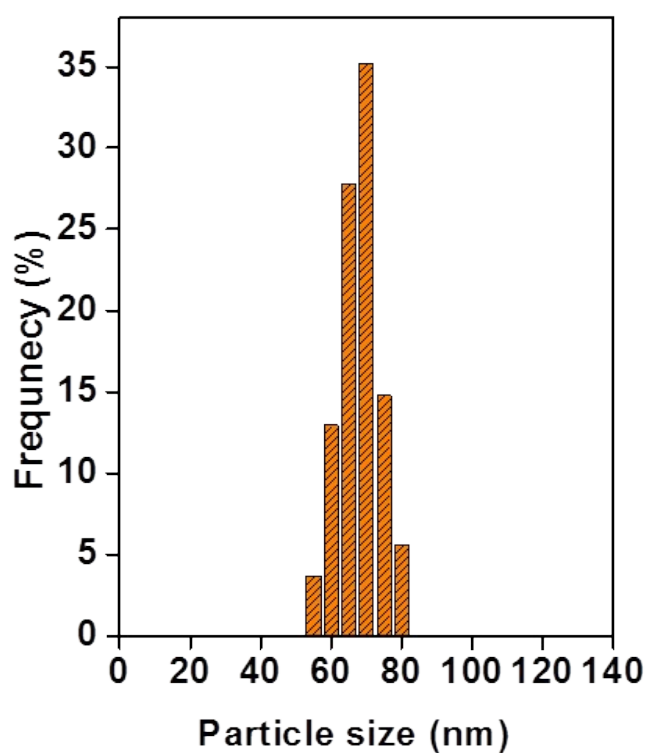
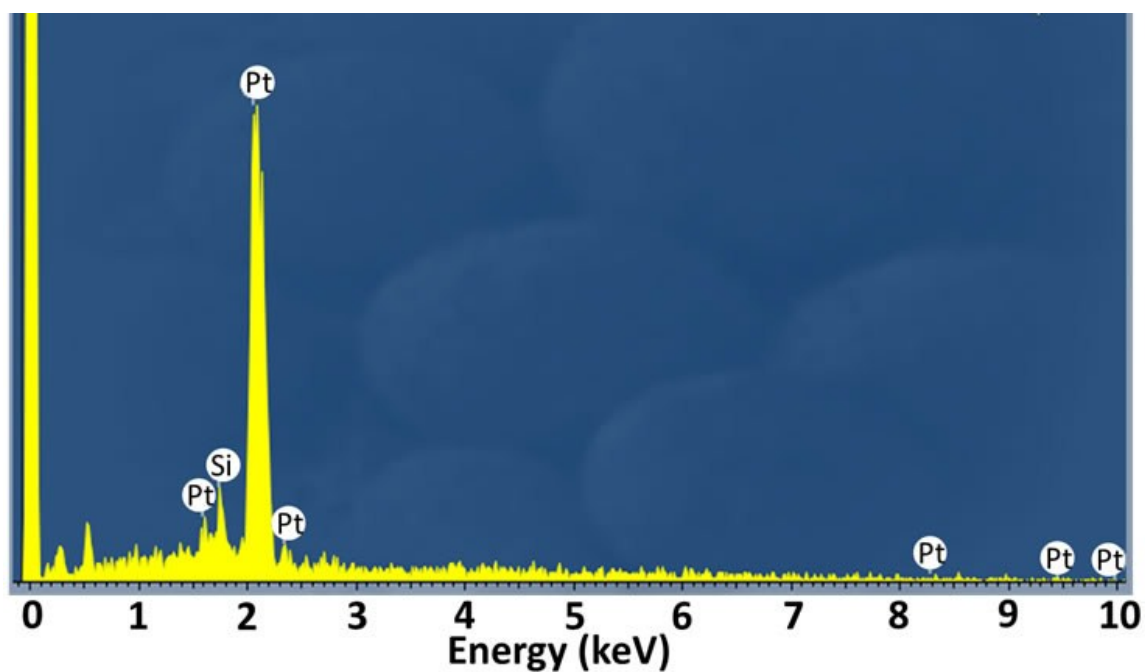


