Electronic Supplementary Material (ESI) for Sustainable Energy & Fuels.

SUPPORTING INFORMATION

Designing $AgBi_3S_5$ as an Efficient Electrocatalyst for Hydrogen Evolution Reaction

Anupam Chowdhury, [#] ***Aditi De,*** [†‡] ***Subrata Kundu,*** [†‡,*] ***and Swapan Kumar Bhattacharya*** [#*]

[#] *Physical Chemistry Section, Department of Chemistry, Jadavpur University, Kolkata-700032, West Bengal, India.*

[†] *Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201002, India.*

[‡] *Electrochemical Process Engineering (EPE) Division, CSIR-Central Electrochemical Research Institute (CECRI), Karaikudi-630003, Tamil Nadu, India.*

*To whom correspondence should be addressed, *E-mail:* skundu@cecri.res.in; skbhatt7@yahoo.co.in. Phone: (+ 91) 9831699643. Fax: (+91) 3324146584

This file contains 11 pages in which instruments used in the study, electrochemical measurements, and characterizations like XPS, size distribution, FE-SEM, SEM, HR-TEM images, EDS spectrum, Faradic Efficiency measurement, XRD and FE-SEM images before and after HER are given respectively.

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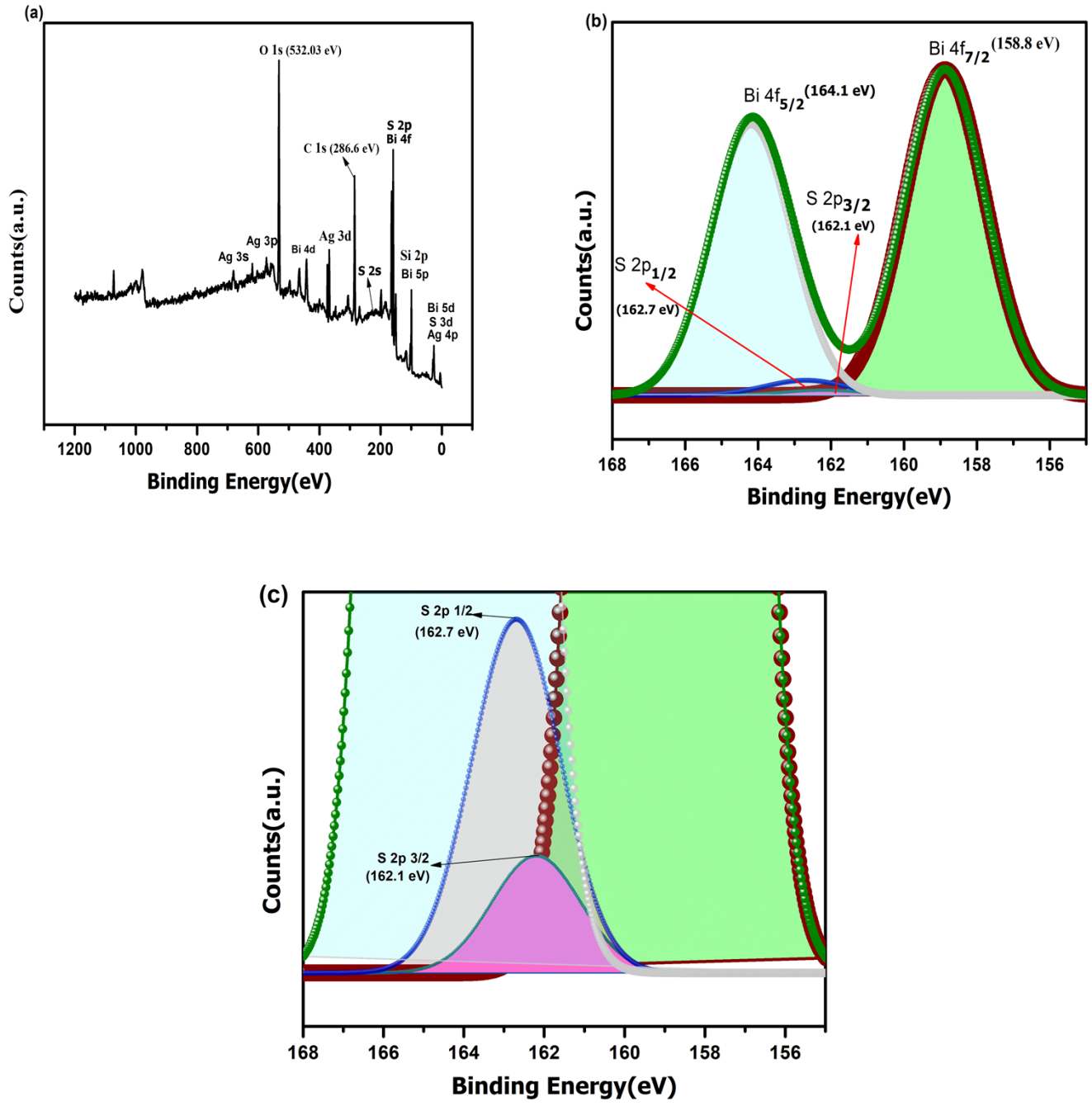

