SUPPLEMENTARY MATERIALS

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Table S1†. Crystallite size analysis data for Debye Scherrer model

Cu_2O							
K	**λ (nm)**	**2θ**	**FWHM(β)**	**Theta (radians)**	**Cos (θ)**	**FHWM (radians)**	**Crystallite size D(nm)**
0,94	0,15418	29,74	0,152	0,25953046	0,966510581	0,002654471	56,48995834
0,94	0,15418	36,60	0,187	0,319395253	0,949425478	0,003266907	46,72595675
0,94	0,15418	42,51	0,209	0,370969733	0,931976237	0,003647738	42,63118475
0,94	0,15418	61,60	0,289	0,53756141	0,858959897	0,005044002	33,4508992
0,94	0,15418	73,76	0,300	0,643677428	0,799894196	0,005235988	34,6038744
0,94	0,15418	77,62	0,370	0,677362283	0,77922859	0,006462082	28,78184179
							40,44
$BaFe_2O_4$							
K	**λ (nm)**	**2θ**	**FWHM(β)**	**Theta (radians)**	**Cos (θ)**	**FWHM (radians)**	**D(nm)**
0,94	0,15418	23,99	0,183	0,209352244	0,978165741	0,003192207	46,41436079
0,94	0,15418	32,63	0,960	0,284750467	0,959731781	0,016755161	9,012751938
0,94	0,15418	42,09	0,210	0,367304541	0,933298677	0,003665191	42,36806038
0,94	0,15418	43,06	0,620	0,375769388	0,930225541	0,010821041	14,39788095
0,94	0,15418	44,97	0,220	0,392437282	0,923979687	0,003839724	40,8501281
0,94	0,15418	46,86	0,360	0,408930644	0,917546554	0,006283185	25,13899538
							29,69
$BaFe_2O_4@Cu_2O$							
K	**λ (nm)**	**2θ**	**FWHM(β)**	**Theta (radians)**	**Cos (θ)**	**FWHM (radians)**	**D(nm)**
0,94	0,15418	23,86	0,100	0,20821778	0,978400883	0,001745329	84,87146358
0,94	0,15418	34,60	1,900	0,301941961	0,9547608	0,033161256	4,577521016
0,94	0,15418	42,45	0,160	0,370446134	0,932165924	0,002792527	55,6756533
0,94	0,15418	44,84	0,180	0,391302818	0,924412959	0,003141593	49,90453317
0,94	0,15418	46,21	1,020	0,403258324	0,919787256	0,017802358	8,850972016
0,94	0,15418	46,80	1,040	0,408407045	0,917754626	0,018151424	8,699987045
0,94	0,15418	29,61	0,165	0,258395996	0,966801093	0,002886775	51,92851334
0,94	0,15418	36,68	0,750	0,320093385	0,949206038	0,013089969	11,66424872
0,94	0,15418	42,41	1,020	0,370053435	0,932308021	0,017802358	8,732104707
0,94	0,15418	61,54	0,420	0,537037811	0,859227884	0,007330383	23,01022548
0,94	0,15418	73,73	0,380	0,643415629	0,800051285	0,006632251	27,31348419
							30,47

Table S2†. Areal capacitance results of the materials

Areal Capacitance (mF/cm^2)						
Current Density (mA)	0.85	2.125	4.25	8.5	1.7	3.4
Cu_2O	390	328	242	192	133	-
$BaFe_2O_4$	503	483	401	262	210	167
Cu_2O@ $BaFe_2O_4$	682	603	545	210	167	231

