

## Supplementary materials

### Interface Properties of Hydroxyapatite in Ternary Composites

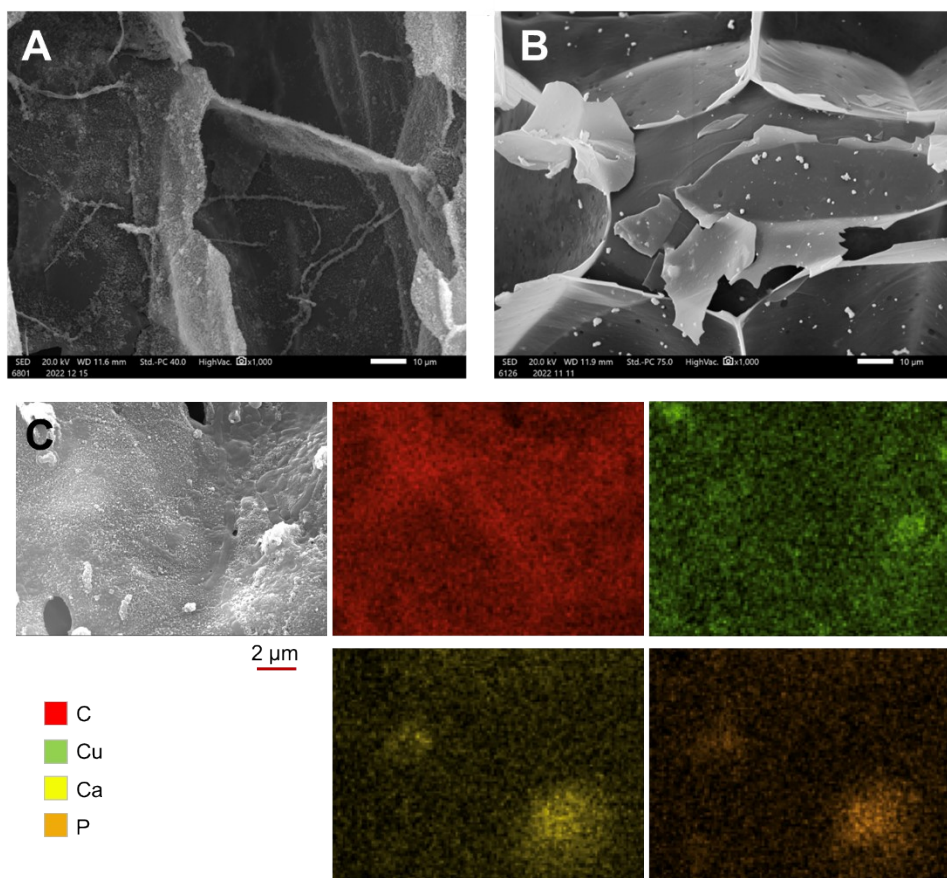
### Cathodes for Electromethanogenesis

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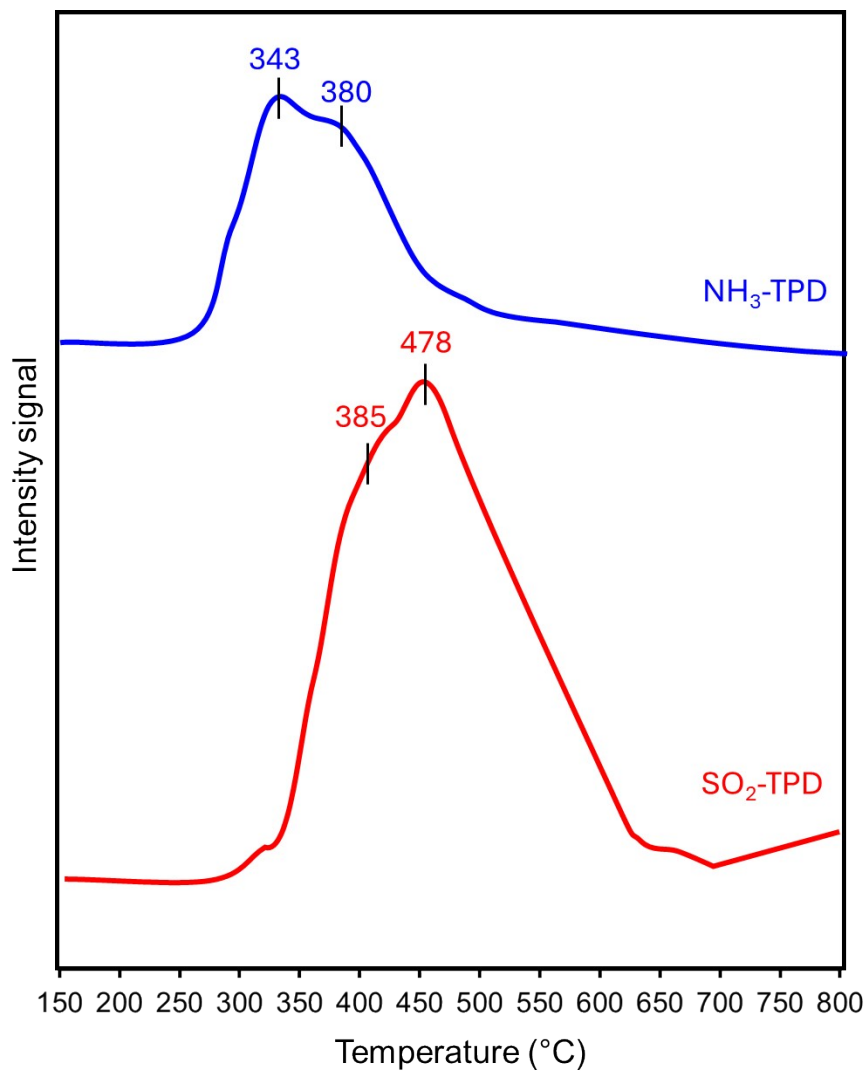
