

## Supporting Information

### **Self-assembled palladium nanocrystals on helical carbon nanofibers as enhanced electrocatalysts for electro-oxidation of small molecules**

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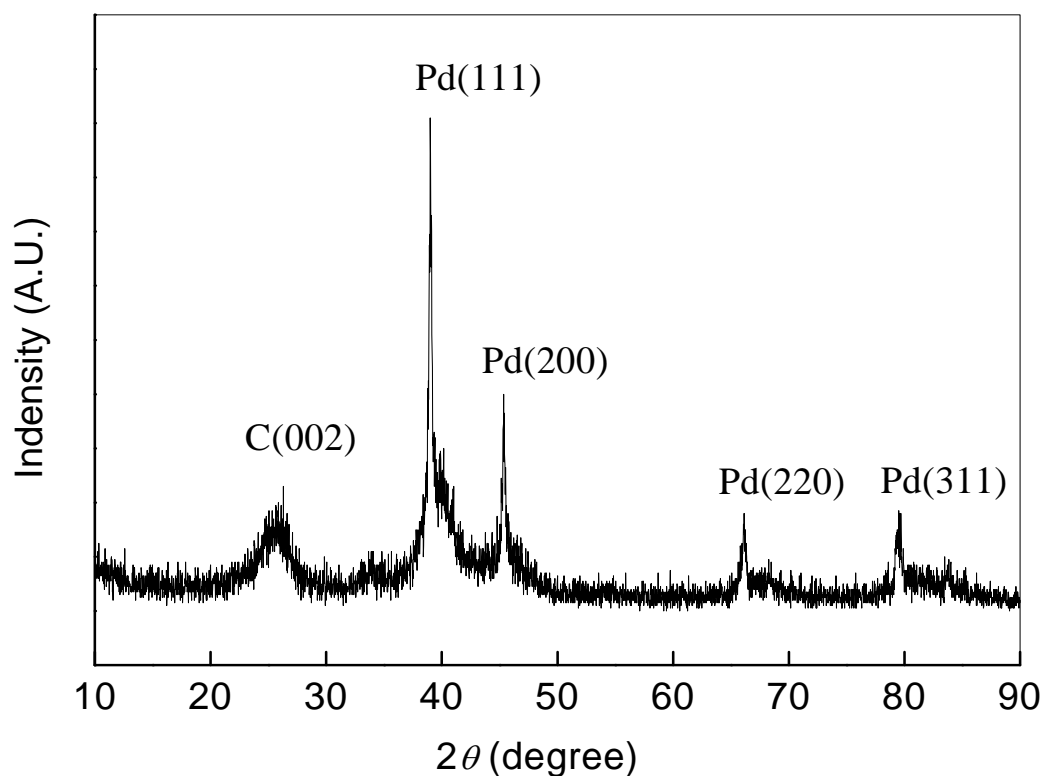
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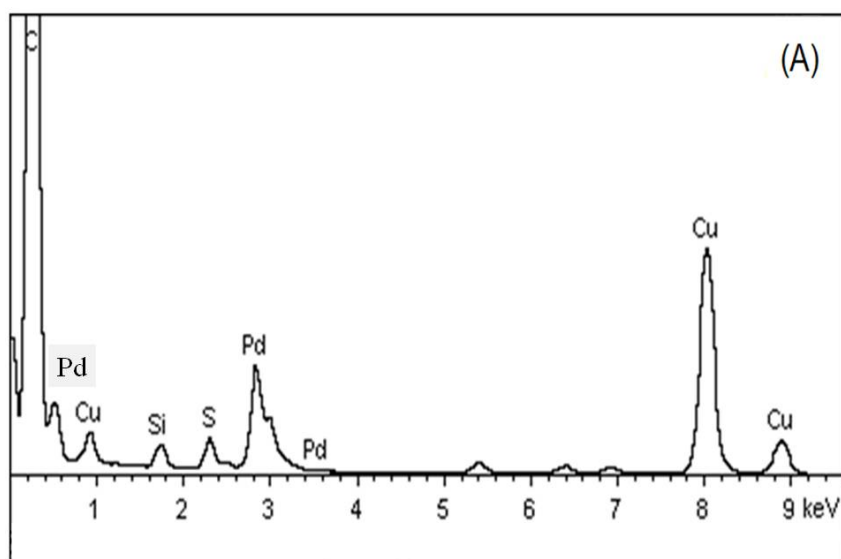
### **XRD analysis of Pd/HCNFs**

The XRD pattern of Pd/HCNFs in Figure S1 reveals five peaks. The broad peak at about  $26^\circ$  corresponds to the peak of C (002) in graphite structure. The other four peaks at around  $2\theta = 38.9, 45.4, 66.1,$  and  $79.4^\circ$  are assigned to the (111), (200), (220) and (311) crystalline planes of the face centered cubic structure of Pd, respectively. However as clearly observable, especially from the peak at  $2\theta = 38.9^\circ$  the XRD peaks consist of sharp components overlaid on broader features that are up-shifted compared to the sharp peaks. Earlier reports show that the sharp peaks originate from the roughly 40-50 nm sized Pd catalyst particles that are used in the synthesis of the HCNFs [F. Nitze et al, submitted to *Electrochimica Acta*]. From the analysis of the broader envelopes we can thus use the Scherrer's formula [A. L. Patterson, *Physical review*, 1939, **56**, 978-982.] to estimate the size of the attached Pd-nanoparticles to about 4.4 nm, which is in good agreement with the statistical result of TEM image.



**Figure S1. XRD pattern of as-prepared Pd/HCNFs**

The EDX spectrum (supporting information figure S2) confirms the presence of carbon, sulfur and palladium. In addition small peaks are detectable for copper and silicon originating from the TEM grid and the glass beaker used in the synthesis, respectively.



**Figure S2. EDX spectrum of Pd/HCNFs.**