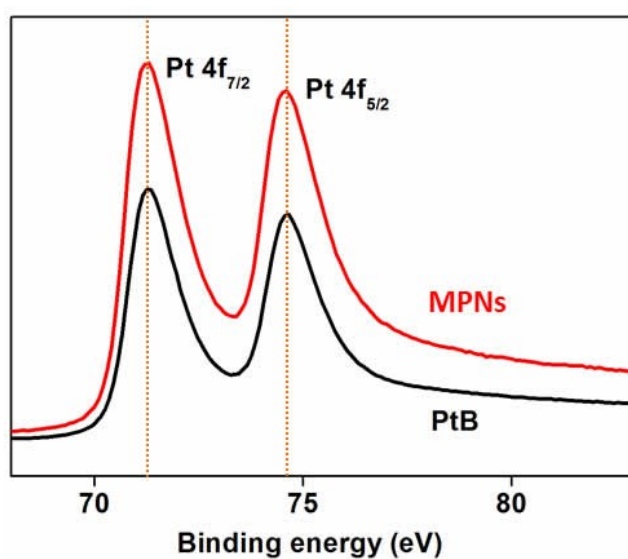
**Figure S1** | Typical SEM images of the MPNs at low and high magnifications.



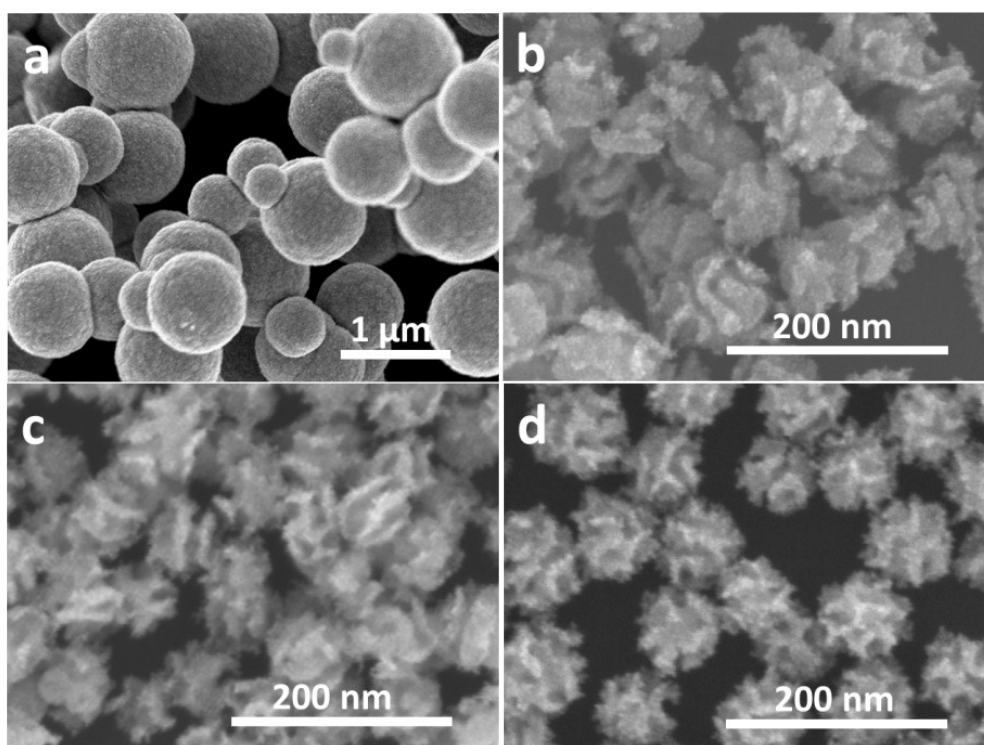
**Figure S2** | Histogram of particle size distribution of the MPNs with interconnected mesopores.



