

**Ru nanoparticles supported on nitrogen-doped porous carbon
derived from ZIF-8 as efficient catalyst for selective hydrogenation of
p-chloronitrobenzene and p-bromonitrobenzene.**

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1. Experimental

1) Preparation of nitrogen doped activated carbon (NAC)

0.3 g of CAC was totally dispersed in 30ml of ethanol under ultrasound. Then 0.08 g of dicyandiamide was added. The system was stirred for 12 hours and then the solvent was rotary evaporated at 40 ° C. The black powder was calcinated under nitrogen flow at 600° C for 2 hours to obtain NAC. N content determined by elemental analysis is 1.2%.

2) Preparation of Ru/NAC (5wt%)

The procedure to prepare Ru5/NAC is similar to that of Ru5/NPC(NB). NAC was chosen as support instead of NPC. Ru content is 4.7wt% (determined by ICP).

3) Preparation of Ru/CAC (5wt%)

The procedure to prepare Ru5/AC is similar to that of Ru5/NPC(NB). CAC was chosen as support instead of NPC. Ru content is 4.5wt% (determined by ICP).

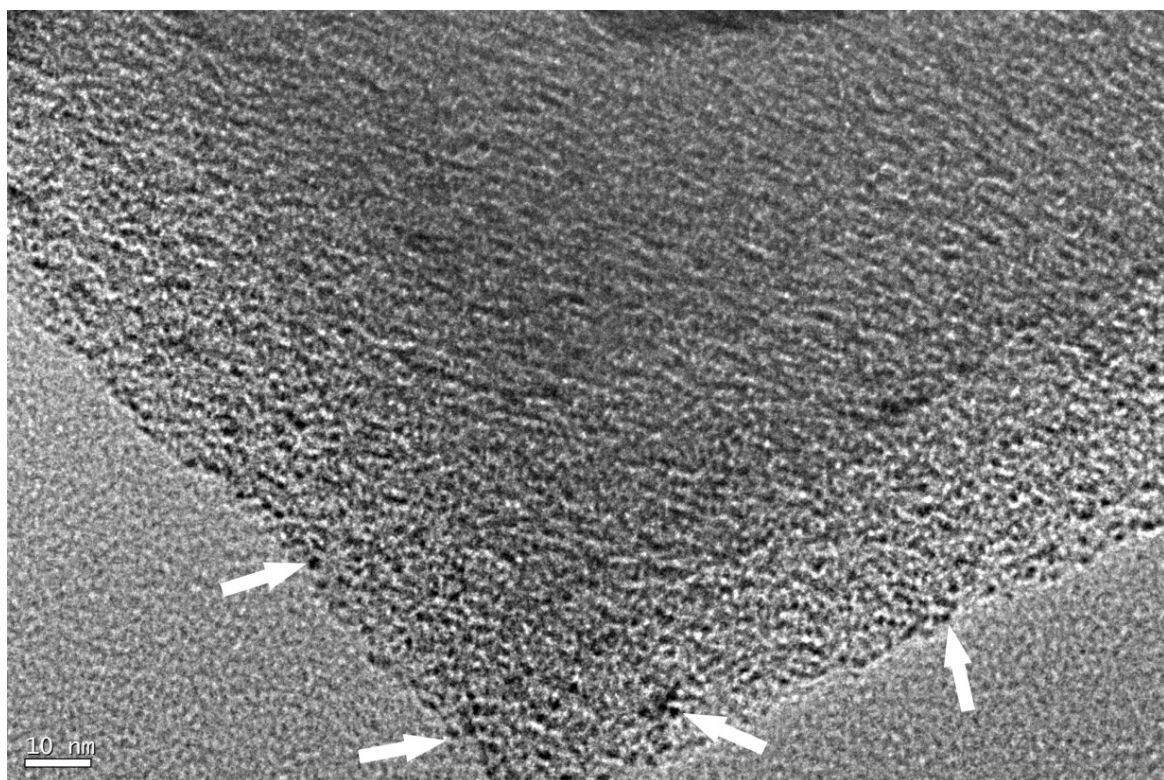


Figure S1. TEM image of Ru5/NPC(NB).

