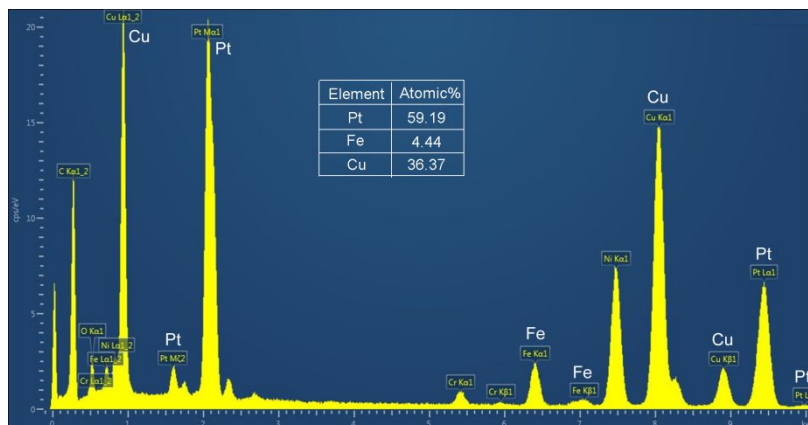


# **PtFeCu Concave Octahedron Nanocrystals as Electrocatalysts for Methanol Oxidation Reaction**

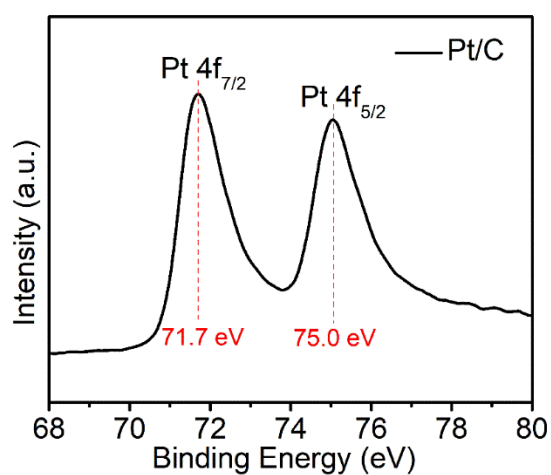
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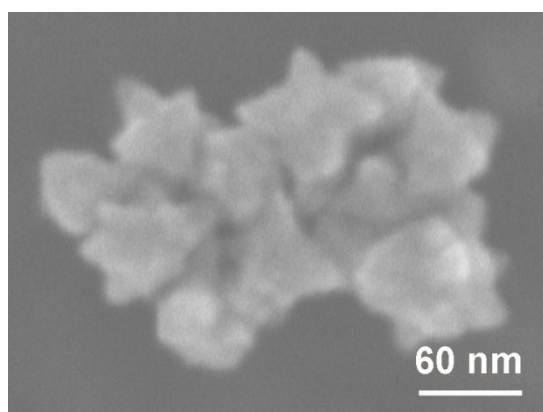
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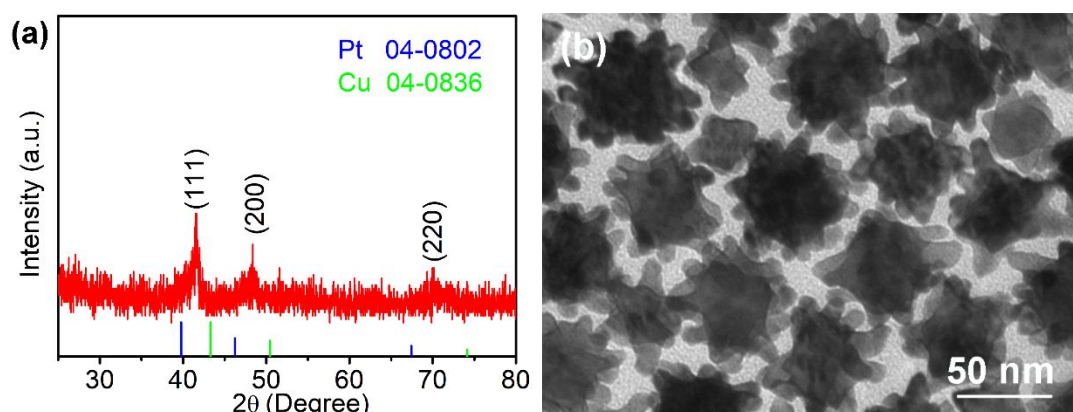
**Figure S1** EDS spectrum of the PtFeCu concave octahedron nanocrystals, the peaks of Ni, Cr and C come from the TEM grid.



