016/j.cplett.2022.139780
- Tapas Das, **Vikas K Pandey**, Sanjeev Verma, Bhawna Verma, Optimization of the ratio of aniline, ammonium persulfate, para-toluene sulfonic acid for the synthesis of conducting polyaniline and its use in energy storage devices, International Journal of Energy Research, Volume 46, 2022, 19914 doi.org/10.1002/er.8690
- Sanjeev Verma, Tapas Das, **Vikas Kumar Pandey**, Bhawna Verma, Facile and scalable synthesis of reduced-graphene oxide using different reducing agents and its characterizations, Diamond and related materials, Volume 129, 2022, 109361 doi.org/10.1016/j.diamond.2022.109361