

*Supplement Information*

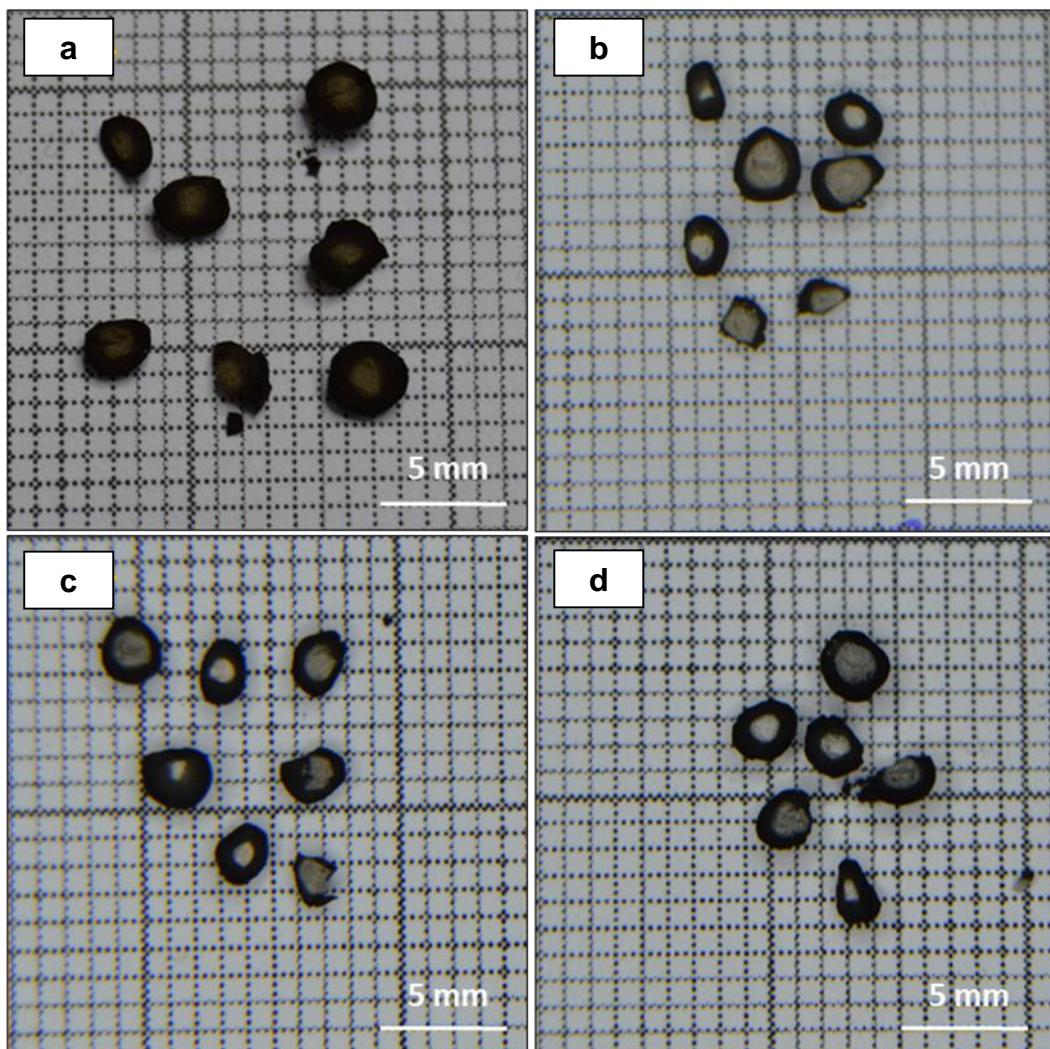
# First phenol carboxylation with CO<sub>2</sub> on carbon nanostructured C@Fe-Al<sub>2</sub>O<sub>3</sub> hybrids in aqueous