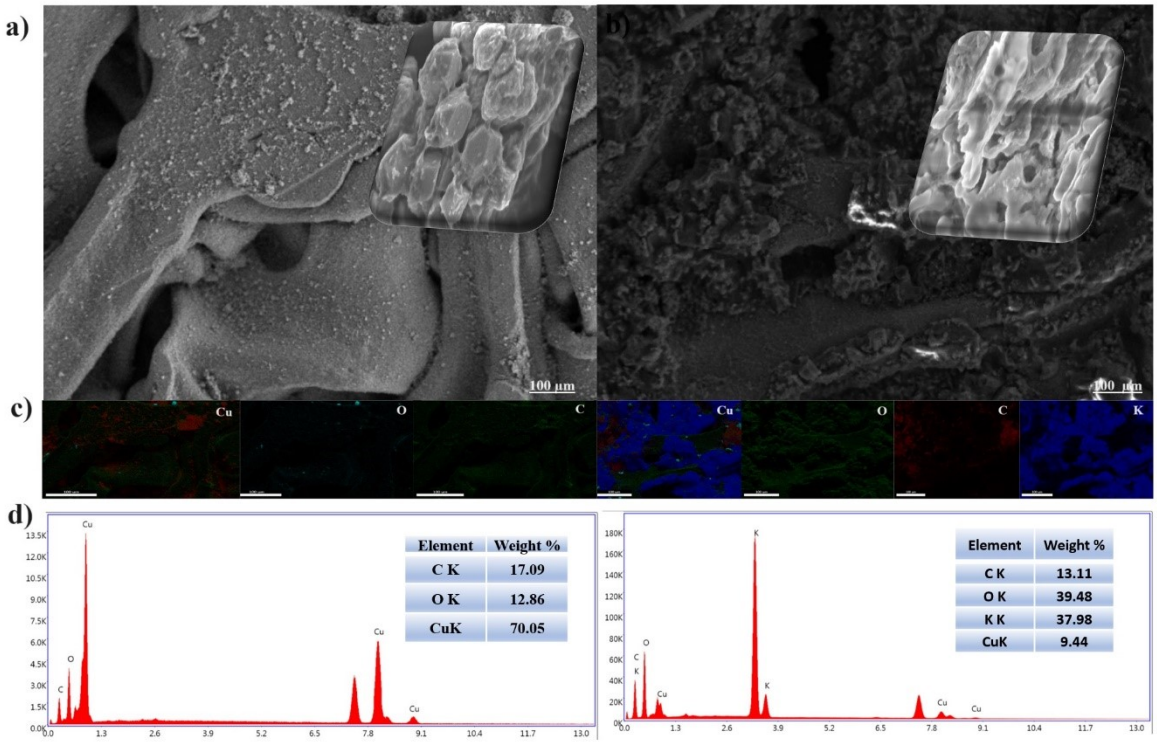

Figure S1. FESEM images of Cu_2O electrode (a) before cycling and (b) after cycling stability test. (c) Individual elemental mapping image of Cu, O, C, and K (after cyclic), (d) spectra of EDS mapping.