Figure S1: *(a) The survey XPS spectrum of ABS and (b) XPS spectrum of Bi and S together of ABS after deconvolution and (c) extend of figure (b) with lower counts of Y axis scale.*

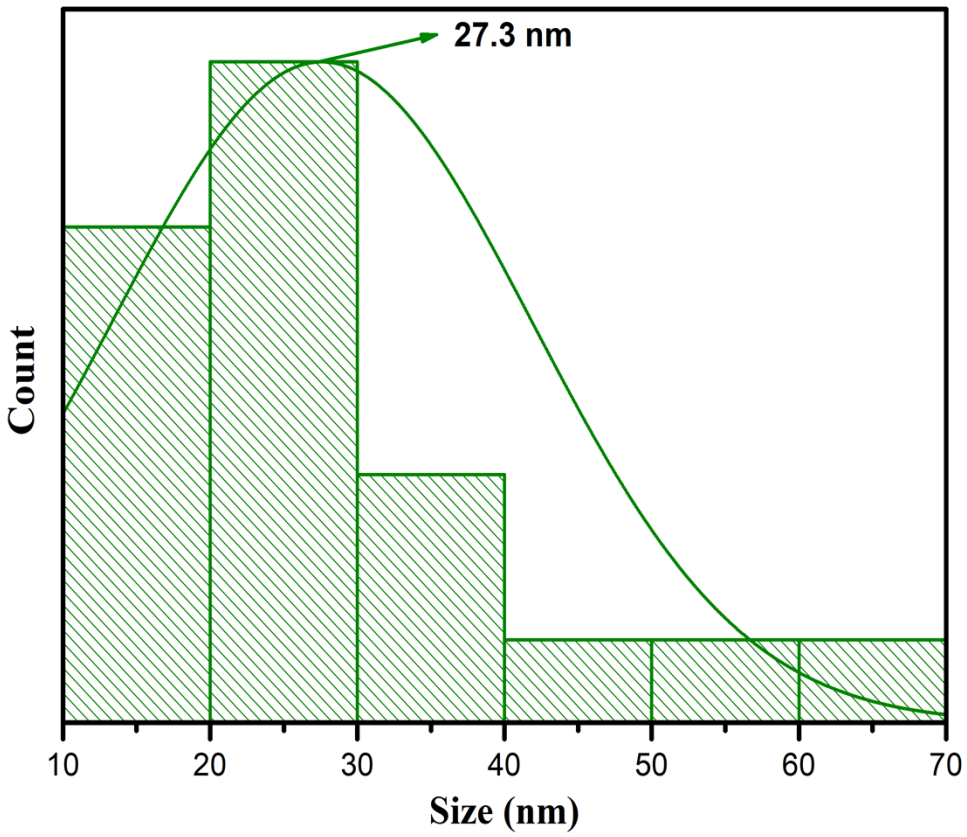

Figure S2: *Size distribution histogram for ABS.*

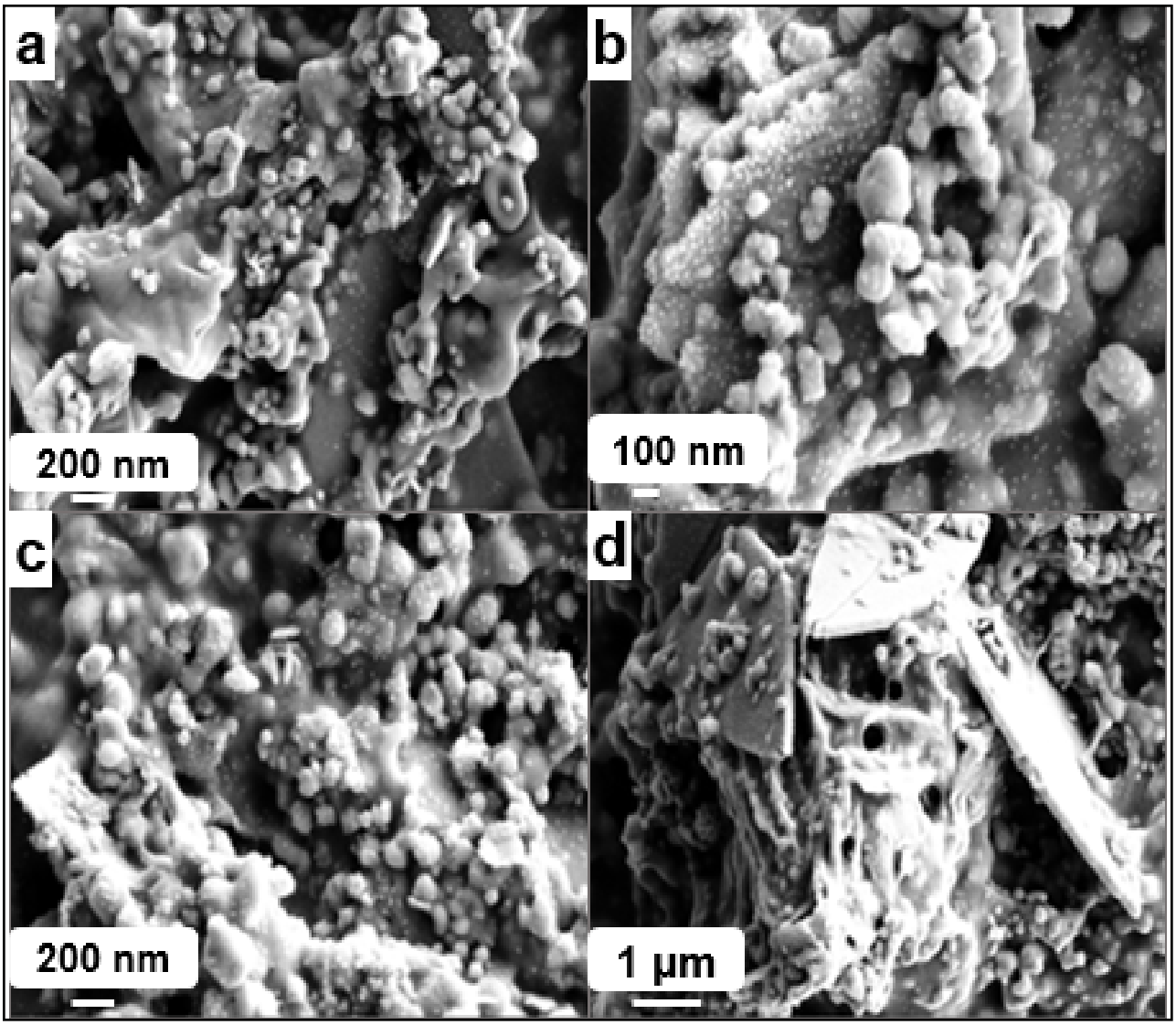

