

Electronic Supplementary Information for

Large-Scale Sonochemical Fabrication of $\text{Co}_3\text{O}_4\text{-CoFe}_2\text{O}_4\text{@MWCNT}$ Bifunctional Electrocatalyst for Enhanced OER /HER Performances

Muhammad Afaq^a, Muhammad Shahid^b, Iqbal Ahmad^c, Sheraz Yousaf^a, Amira Alazmi^d, M.H.H.
Mahmoud^d, Islam H. El Azab^e, Muhammad Farooq Warsi^{a*}

^aInstitute of Chemistry, Baghdad-ul-Jadeed Campus, The Islamia University of Bahawalpur, Bahawalpur, -63100, Pakistan

^bDepartment of Chemistry, College of Science, University of Hafr Al Batin, P.O. Box 1803, Hafr Al Batin, Saudi Arabia

^cDepartment of Chemistry, Allama Iqbal Open University, Islamabad, 44000, Pakistan

^dDepartment of science and technology, University Colleges at Nairiyah, University of Hafr Al Batin, Nairiyah 31981, Saudi Arabia

^dDepartment of Chemistry, College of Science, Taif University, Taif 21944, Saudi Arabia

^eDepartment of Food Science and Nutrition, College of Science, Taif University, P.O. box 11099, Taif 21944, Saudi Arabia

Corresponding author: farooq.warsi@iub.edu.pk

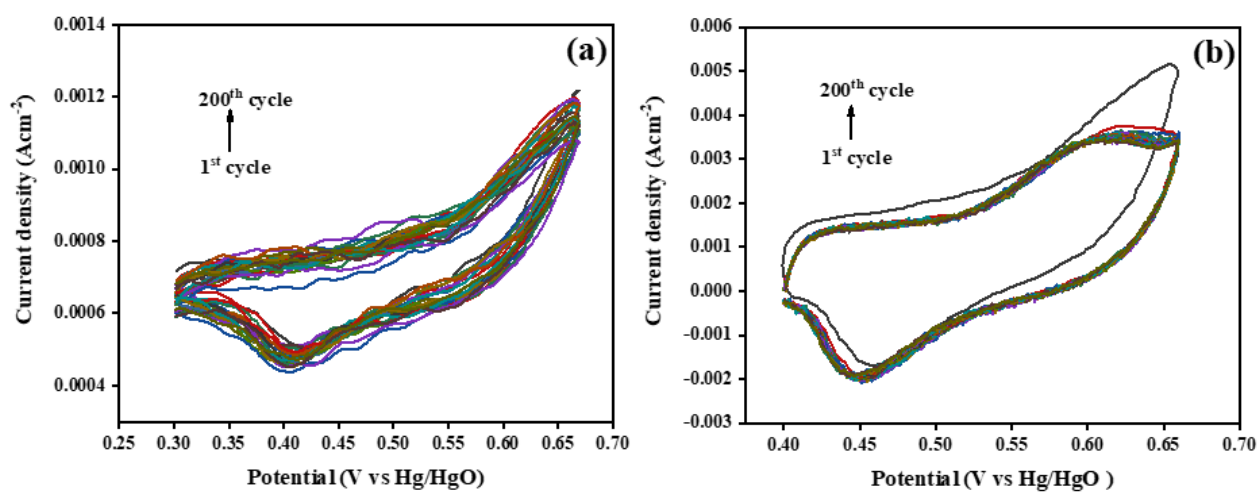


Figure S1: Cyclic voltammograms cycles of as-prepared product from 1st to 200th for (a) $\text{Co}_3\text{O}_4\text{-CoFe}_2\text{O}_4$ and, (b) $\text{Co}_3\text{O}_4\text{-CoFe}_2\text{O}_4\text{@MWCNT}$.

