

Electronic Supplementary Information

A novel bifunctional Pd-ZIF-8/rGO catalyst with spatially separated active sites for the tandem Knoevenagel condensation-reduction reaction

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Preparation of Pd/ZIF-8: firstly, 11.29 mg of polyvinyl-pyrrolidone (PVP) was added to the Na₂PdCl₄ solution (2.56 mL, 0.01 M) at 25 °C. After stirring for 1.0 h, 100 mg of the dried ZIF-8 was added into the above solution and the mixture was stirred for 2.0 h. Then, 1.28 mL of NaBH₄ solution (0.1 M) was added dropwise into the reaction mixture with vigorous stirring at 0 °C. After further stirring for 5.0 h, the resultant mixture was isolated by filtration, washed three times with deionized water. Then, the resulting product was dried for 12.0 h in a vacuum oven (60 °C, -0.1 MPa).

Preparation of Pd/rGO: firstly, 100 mg of GO was dispersed in deionized water and sonicated for 2.0 h at 25 °C. Secondly, 11.29 mg of polyvinyl-pyrrolidone (PVP) was added to the Na₂PdCl₄ solution (2.56 mL, 0.01 M) at 25 °C. After stirring for 1.0 h, the GO dispersion was added into the above solution and the mixture was stirred for 2.0 h. Then, 1.28 mL of NaBH₄ solution (0.1 M) was added dropwise into the reaction mixture with vigorous stirring at 0 °C. After further stirring for 5.0 h, the resultant mixture was isolated by filtration, washed three times with deionized water. Then, the resulting product was dried for 12.0 h in a vacuum oven (60 °C, -0.1 MPa).

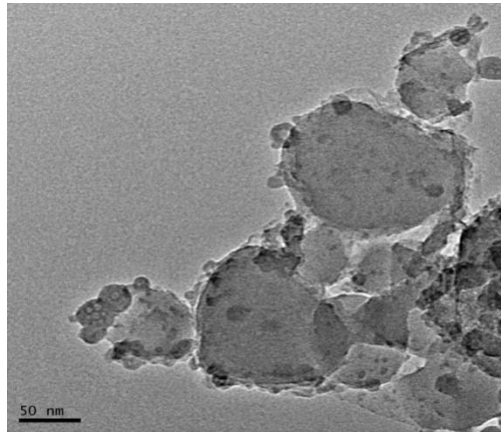


Fig. S1 TEM image of Pd-(ZIF-8+rGO)

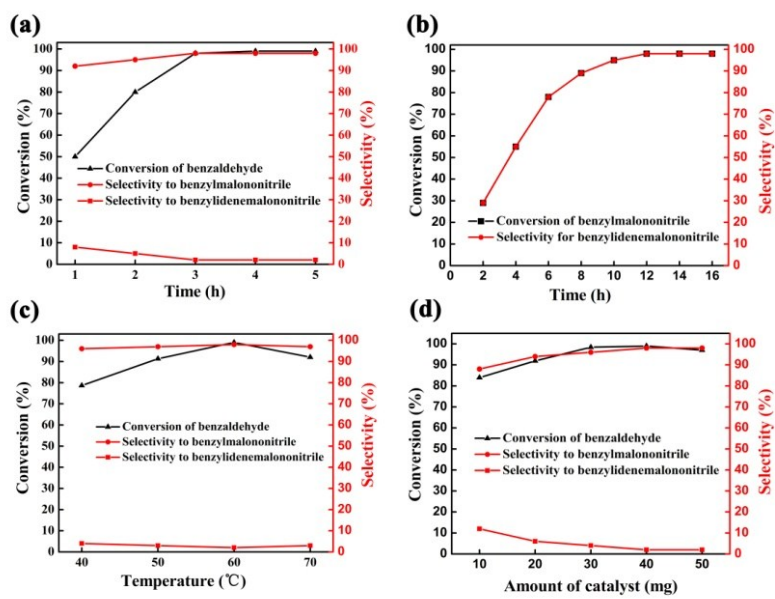


Fig. S2 The effects of Knoevenagel condensation time (a), reduction reaction time (b), reaction temperature (c) and catalyst amount (d) on the tandem reaction over Pd-ZIF-8/rGO.