Figure S3: *(a-d) are the low to high magnified FESEM images of ABS.*

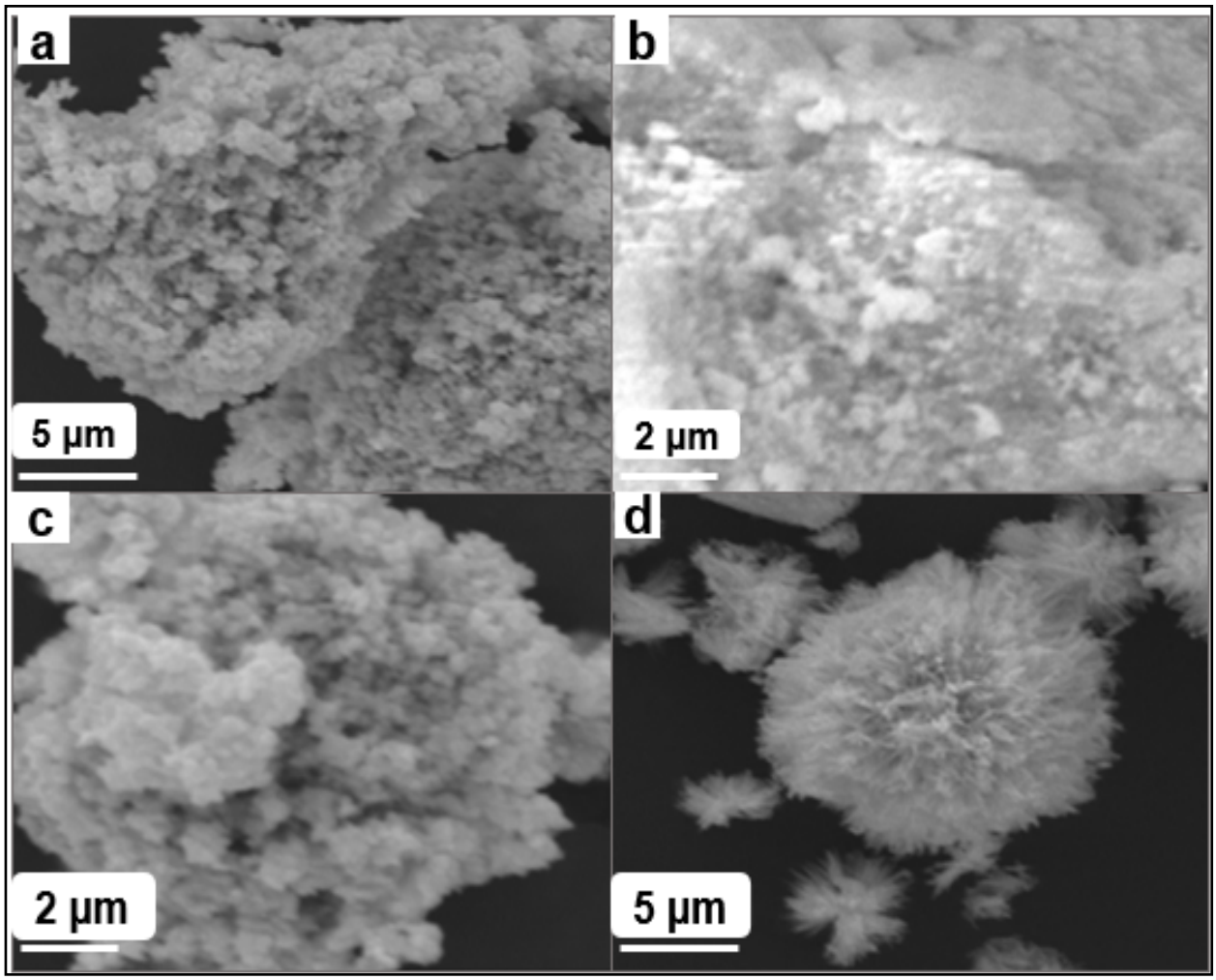

Figure S4: *Low to high (a, c) magnified SEM images of AS electrocatalyst, (b) represents the SEM image of BS and (d) represents the SEM image of CBS electrocatalyst respectively.*

