

## Supporting Information

### Surface modification of carbon catalysts for efficient production of H<sub>2</sub>O<sub>2</sub> in bioelectrochemical systems

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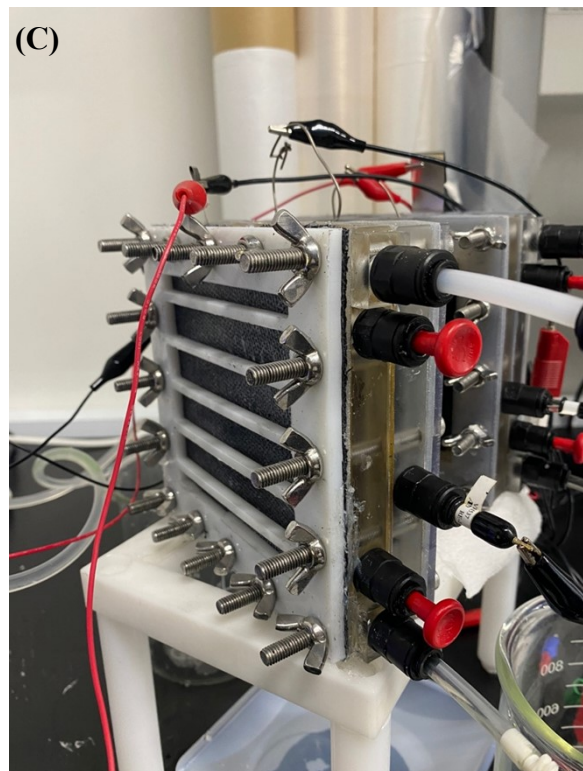
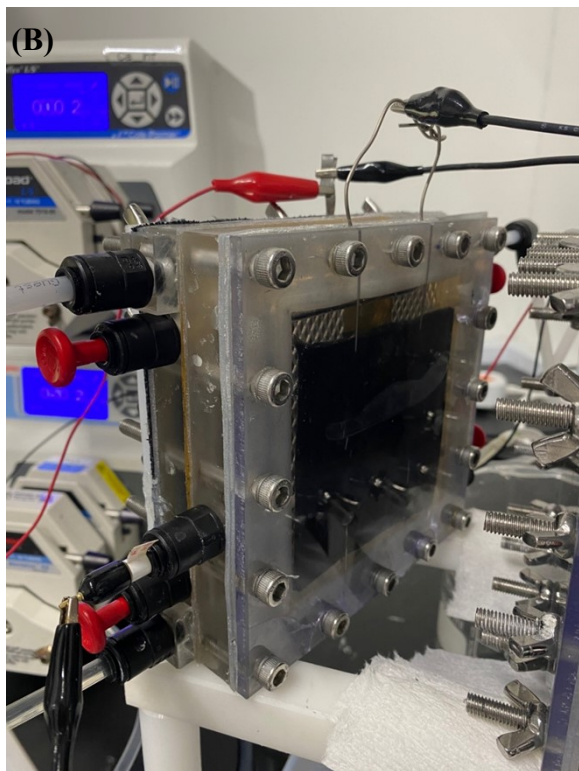
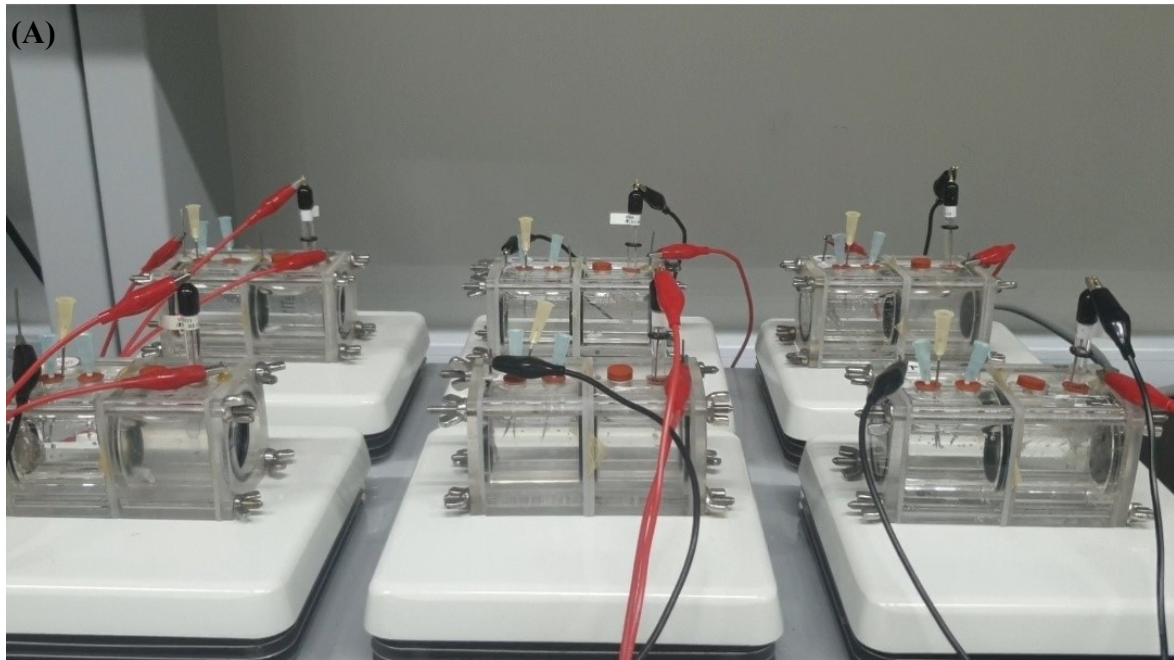
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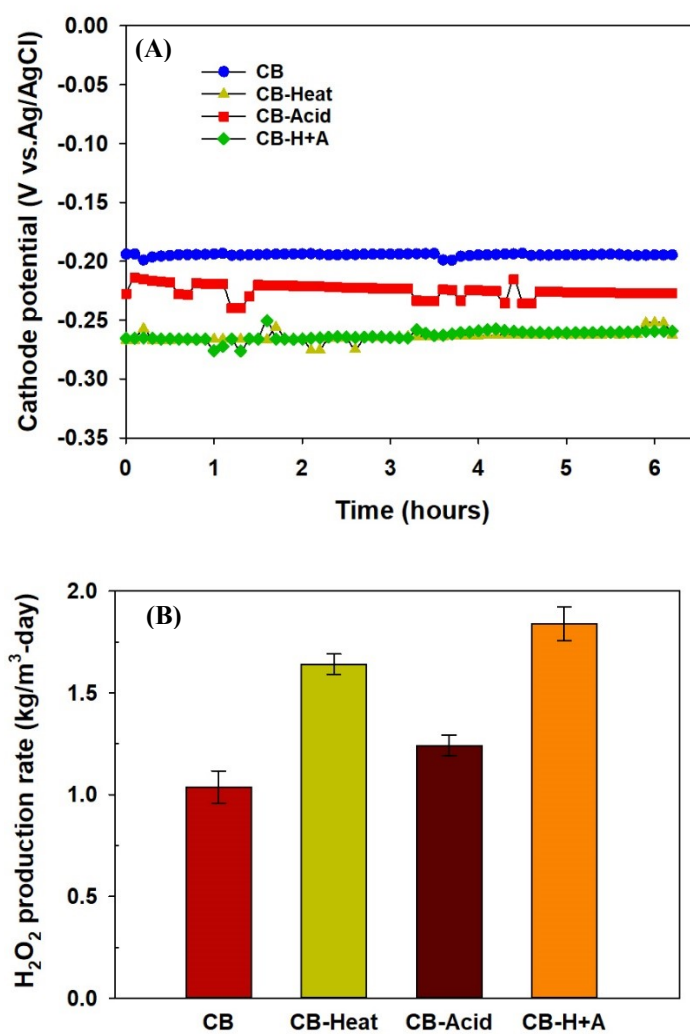