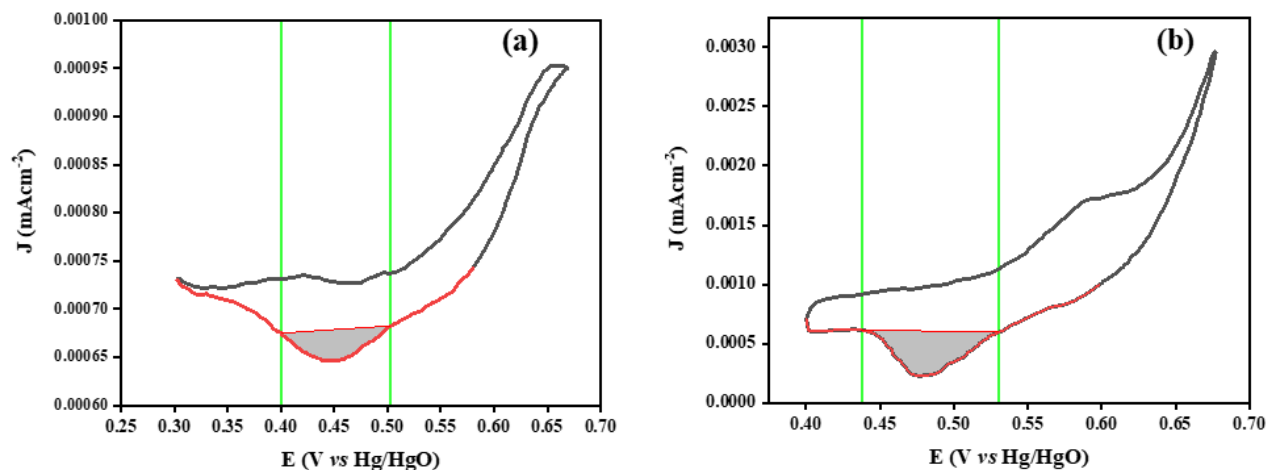


Figure S2: Cyclic voltammograms of fabricated samples taken at 20 mVs⁻¹ showing area under reduction peak (a) Co₃O₄-CoFe₂O₄ and, (b) Co₃O₄-CoFe₂O₄@MWCNT electrocatalysts.

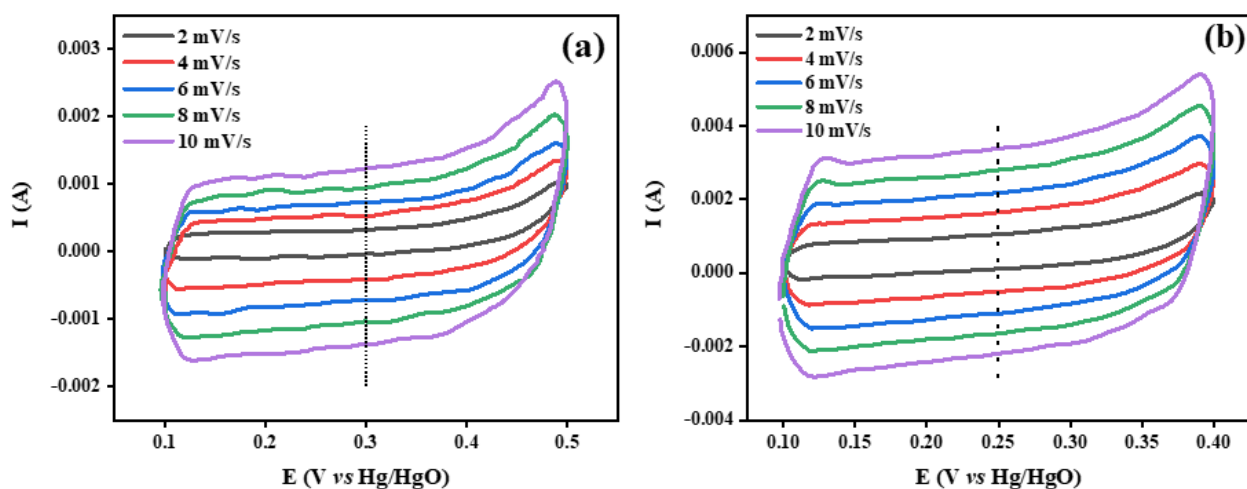


Figure S3: CV curves at various scan rates (mVs⁻¹) for the determination of electrochemical active surface area of materials (a) Co₃O₄-CoFe₂O₄ and, (b) Co₃O₄-CoFe₂O₄@MWCNT electrocatalysts.