media under mild conditions

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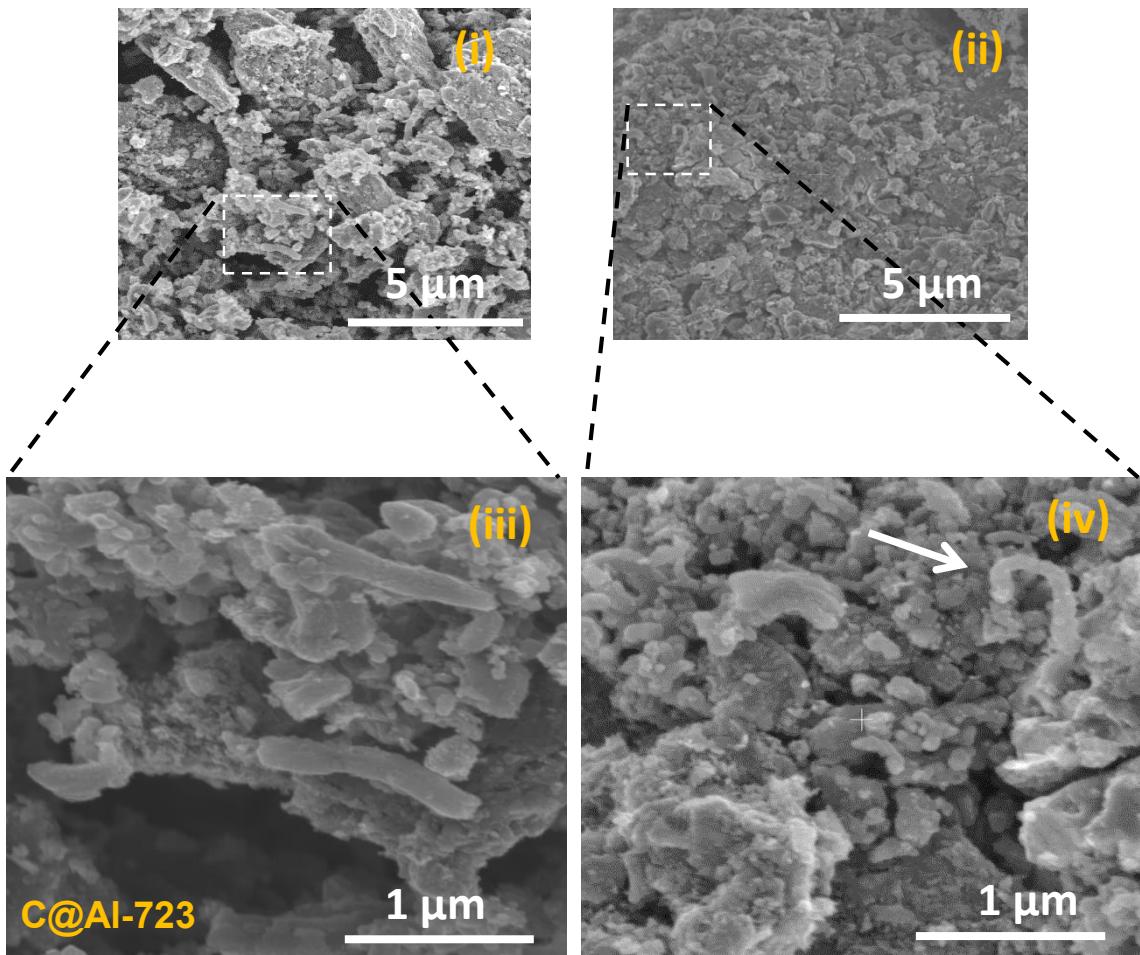
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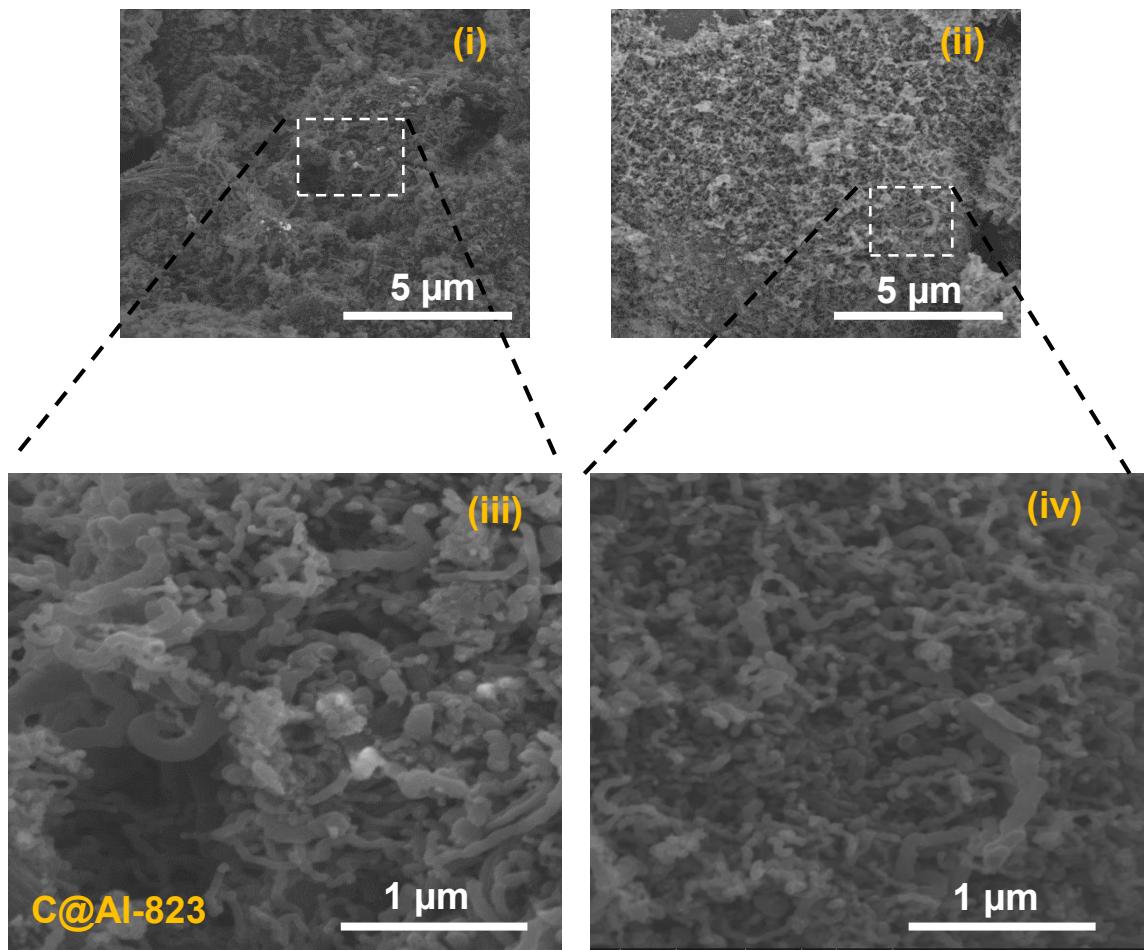