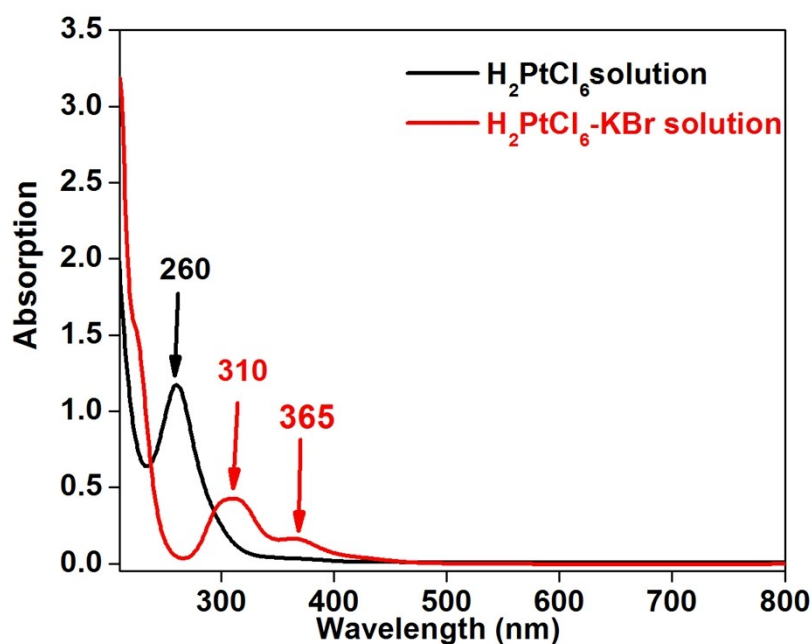
**Figure S3** | A representative EDX spectrum of MPNs. In the EDX spectrum, the additional signal originates from the Si substrate.



**Figure S4** | Pt 4f XPS data of MPNs and PtB.



**Figure S5** | SEM images of the samples prepared under typical conditions with different amounts of F127 [(a) 0 mg, (b) 2.0 mg, (c) 10 mg, and (d) 30 mg, respectively].

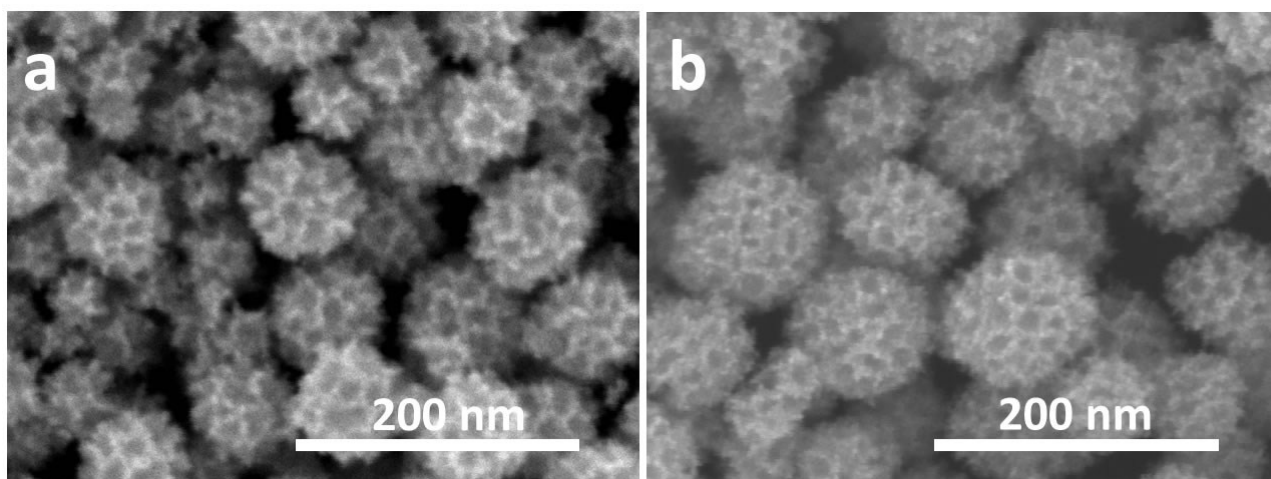


**Figure S6** | UV-vis spectrum of (black plot) H<sub>2</sub>PtCl<sub>6</sub> solution only and (red) H<sub>2</sub>PtCl<sub>6</sub> solution after addition of KBr.