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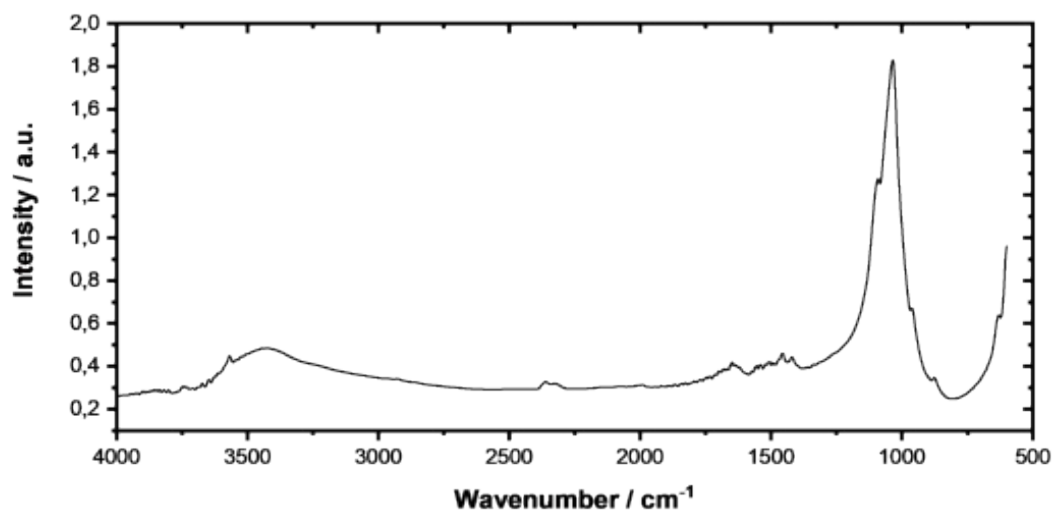
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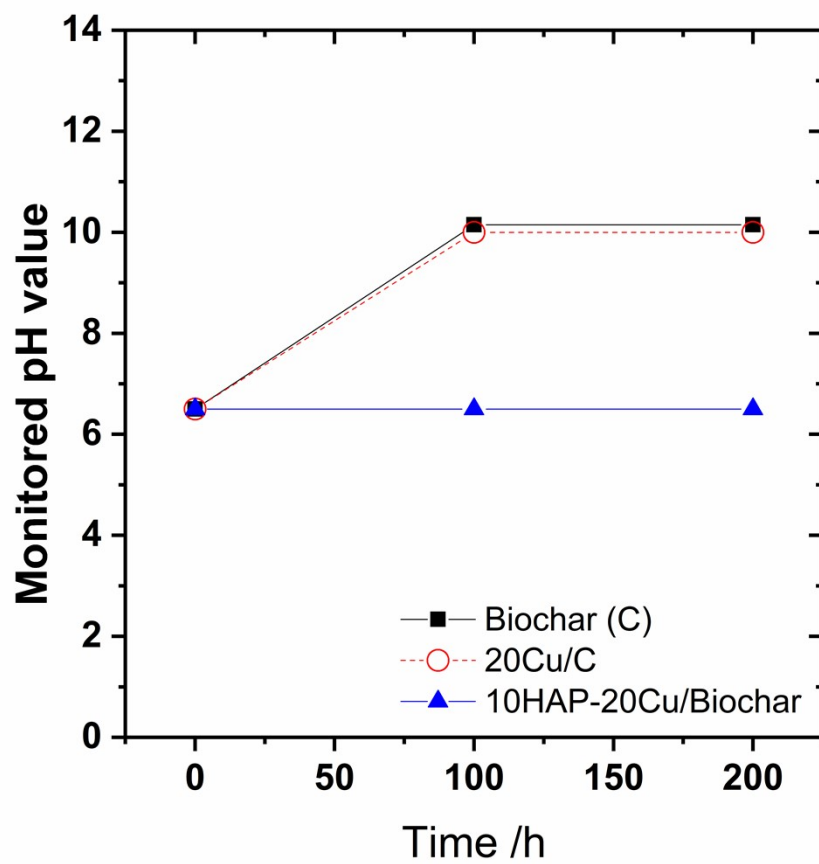
**Figure S.1** SEM micrographs of colonized external section (a) and uncolonized internal section (b) of 10HAP-20Cu/C surface and EDS mapping (c).