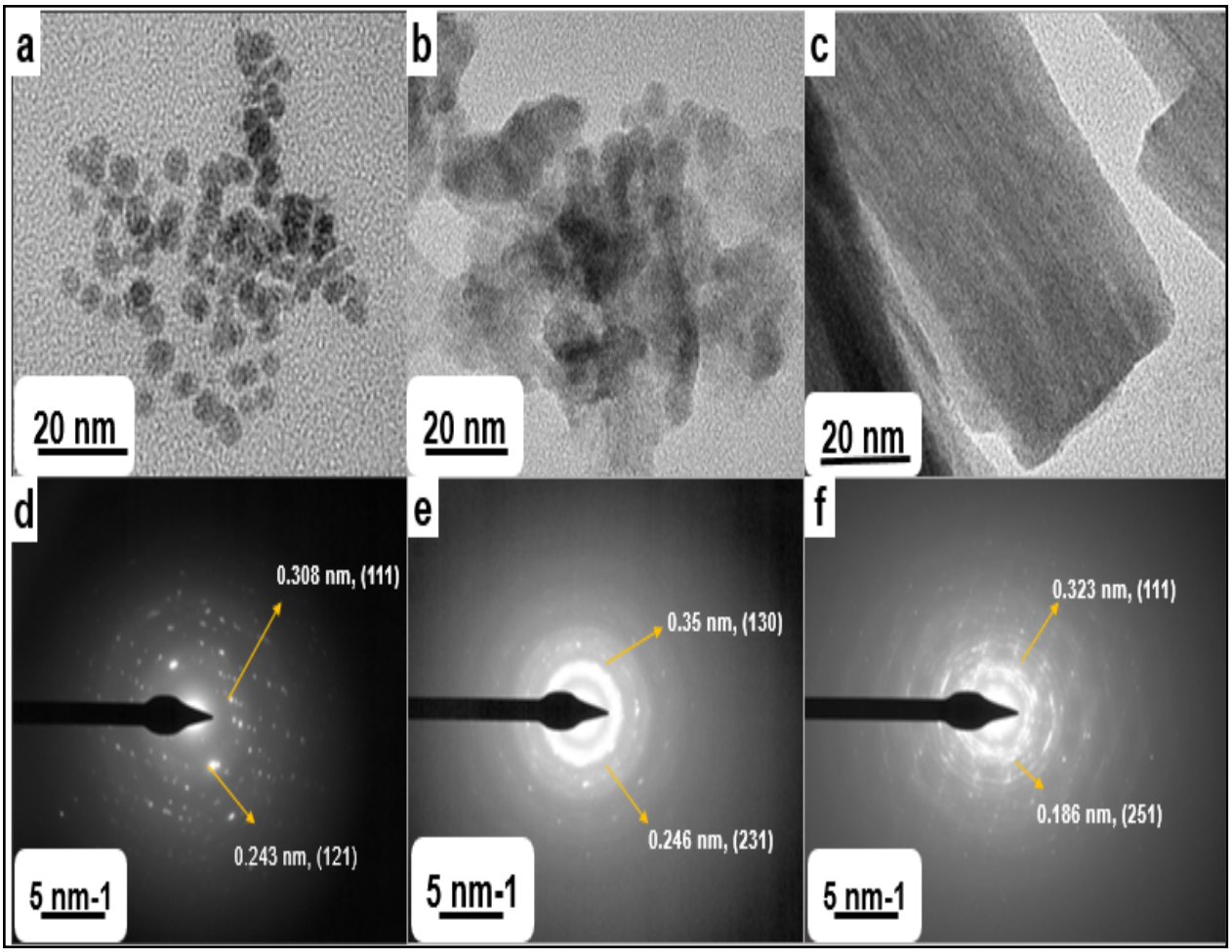

Figure S5: *(a, b, c) HRTEM image of AS, BS and CBS electrocatalysts respectively; (d, e, f) represents SAED pattern of AS, BS, CBS electrocatalysts respectively.*

