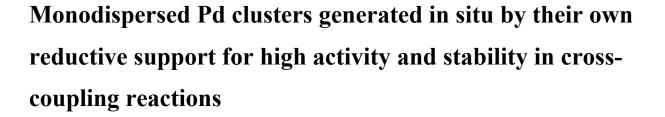
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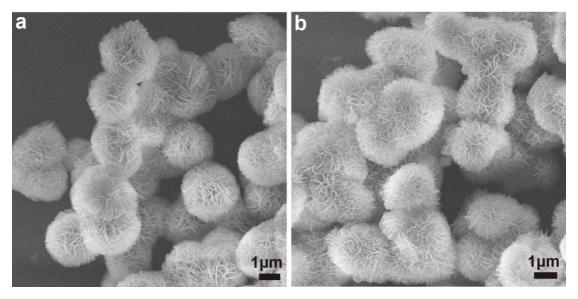
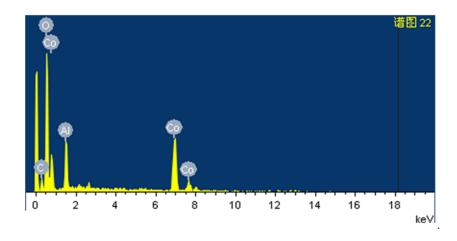


Figure S1. SEM images of (a) CoAl-LDH and (b) CoAl-LDH/Pd nanocomposite.



**Figure S2.** The EDS spectrum of the CoAl-LDH sample.

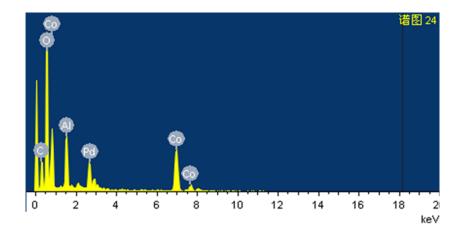
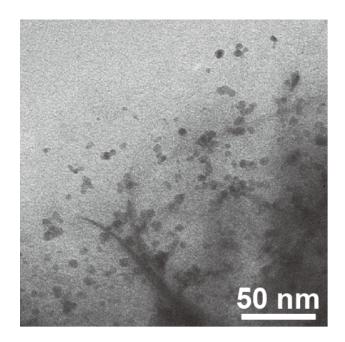


Figure S3. The EDS spectrum of the CoAl-LDH/Pd nanocomposite.



**Figure S4.** The high magnification TEM image of CoAl-LDH/Pd catalyst after being used repetitively for 6 times.



Figure S5. Photo of about 200 g of CoAl-LDH material from a scale up process.



Figure S6. Photo of CoAl-LDH/Pd material (without the drying process) from a scale up process.