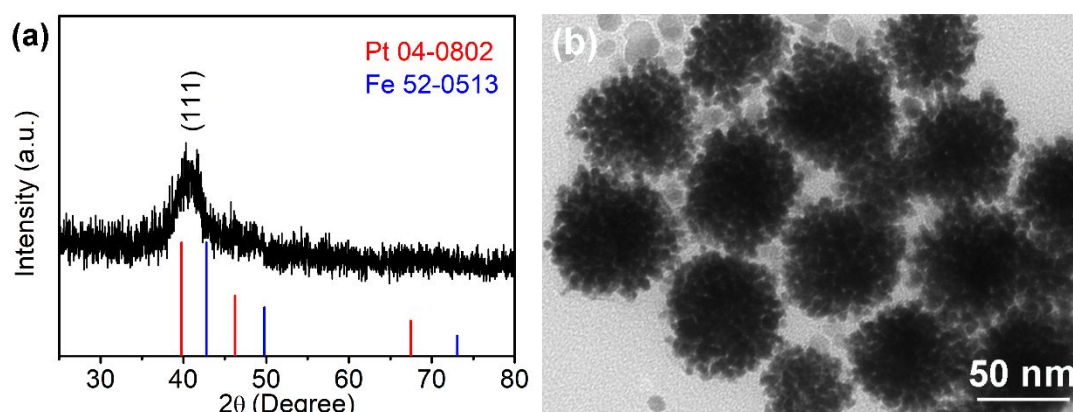
**Figure S2** Pt 4f XPS spectrum of Pt/C.



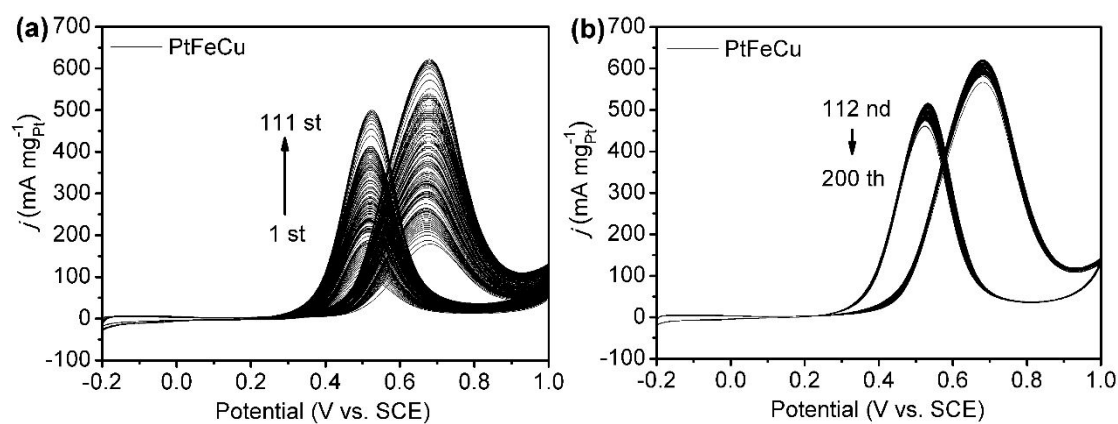
**Figure S3** SEM image of the PtFeCu concave octahedron nanocrystals.