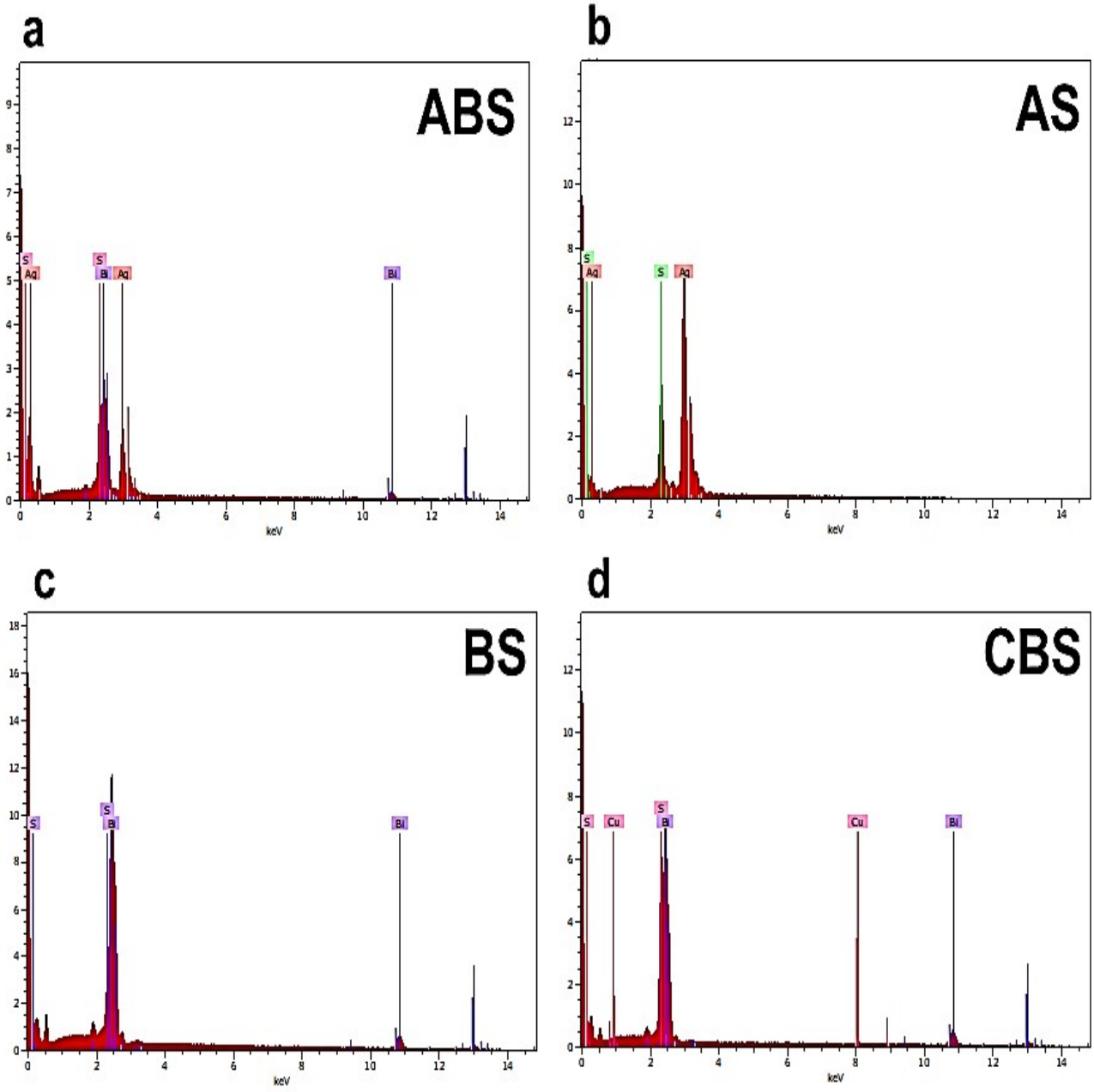

Figure S6: *(a, b, c, d) represents the EDS spectrum of ABS, AS, BS, and CBS electrocatalysts respectively.*