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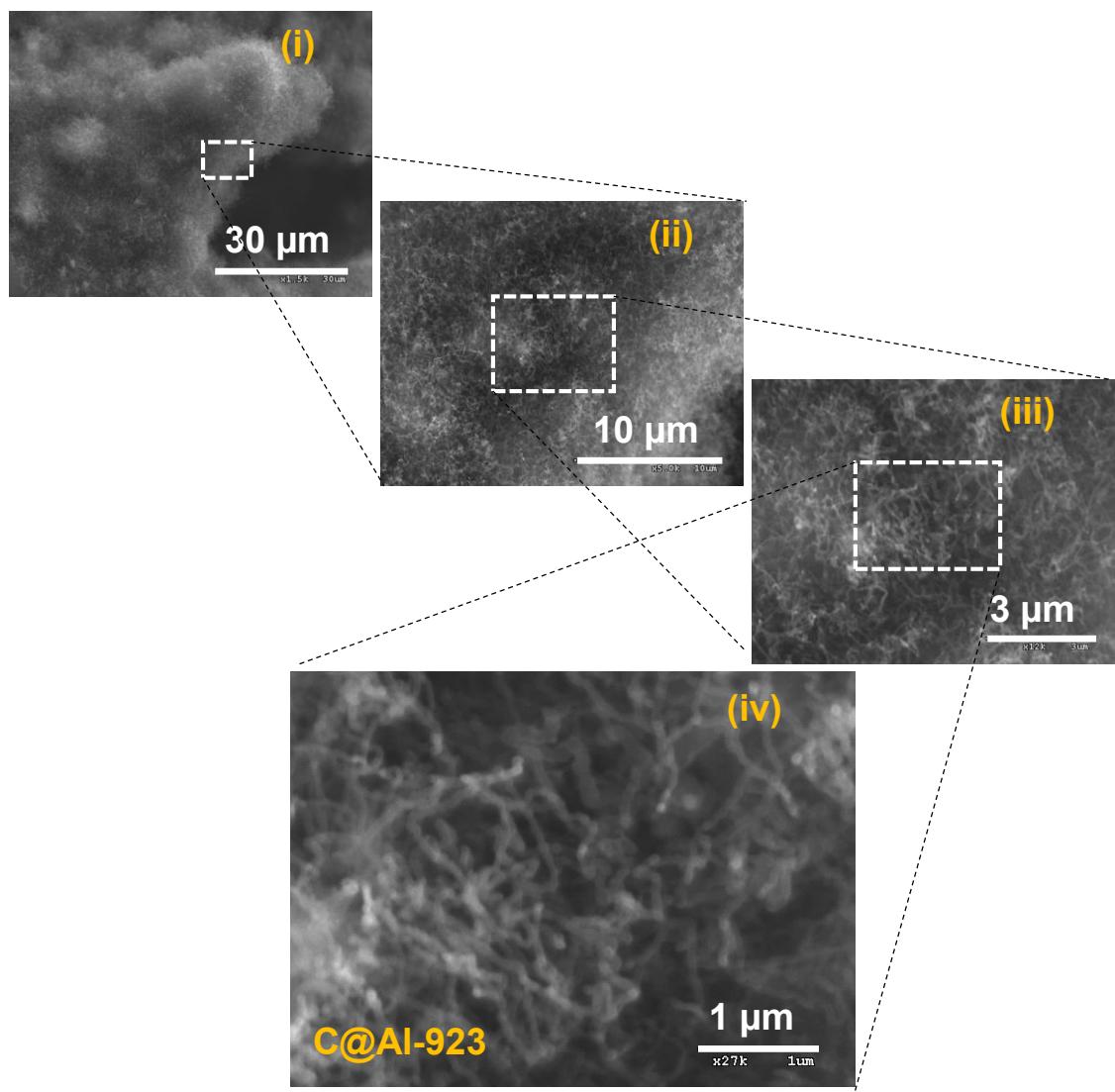
**Figure S1.** Cross-section images of hybrid samples: (a) C@Al-723; (b) C@Al-823; (c) C@Al-923; (d) C@Al-1123.



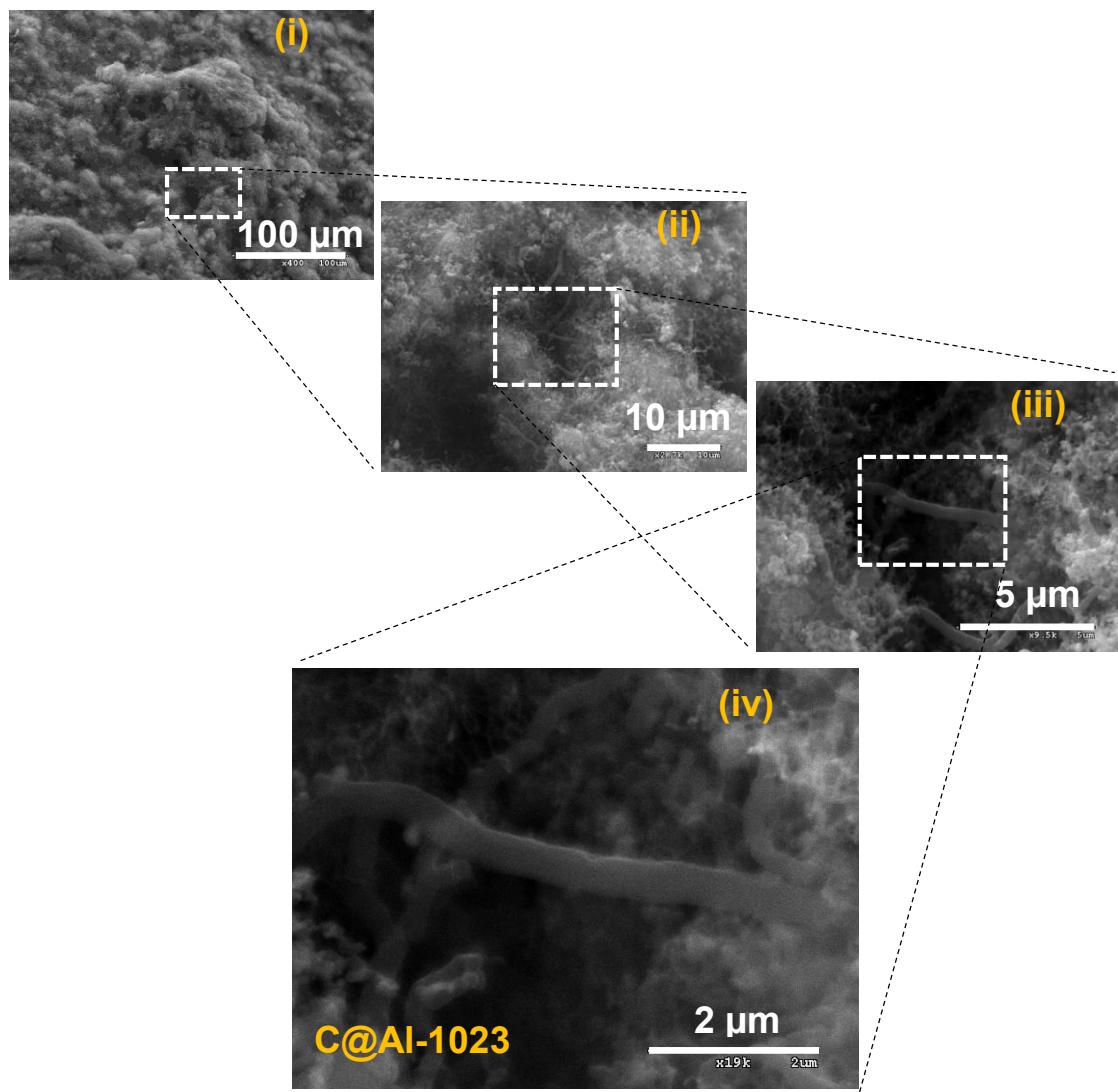
**Figure S2.** SEM images of C@Al-723 hybrid sample.



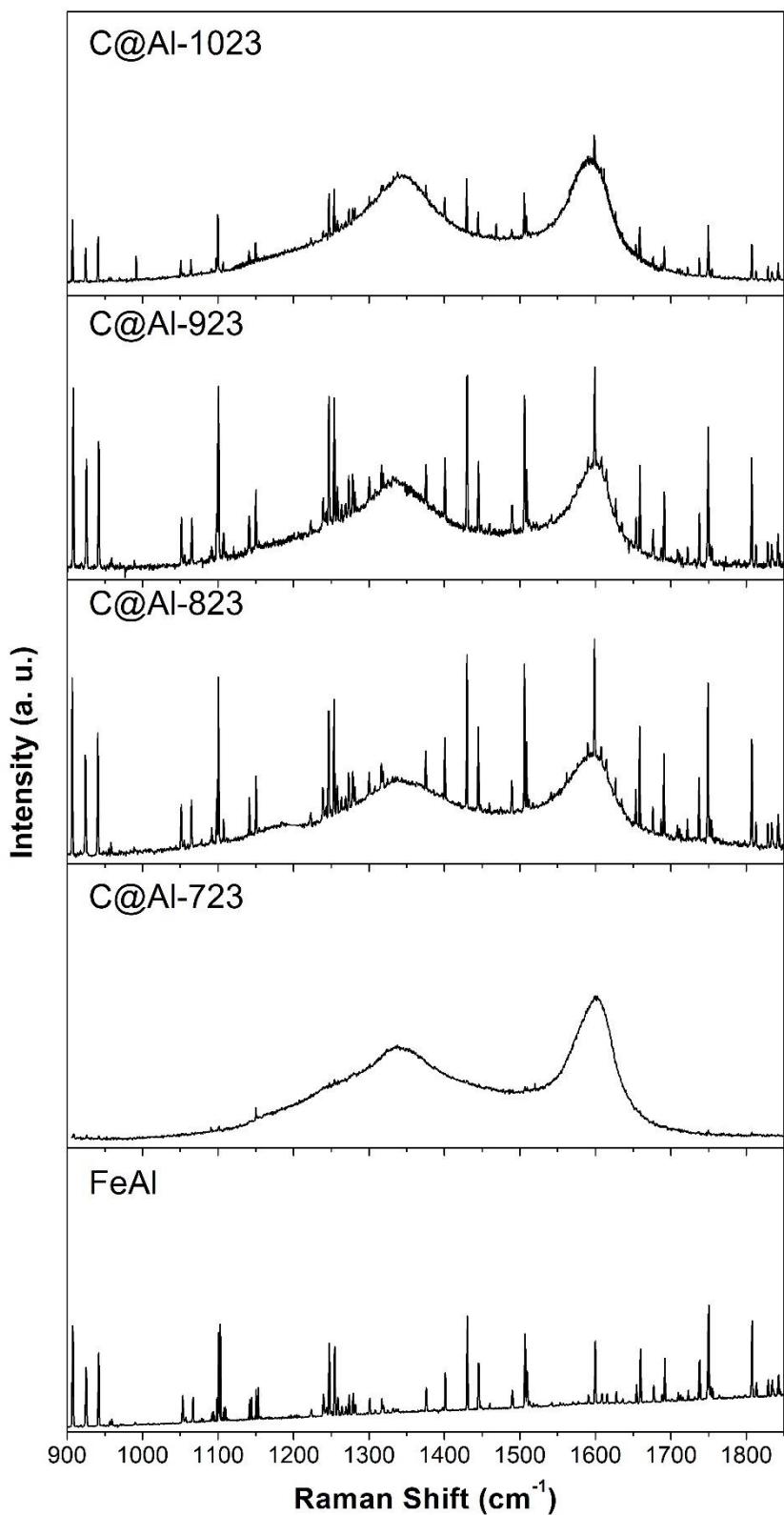