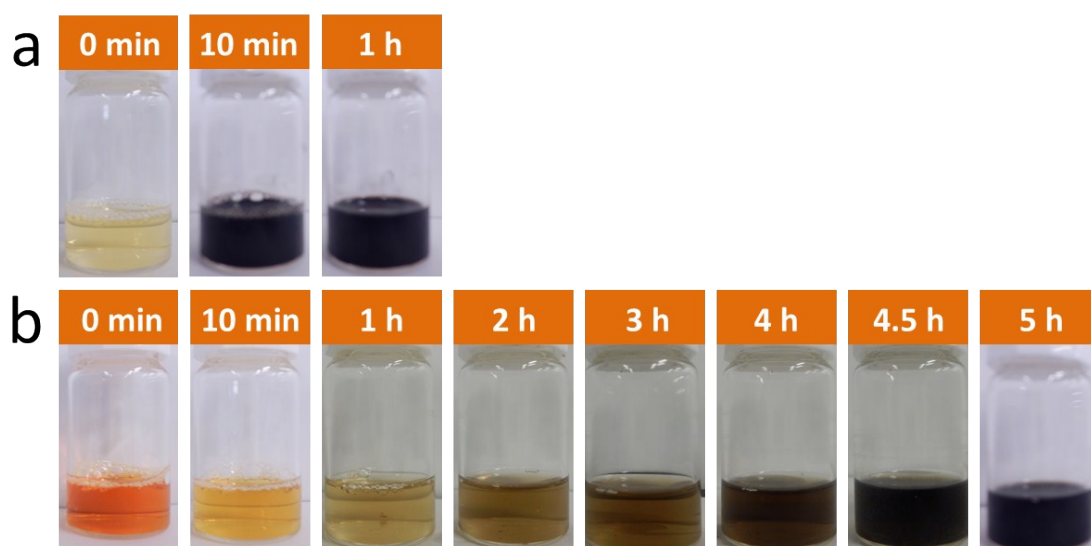
**Comment in Figure S6:** The absorption peak located at 260 nm in the [PtCl<sub>6</sub>]<sup>2-</sup> solution corresponds to the absorption of [PtCl<sub>6</sub>]<sup>2-</sup> complexes.[R1] After addition of KBr, the absorption peak at 260 nm disappears and two new characteristic features located at 310 and 365 nm can be observed, indicating that [PtCl<sub>6</sub>]<sup>2-</sup> was successfully replaced by [PtBr<sub>6</sub>]<sup>2-</sup> complexes.[R2]

#### Reference:

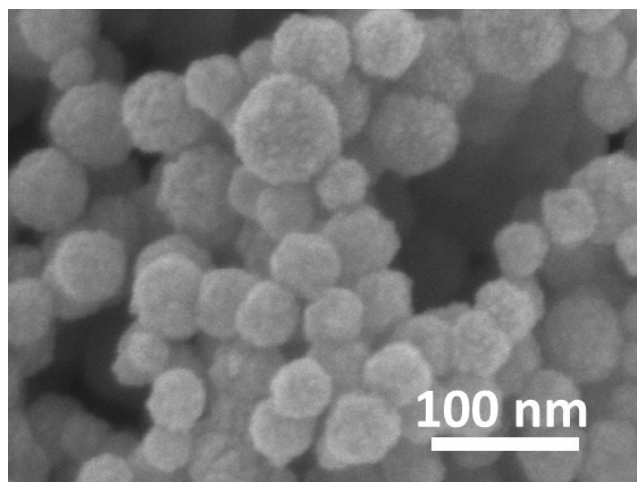
- [R1] a) Tang, Z.; Geng, D.; Lu, G. *J. Colloid Interface Sci.* **2005**, 287, 159-166; b) Hikosaka, K.; Kim, J.; Kajita, M.; Kanayama, A.; Miyamoto, Y. *Colloid Surf. B* **2008**, 66, 195-200.
- [R2] a) Dabestani, R.; Wang, X.; Bard, A.; Campon, A.; Fox, M. A.; Webber, S.; White, J. M.; *J. Phys. Chem.* **1986**, 90, 2729-2732; b) Glebov, E. M.; Plyusnin, V. F.; Grivin, V.P.; Venediktov, A. B.; Korenev, S. V.; *Russ. Chem. B. Int. Ed.* **2007**, 56, 2357-2363.