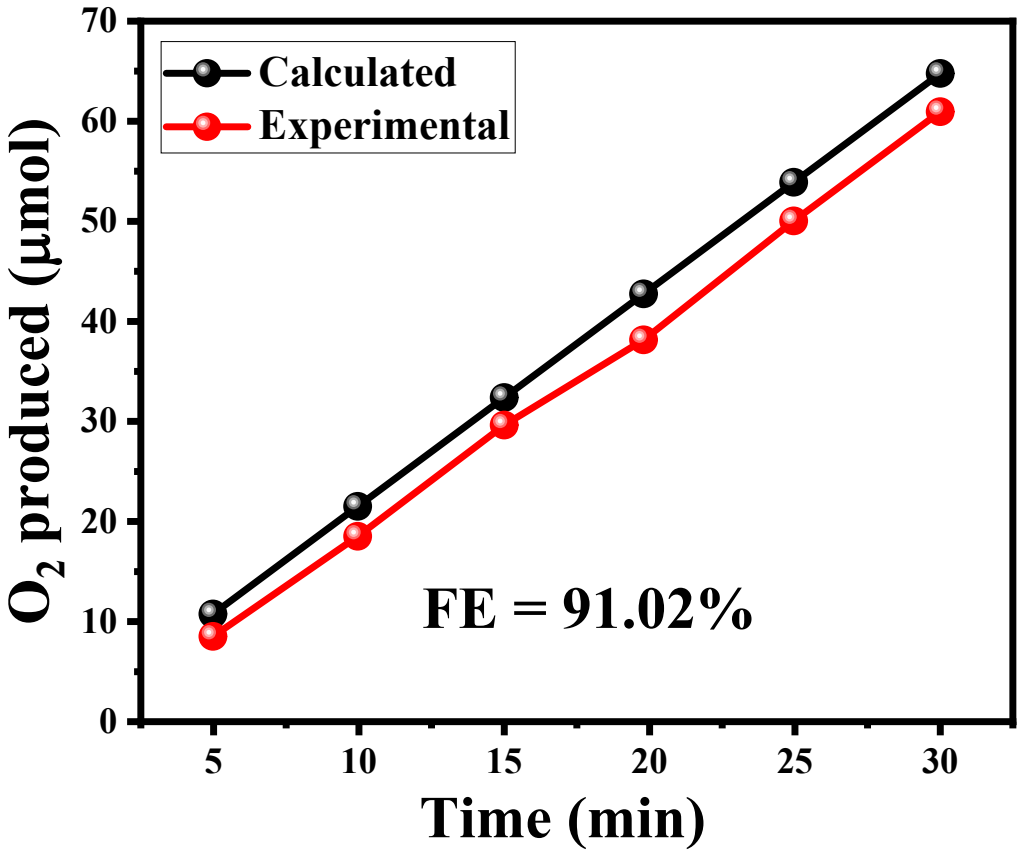

Figure S7: *Faradaic efficiency (FE) of the ABS electrocatalyst for acidic HER solution.*