**Figure S3.** SEM images of C@Al-823 hybrid sample.



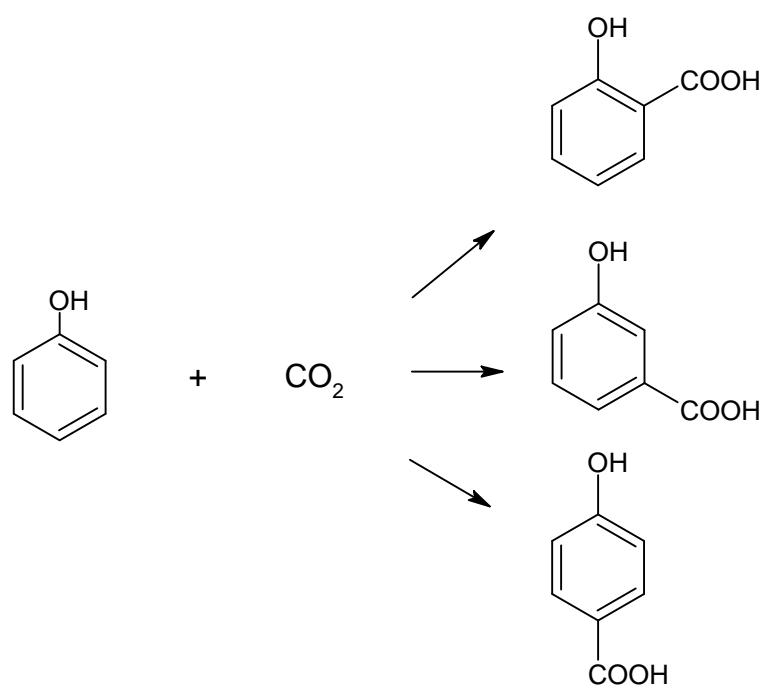
**Figure S4.** SEM images of C@Al-923 hybrid sample.



**Figure S5.** SEM images of C@Al-1023 hybrid sample.



**Figure S6.** Raman spectra of impregnated sphere (FeAl) and C@Fe-Al<sub>2</sub>O<sub>3</sub> hybrids



**Figure S7.** Possible products obtained from direct carboxylation of phenol.