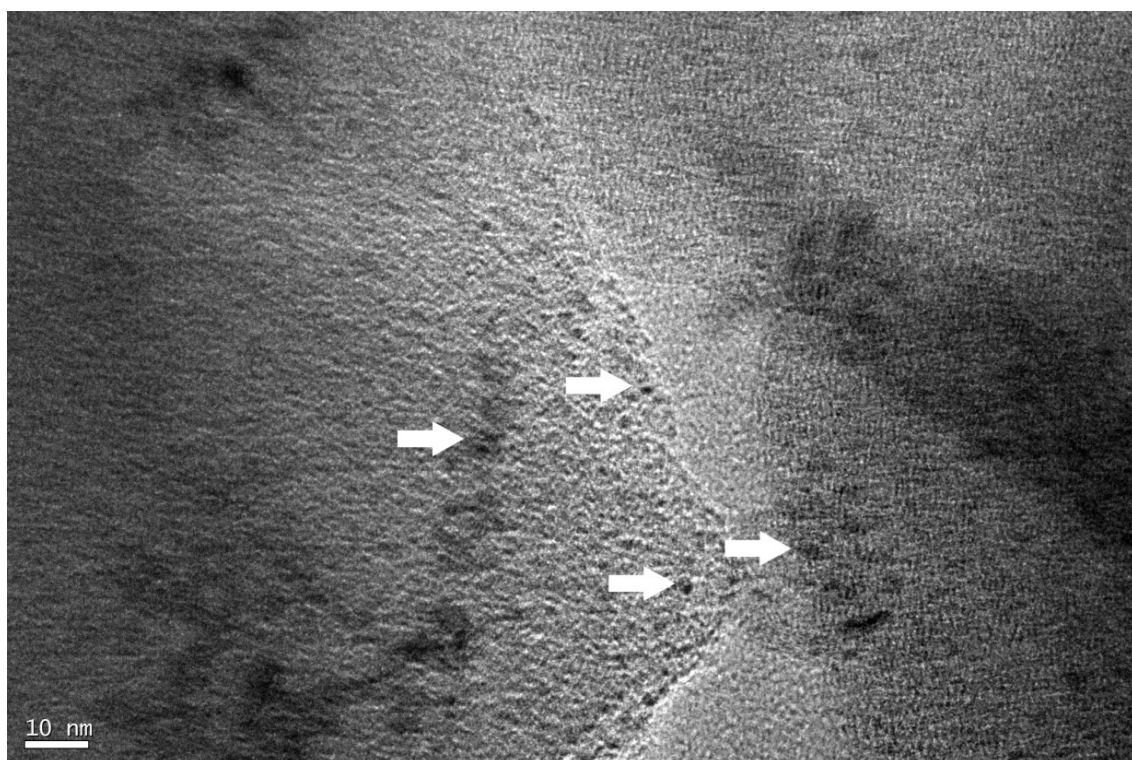


Figure S2. TEM image of Ru5/NPC(H₂-AC)