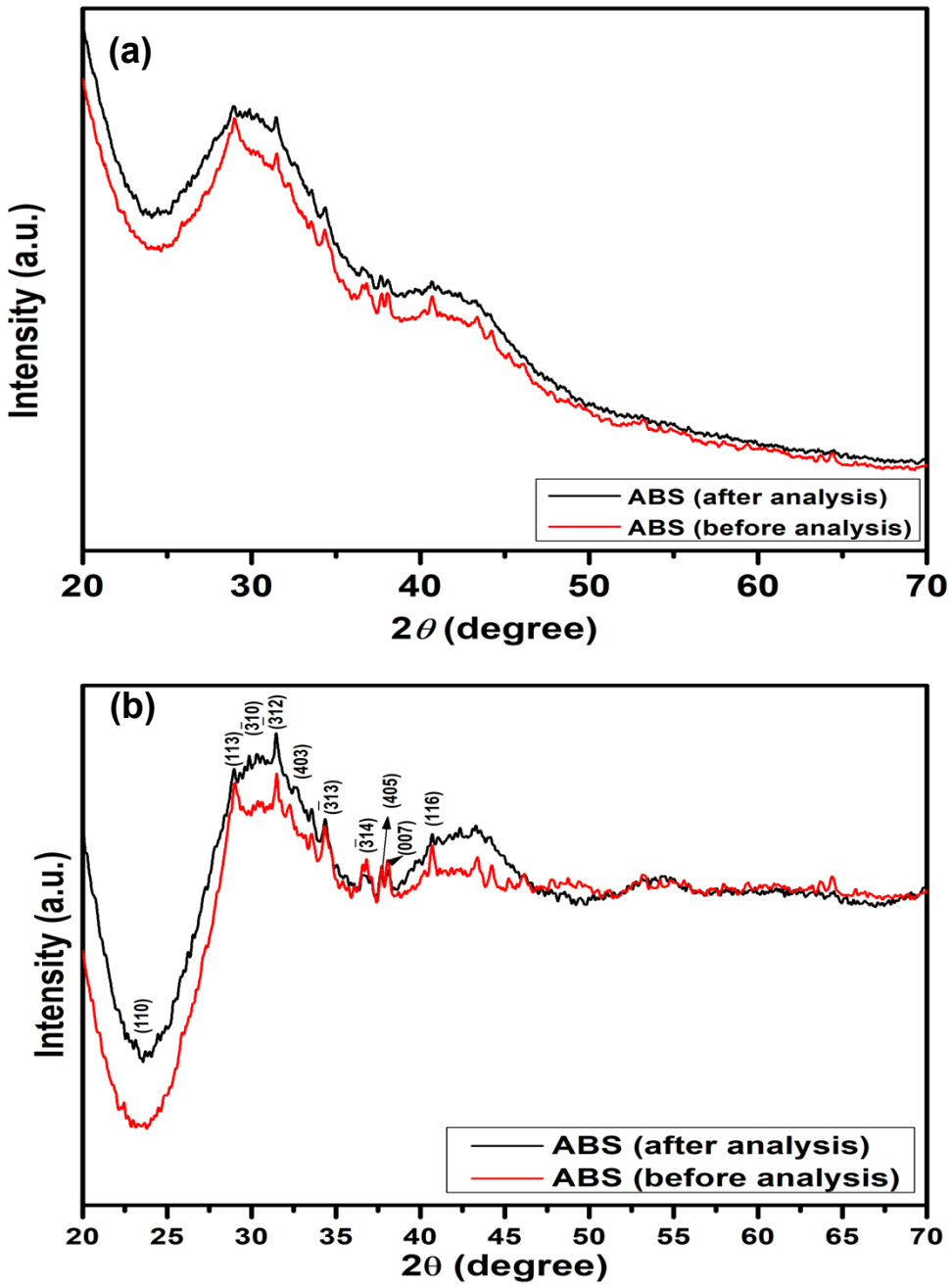

Figure S8: *X-ray powder diffraction (XRD) study of the ABS electrocatalyst before and after HER in 0.5 M H_2SO_4 solution (a) depicted without baseline correction