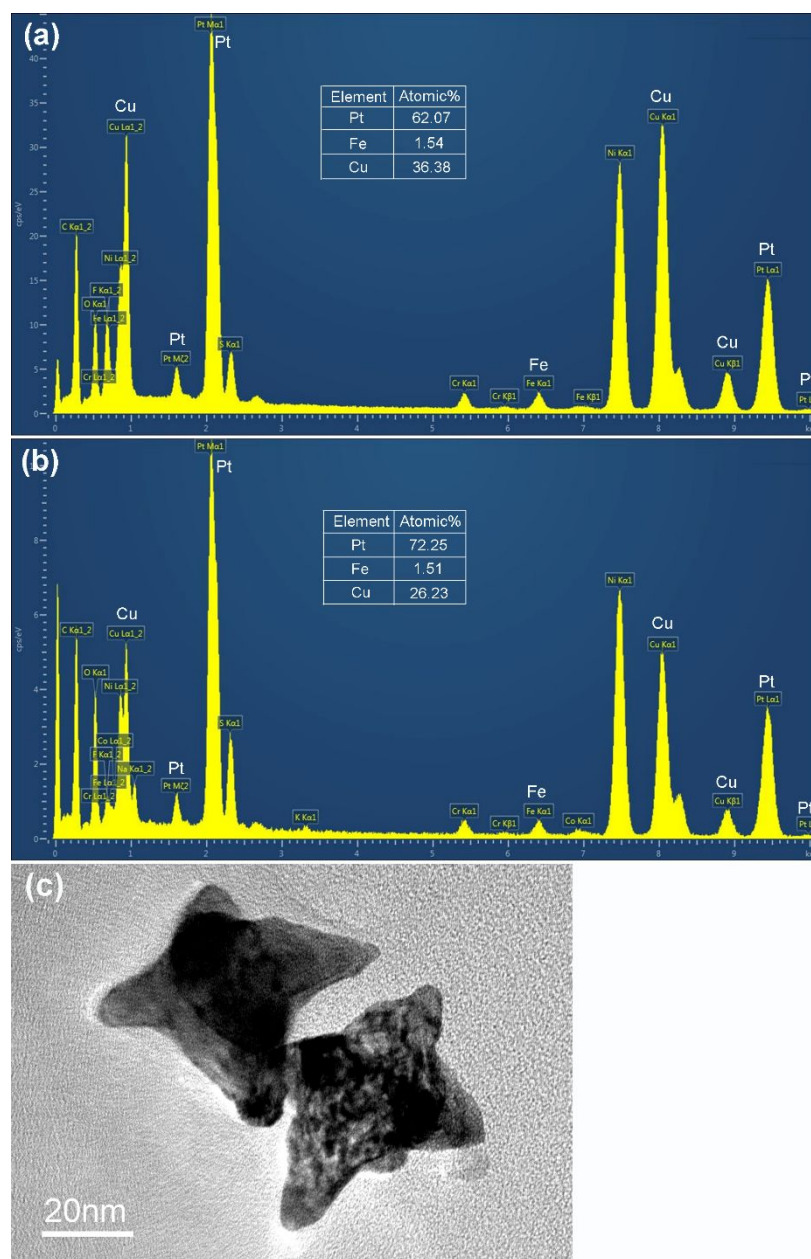
**Figure S4** (a) XRD pattern and (b) TEM image of the PtCu nanocrystals.



**Figure S5** (a) XRD pattern and (b) TEM image of the PtFe nanocrystals.



**Figure S6** CVs of PtPdCu nanodendrites from the 1<sup>st</sup> to the 111<sup>st</sup> cycles (a) and from the 112<sup>nd</sup> to the 200<sup>th</sup> cycles (b). The scan rate of all the CVs is 50 mV s<sup>-1</sup>.



**Figure S7** EDS spectrum of the PtFeCu concave octahedron nanocrystals after CV test for 111 cycles (a) and 200 cycles (b), the peaks of Ni, Cr and C come from the TEM grid; (c) TEM image of the PtFeCu sample after the 200 cycles CV test.