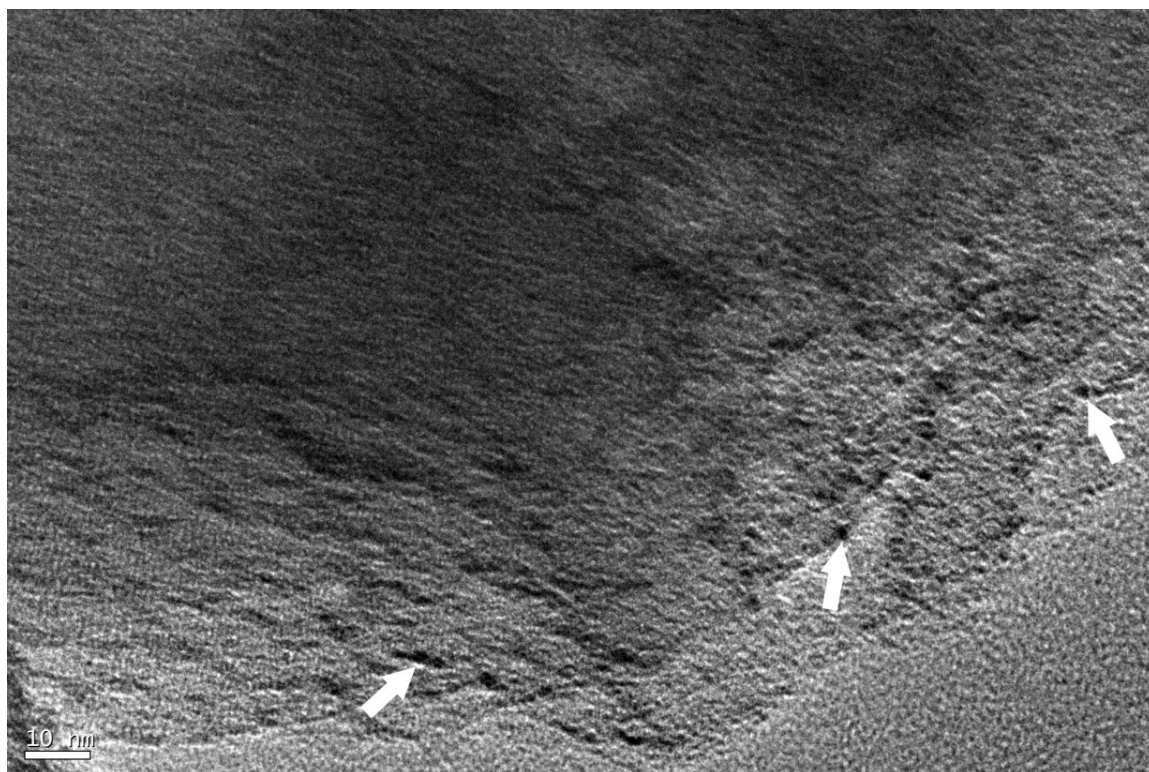


Figure S3. TEM image of Ru5/NPC(H₂-H₂O)

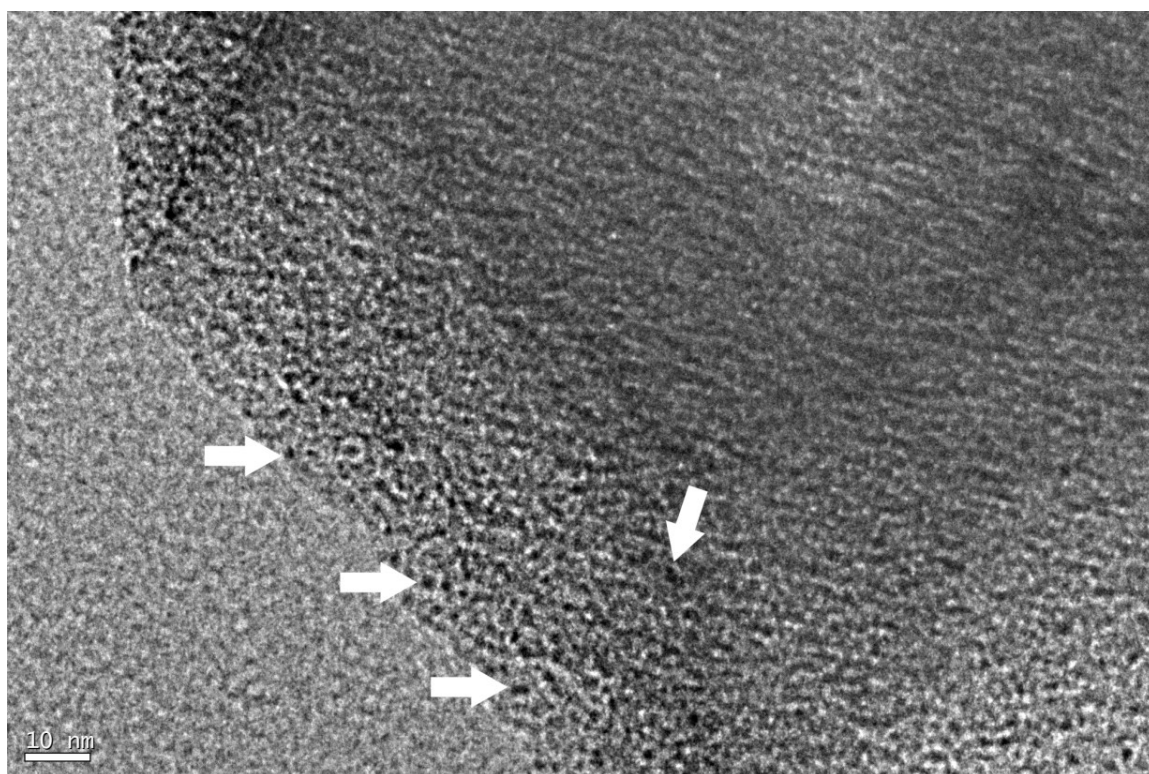


Figure S4. TEM image of Ru3/NPC(NB)