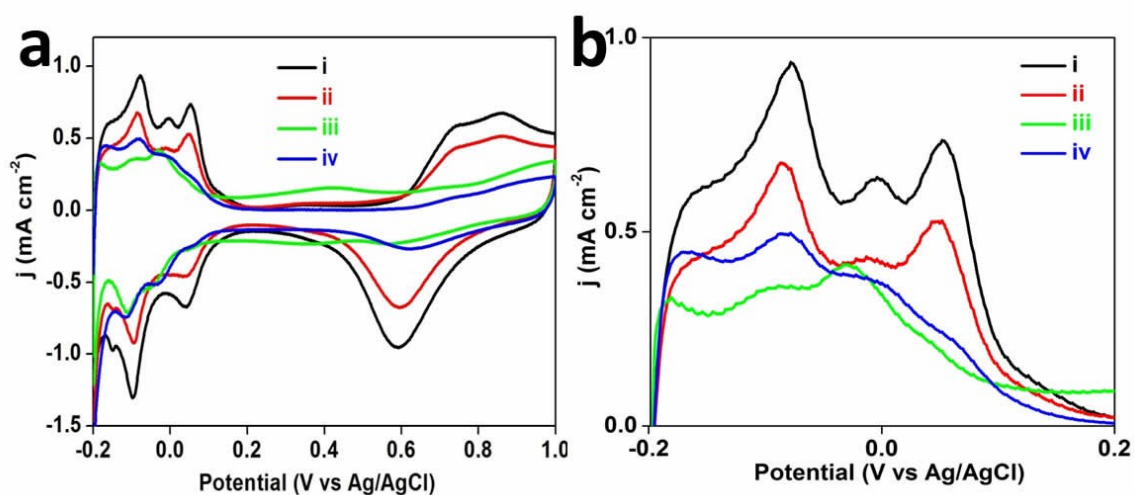
**Figure S7** | SEM images of samples prepared (a) with oxygen but without KBr and (b) with KBr but without oxygen.



**Figure S8** | Photographs of colloidal suspensions of (a)  $\text{H}_2\text{PtCl}_6$  solution, and (b)  $\text{H}_2\text{PtCl}_6$ -KBr solution taken at different reaction times at 70 °C.