and (b) with baseline correction respectively.*

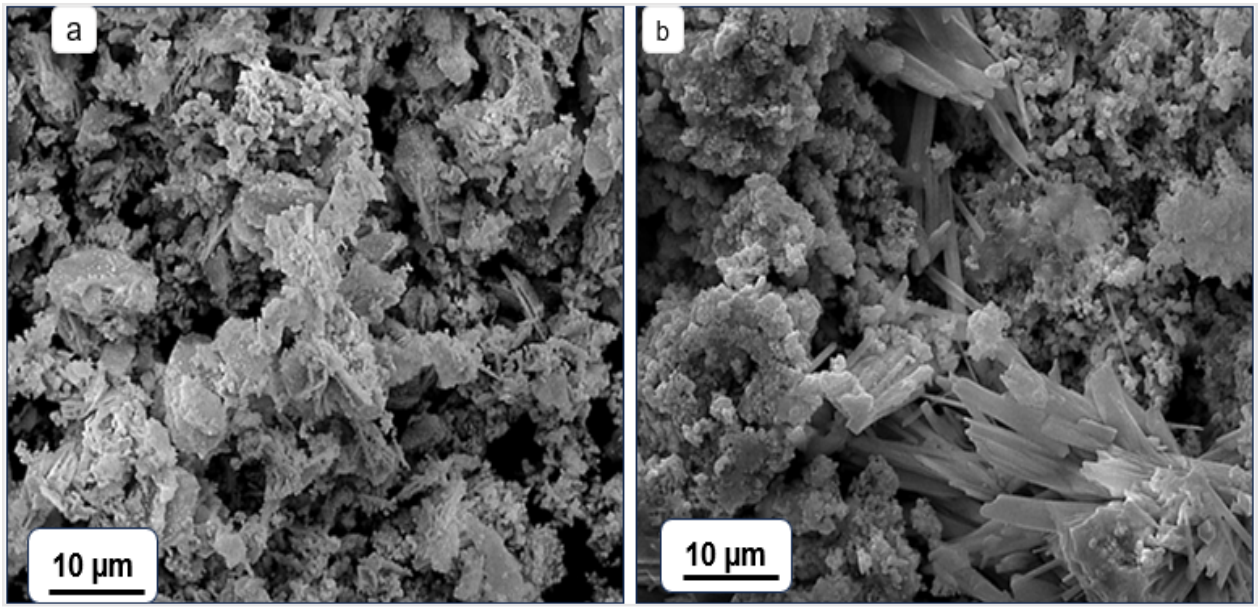

Figure S9: *(a-b) represent the FESEM profiles of $AgBi_3S_5$ nano-catalyst before and after HER studies respectively.*