

Nitrogen-doped magnetic carbon nanoparticles as catalyst supports for efficient recovery and recycling

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1. Electron diffraction pattern of Pd/N-MCNPs

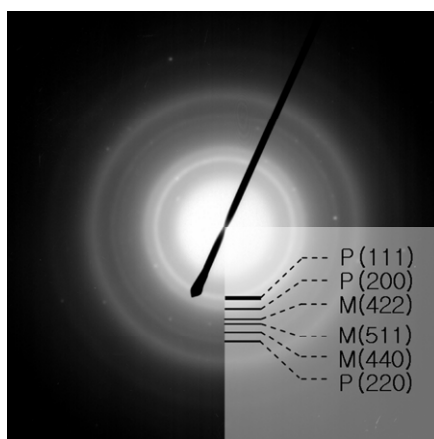


Fig. S1 Electron diffraction pattern of Pd/N-MCNPs (P: palladium; M: γ -Fe₂O₃).

2. Control experiments

2.1. Vulcan XC72R

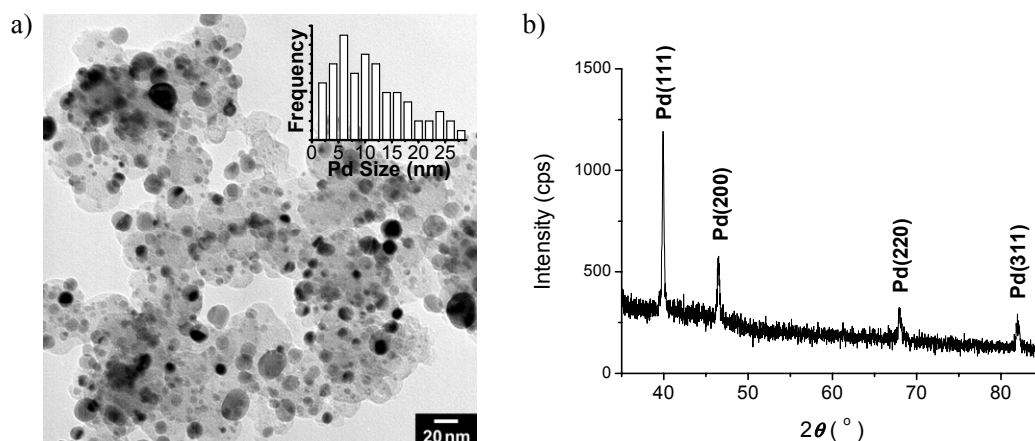


Fig. S2 a) TEM image and b) XRD pattern of Pd-deposited Vulcan XC72R. The diameter of palladium nanoparticles estimated from the TEM observation ranged from 2 to 28 nm (see Fig. S1a inset), and the average size of palladium crystallites calculated using Scherrer formula with Pd(111) was 22.0 nm.

2.2. Carbon black prepared by thermal plasma processing (CB-TPP)

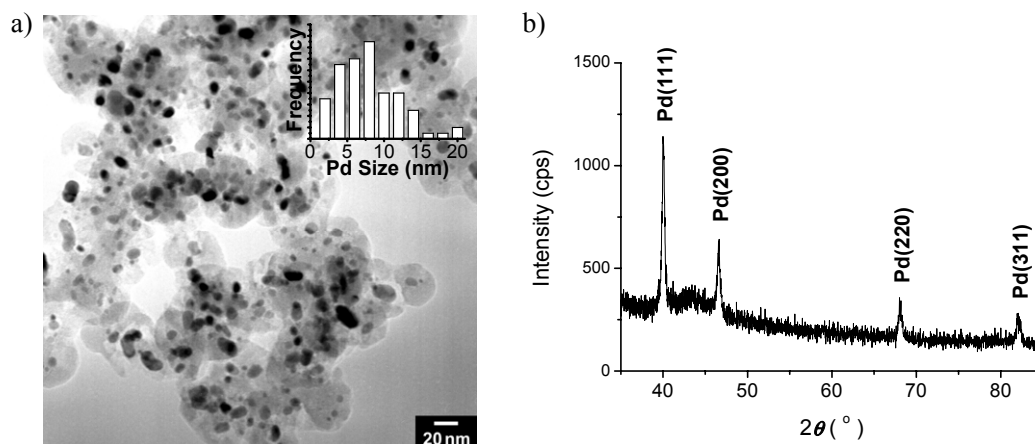


Fig. S3 a) TEM image and b) XRD pattern of Pd-deposited CB-TPP. The diameter of palladium nanoparticles estimated from the TEM observation ranged from 2 to 20 nm (see Fig. S2a inset), and the average size of palladium crystallites calculated using Scherrer formula with Pd(111) was 13.0 nm.

2.3. Major textural parameters of three different catalyst supports

Sample	S_{BET} ($\text{m}^2 \text{g}^{-1}$)	V_{micro} ($\text{cm}^3 \text{g}^{-1}$)	V_{total} ($\text{cm}^3 \text{g}^{-1}$)
N-MCNPs	360	0.15	0.44
Vulcan XC72R ^a	232	0.04	0.32
CB-TPP	313	-	0.73

^a These data were taken from the reference (Chai et al., *J. Phys. Chem. B*, 2004, **108**, 7074). S_{BET} : BET surface area; V_{micro} : micropore volume obtained using Horvath-Kawazoe method; V_{total} : total pore volume.