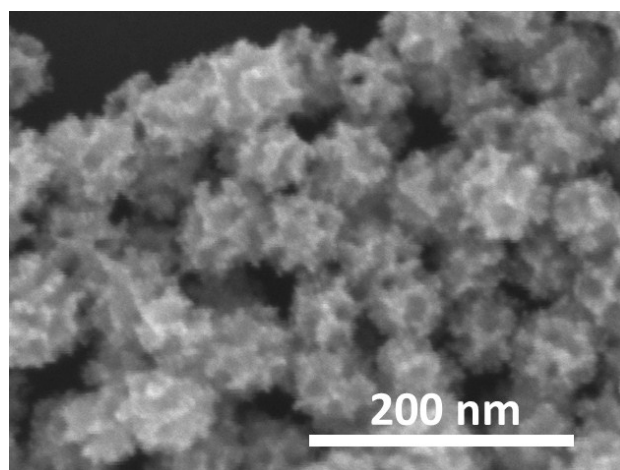


**Figure S9** | SEM image of the as-prepared Pt sample prepared by substituting ascorbic acid with hydrazine.

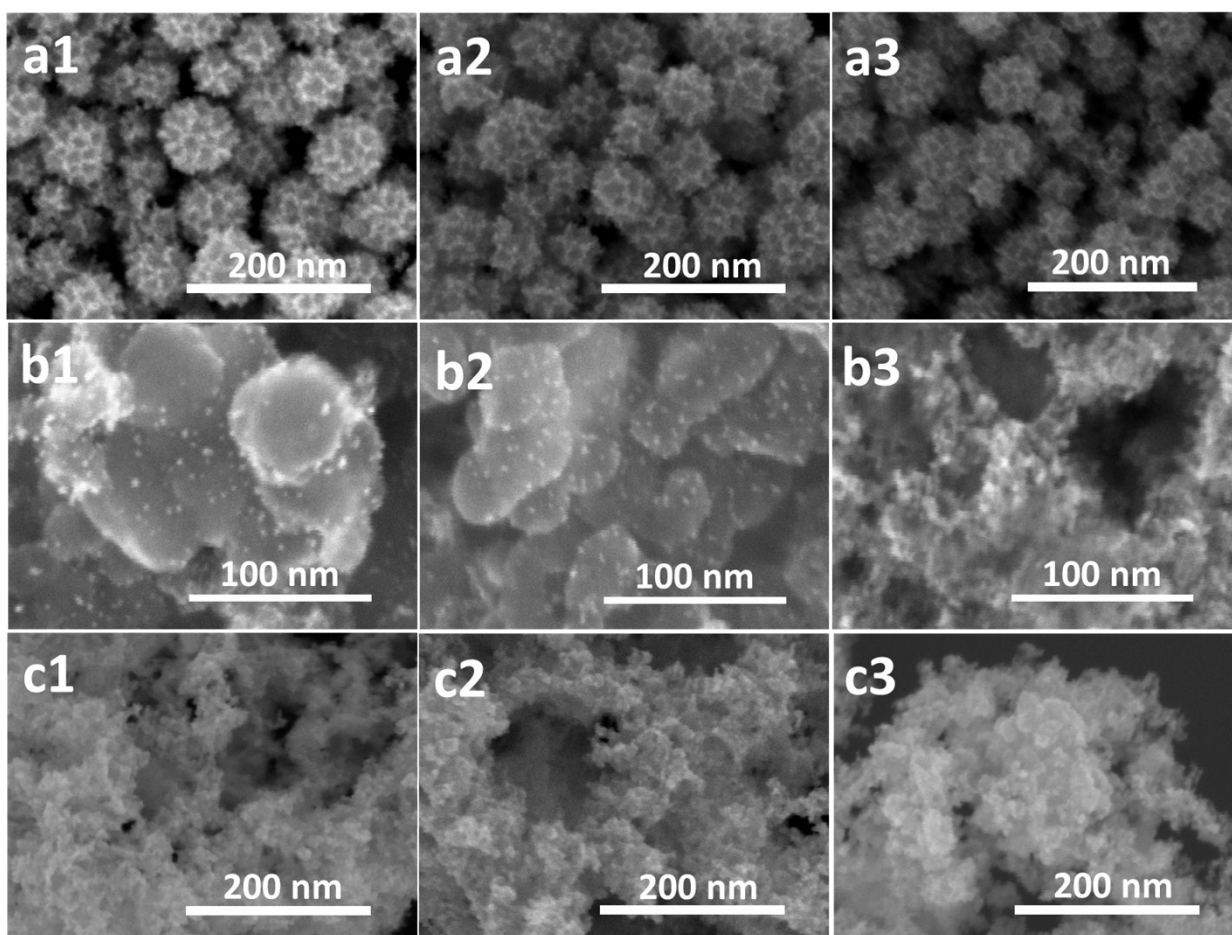


**Figure S10** | Cyclic voltammograms of (i) MPNs, (ii) DPNs, (iii) PtC-20%, and (iv) PtB catalysts recorded in 0.5 M  $\text{H}_2\text{SO}_4$  solution at a scan rate of  $50 \text{ mV s}^{-1}$ . All the currents are normalized by electrode geometric surface area.

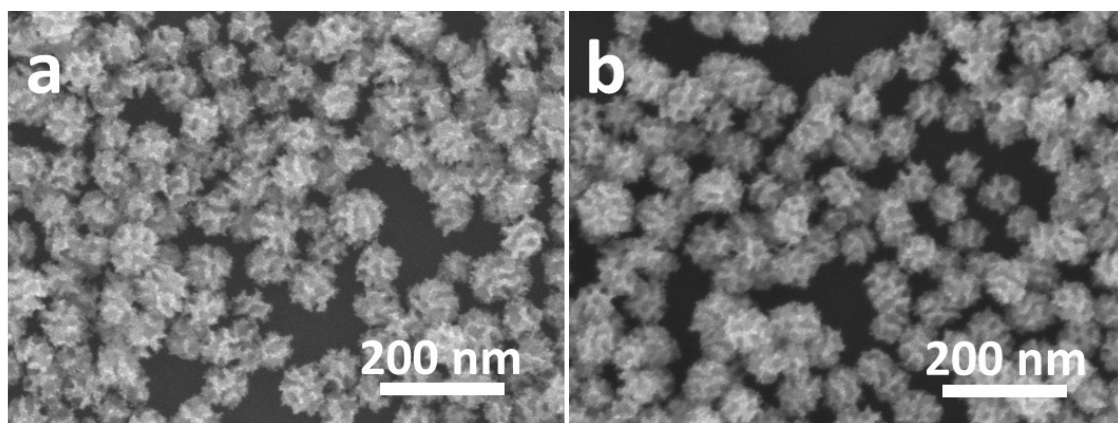




**Figure S11** | SEM images of MPNs after electrocatalytic measurements.



**Figure S12** | SEM image of (a) DPNs, (b) 20%-PtC, and (c) PtB catalysts after thermal treatment at different temperatures [(a1, b1, c1) 25 °C, (a2, b2, c2) 250 °C, and (a3, b3, c3) 350 °C, respectively].



**Figure S13** | SEM images of the MPNs after thermal treatment at (a) 250 °C and (b) 350 °C for 3 hours.