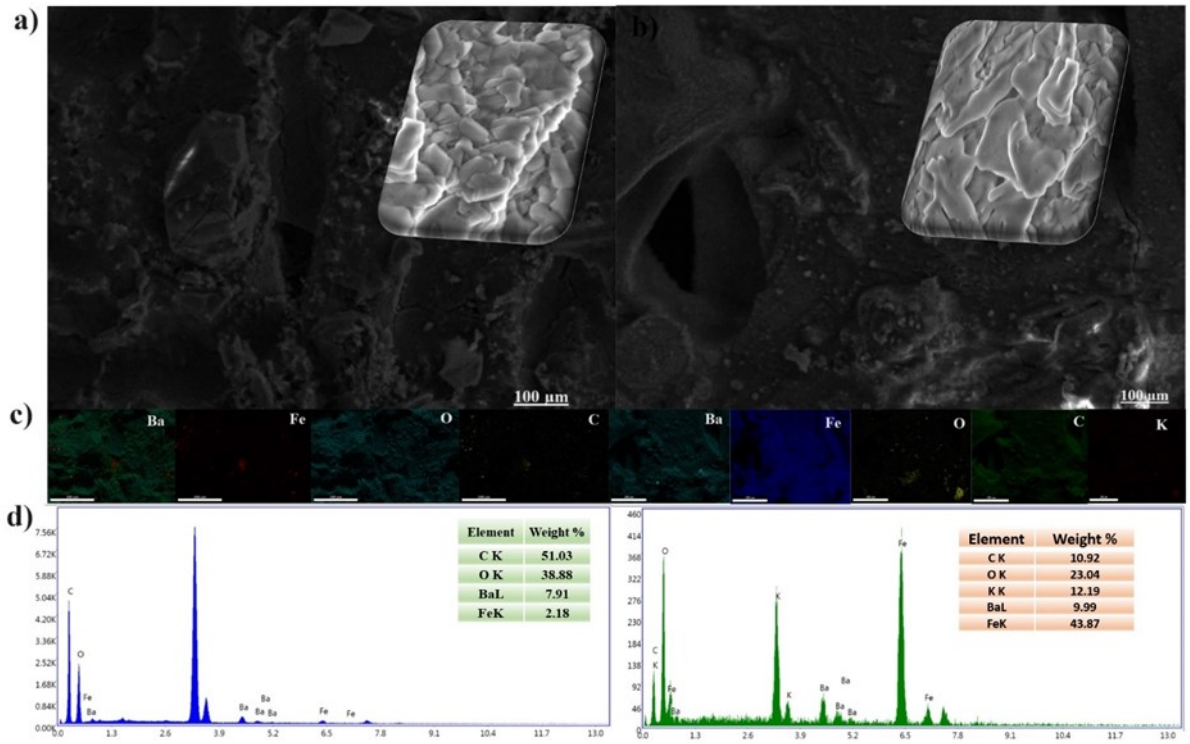

Figure S2. FESEM images of $BaFe_2O$ electrode (a) before cycling and (b) after cycling stability test. (c) Individual elemental mapping image of Ba, Fe, O, C, and K (after cyclic), (d) spectra of EDS mapping.