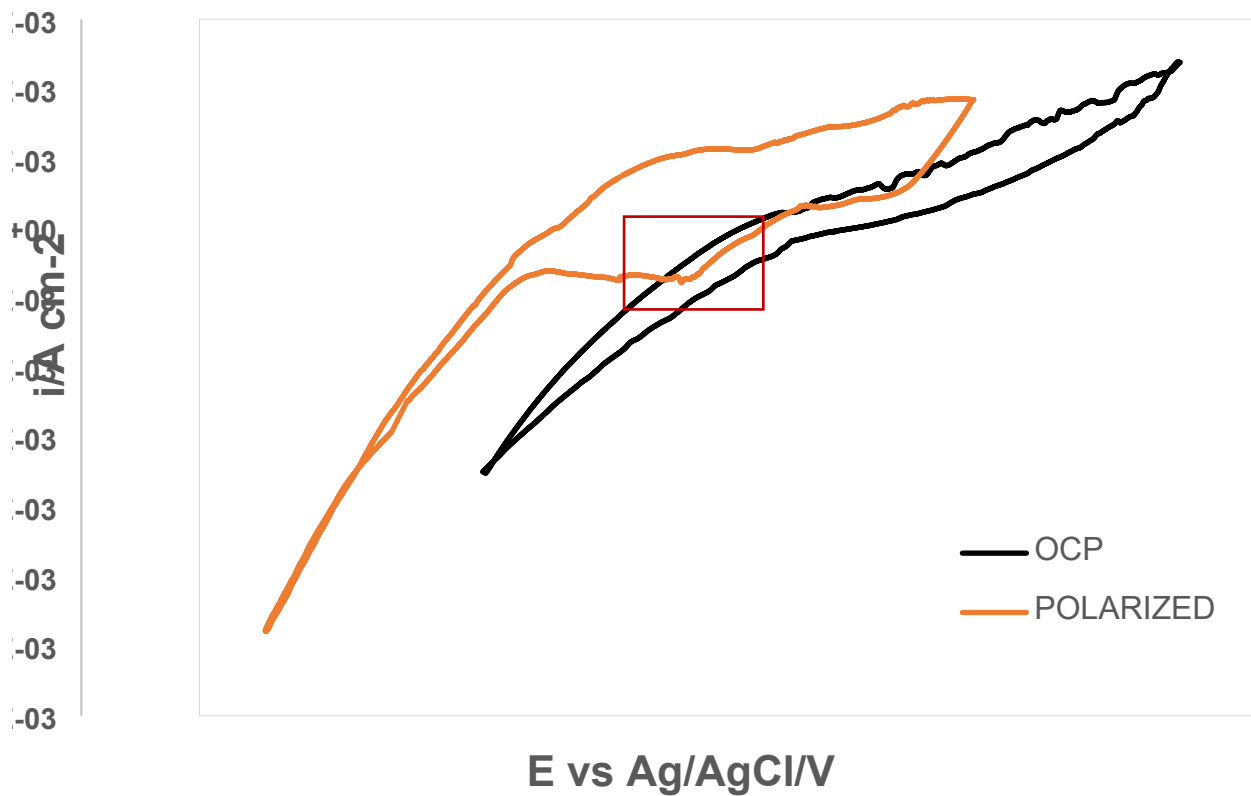
**Figure S.2** NH<sub>3</sub>-TPD and SO<sub>2</sub>-TPD profiles on hydroxyapatite (desorption data acquired in the isothermal step at 150°C are not shown)



**Figure S.3** FT-IR spectrum of HAP in the 500-4000 cm<sup>-1</sup> region



**Figure S.4** Plots of periodically monitored pH values in the cathodic chamber vs. time for biochar (black line), 20Cu/C (red line) and 10HAP-20Cu/C (blue line).



**Figure S.5.** Cyclic voltammograms from  $-1.5$  vs OCP to  $1.5$  vs OCP at  $50 \text{ mV s}^{-1}$  of the composites (OCP and POLARIZATION) at 14 days of immersion.