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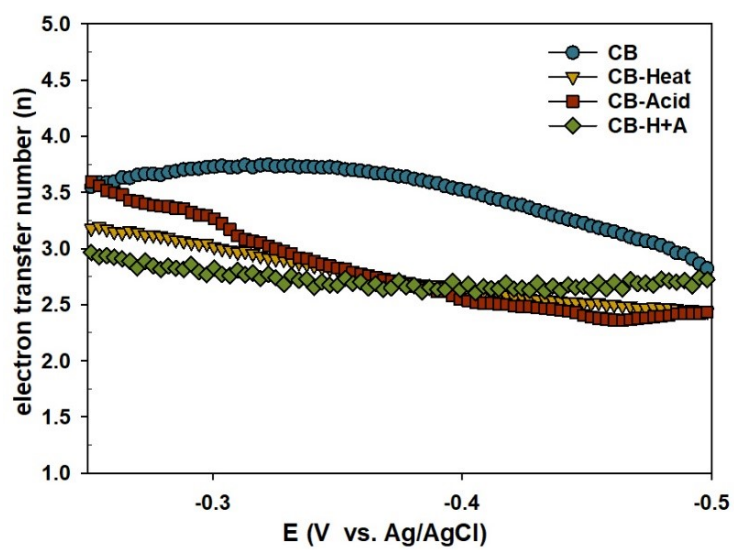
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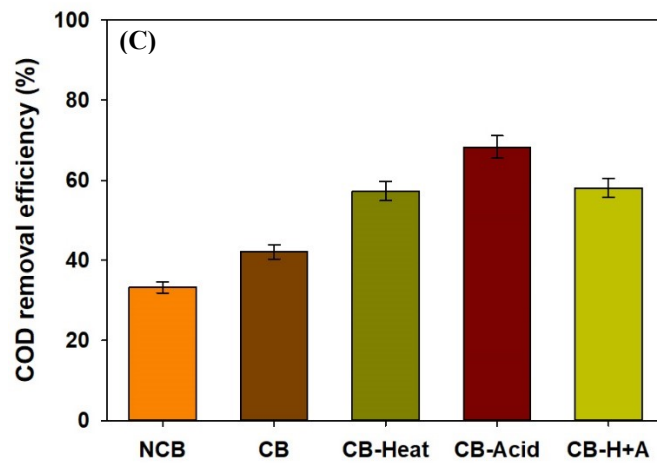
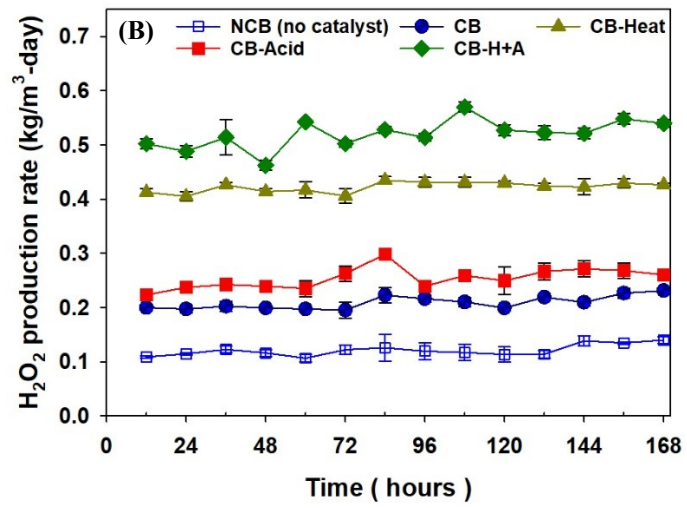
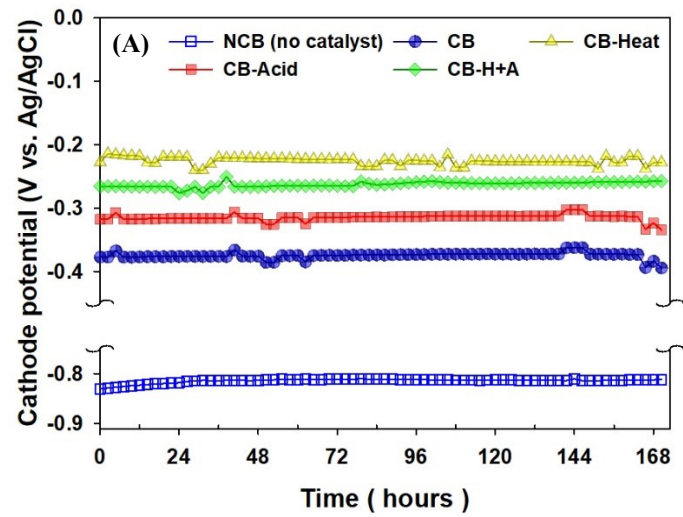
**Figure S1.** Images of experimental set-up (A) abiotic half-cell reactors, (B) Anode chamber of BES (C) Cathode chamber of BES



**Figure S2.** Comparison of differently modified carbon powders for H<sub>2</sub>O<sub>2</sub> production (A) cathode potentials at -3mA (B) H<sub>2</sub>O<sub>2</sub> production rates



**Figure S3.** The calculated number of transferred electrons via RRDE measurement



**Figure S4.** (A) Cathode potentials during H<sub>2</sub>O<sub>2</sub> production (B) H<sub>2</sub>O<sub>2</sub> production rates in continuous-flow BES (C) COD removal efficiency