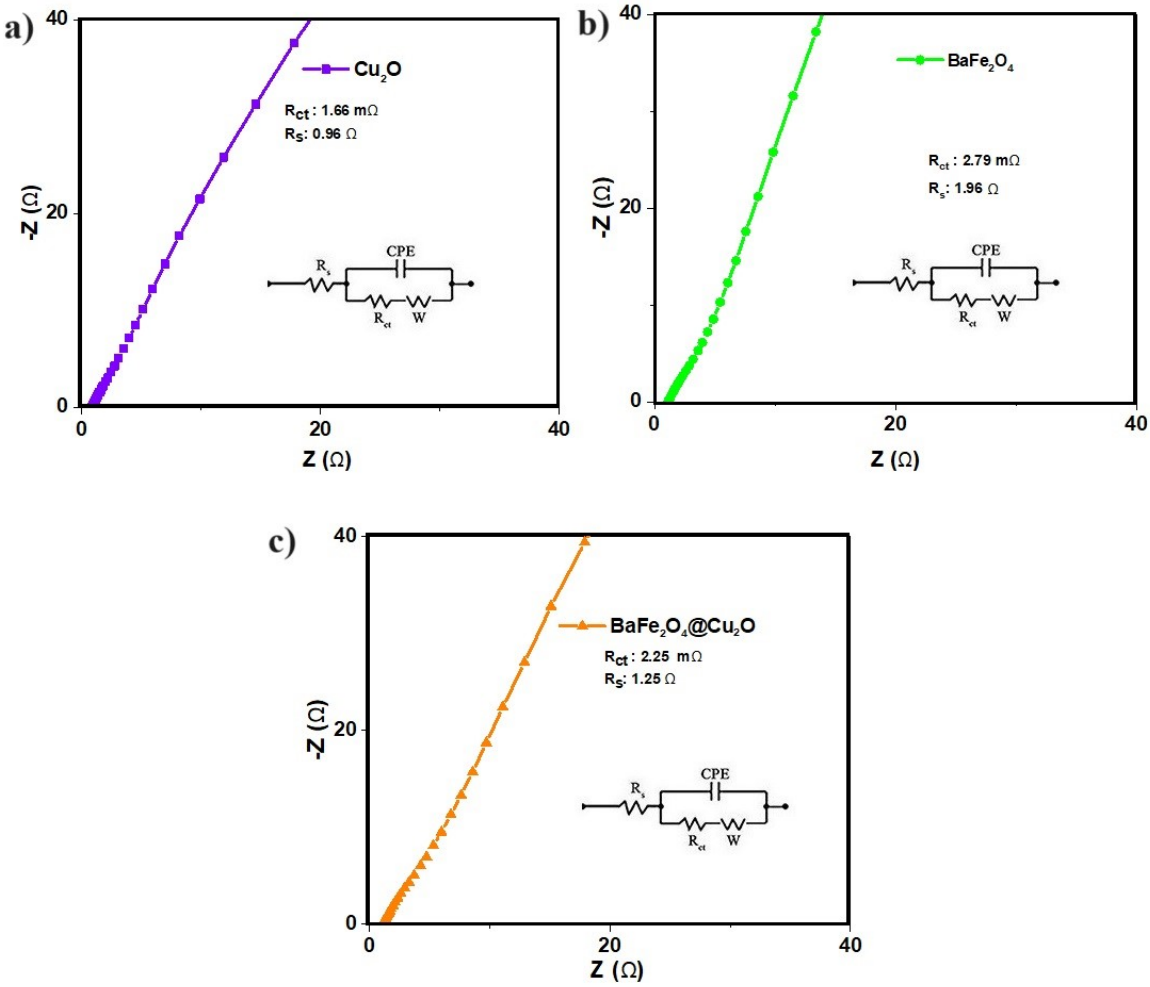

Figure S3. Electrochemical impedance spectra of electrodes at low-frequency range in 2 M KOH solution after cyclic test (Inside corresponding equivalent circuit for modeling the measured impedance spectroscopy).

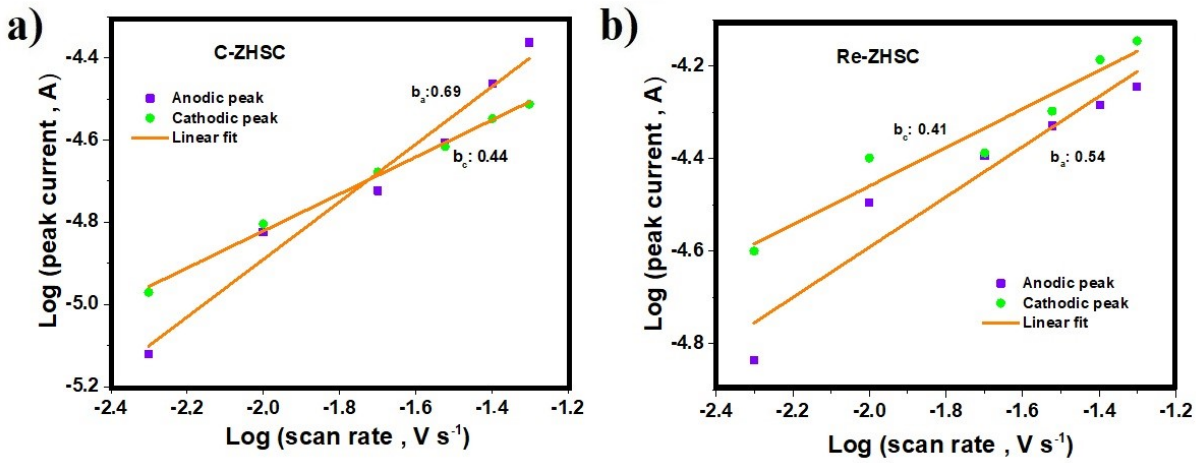

Figure S4. The logarithm of peak currents vs the logarithm of scan rates.