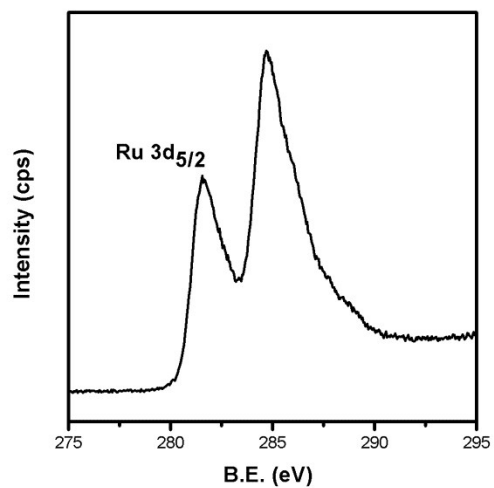


Figure S5. XPS spectra of C 1s and Ru 3d_{5/2} in Ru5/NPC(NB).

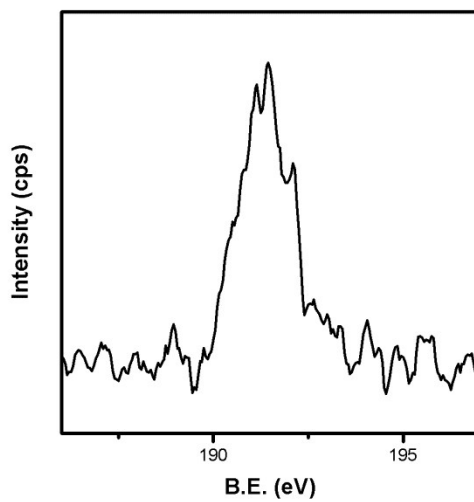


Figure S6. XPS spectra of B 1s in Ru5/NPC(NB).

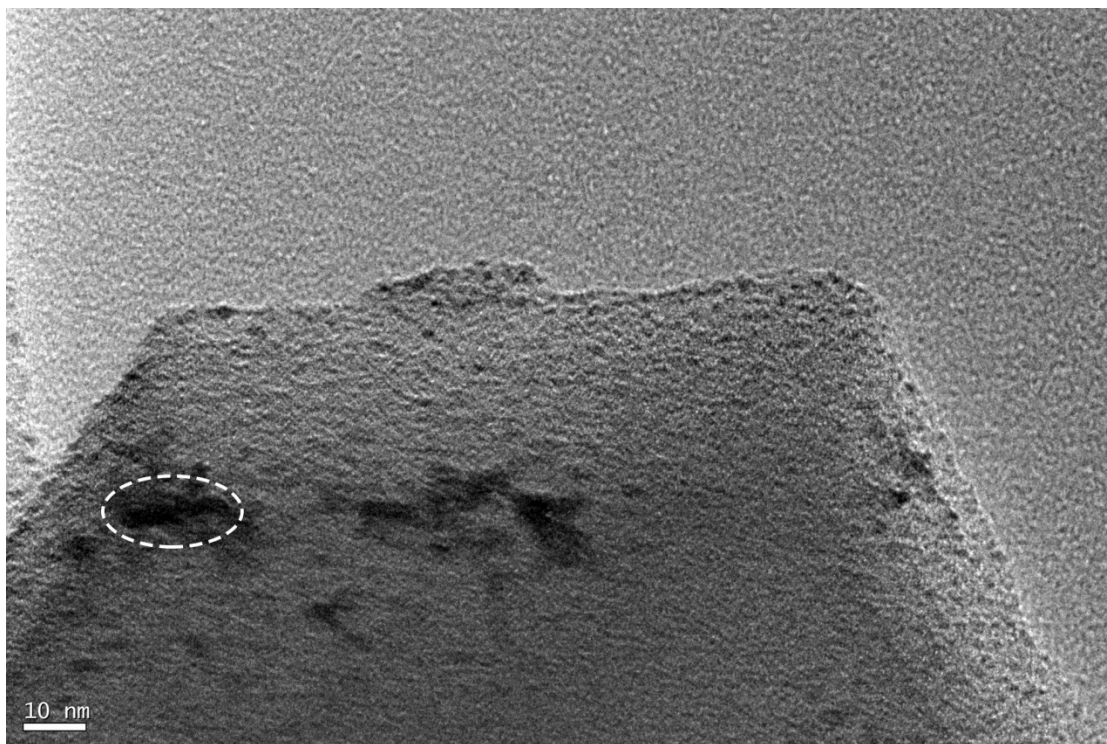


Figure S7. TEM image of regional agglomeration of Ru₃/NPC(NB).