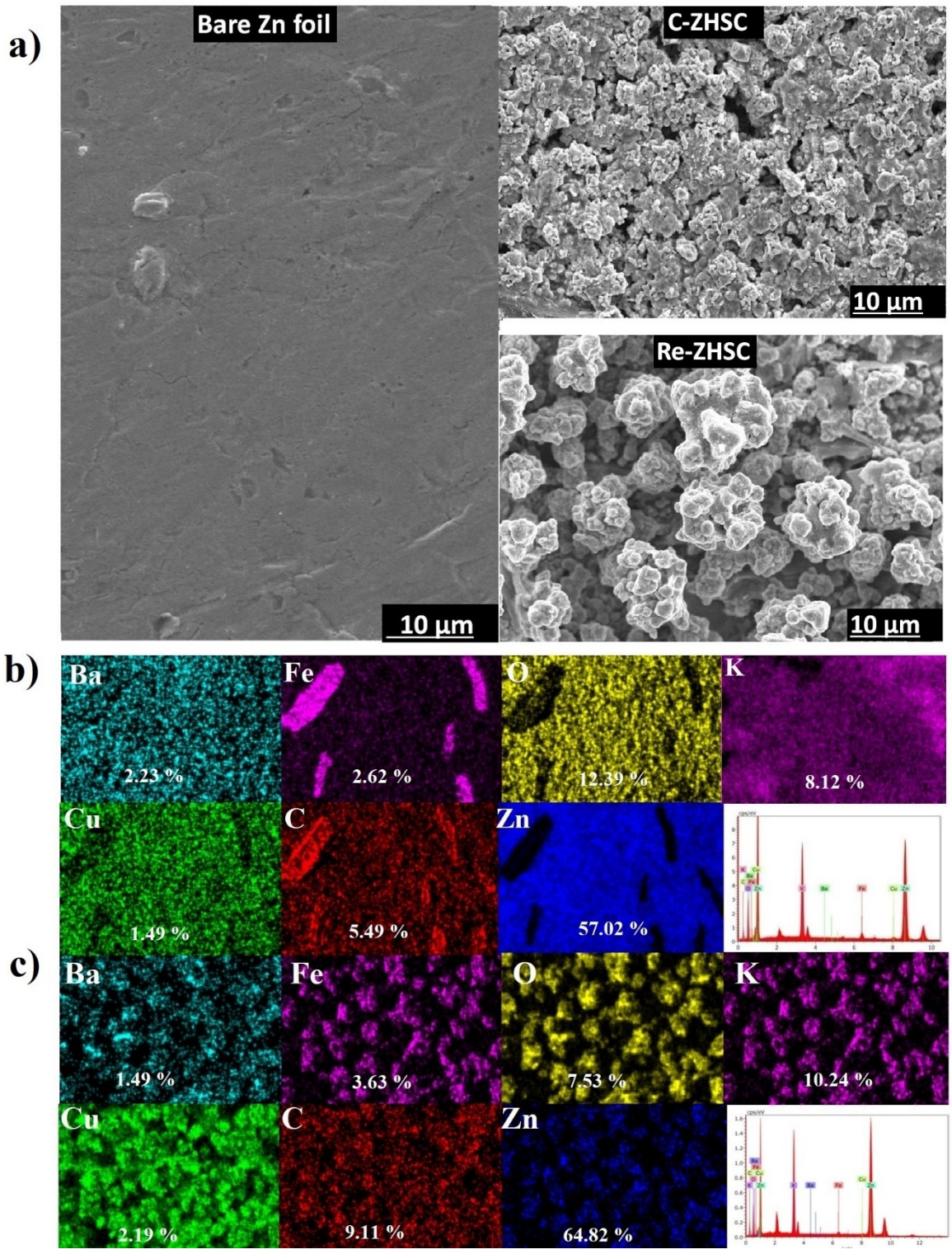

Figure S5. Scanning electron microscopy images of the samples (a) bare Zn foil, C-ZHSC and Re-ZHSC.Individual elemental mapping image of Ba, Fe,O,K,Cu, C,Zn, and spectra of EDS mapping of (b) C-ZHSC and, (c) Re-ZHSC.