

Supporting Information

Bioinspired Polydopamine-Layered Double Hydroxide Nanocomposites: Controlled Synthesis and Multifunctional Performance

Hye Jin Nam,^a Eun Bi Park^a and Duk-Young Jung^{*a}

^a Department of Chemistry, Sungkyunkwan Advanced Institute of Nano Technology, Sungkyunkwan University, Suwon 440-746, Republic of Korea. Fax: +82-31-290-7075; Tel: +82-31-290-7074; E-mail: dyjung@skku.edu

Lists of Contents

Supporting Information Figures (Fig. S1-S6)

The SEM images, XRD data, TEM elemental mapping data, Raman spectra, and UV/vis spectra of PDA/LDH nanocomposites are included.

List of Figure Captions

Fig. S1. SEM images of the CAN-PD1 nanocomposites prepared in water (a) and THAM buffer (b).

Fig. S2. XRD data of CAN in THAM buffer (a), CAN-PD1 nanocomposites prepared in THAM buffer (b), and CAN-PD1 nanocomposite prepared in water (c). The filled circles and asterisk correspond to the peaks of carbonate form LDHs and silicon.

Fig. S3. Elemental mapping data of PDA/LDH nanocomposites; (a) CAN-PD1, (b) CAN-PD2, (c) MAN-PD1, and (d) MAN-PD2.

Fig. S4. Raman spectra of PDA/LDH nanocomposites: (a) CAN, (b) CAN-PD1, (c) CAN-PD2, (d) MAN, (e) MAN-PD1 and (f) MAN-PD2 (absorption band of ∇ : silicon, \blacktriangledown : Al-OH, \bullet : PDA, \blacksquare : NO_3^-).

Fig. S5. UV/vis spectra for the reduction of *p*-nitrophenol with excess NaBH_4 using PDA/LDH nanocomposite catalysts: (a) MAN, (b) MAN-PD1, and (c) MAN-PD2.

Fig. S6. SEM images of the CAN, CAN-PD1, and CAN-PD2 nanocomposites deposited on the Ni foam electrodes, showing the morphologies before (a-c) and after (d-f) cyclic voltammetry.

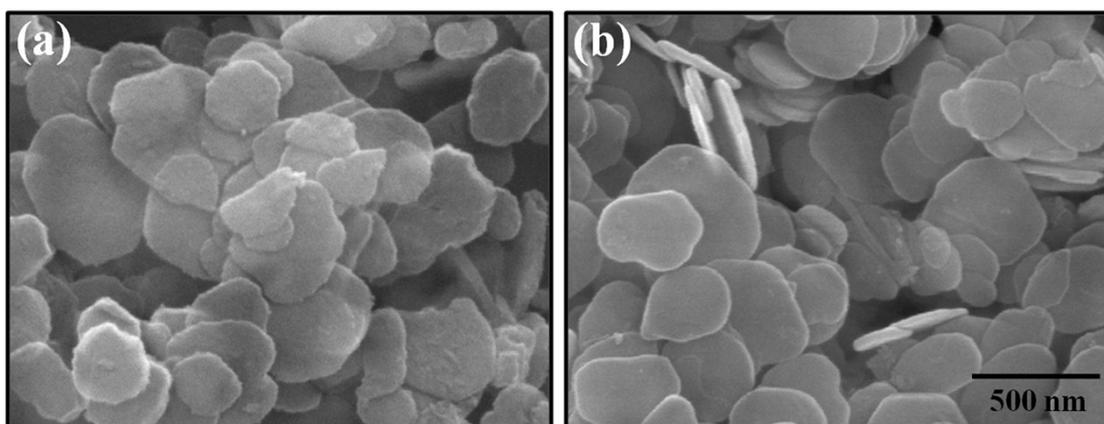


Fig. S1. SEM images of the CAN-PD1 nanocomposites prepared in water (a) and THAM buffer (b).

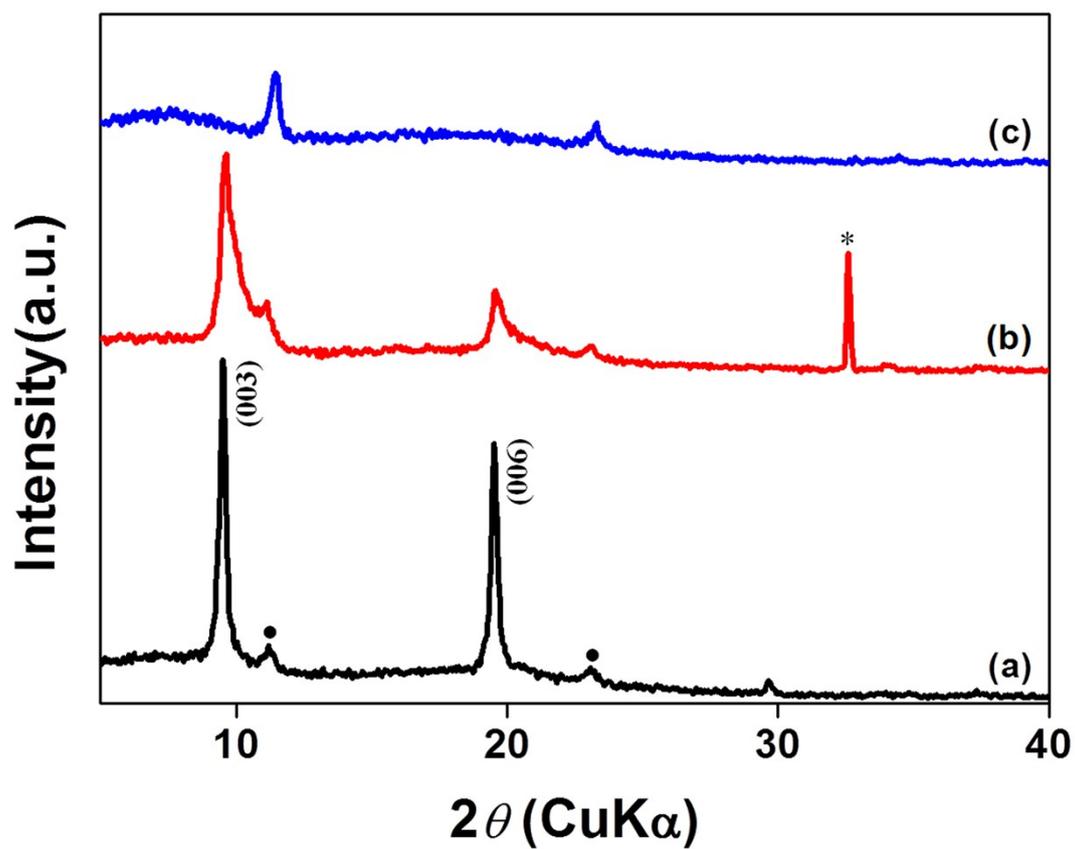


Fig. S2. XRD data of CAN in THAM buffer (a), CAN-PD1 nanocomposites prepared in THAM buffer (b), and CAN-PD1 nanocomposite prepared in water (c). The filled circles and asterisk correspond to the peaks of carbonate form LDHs and silicon.

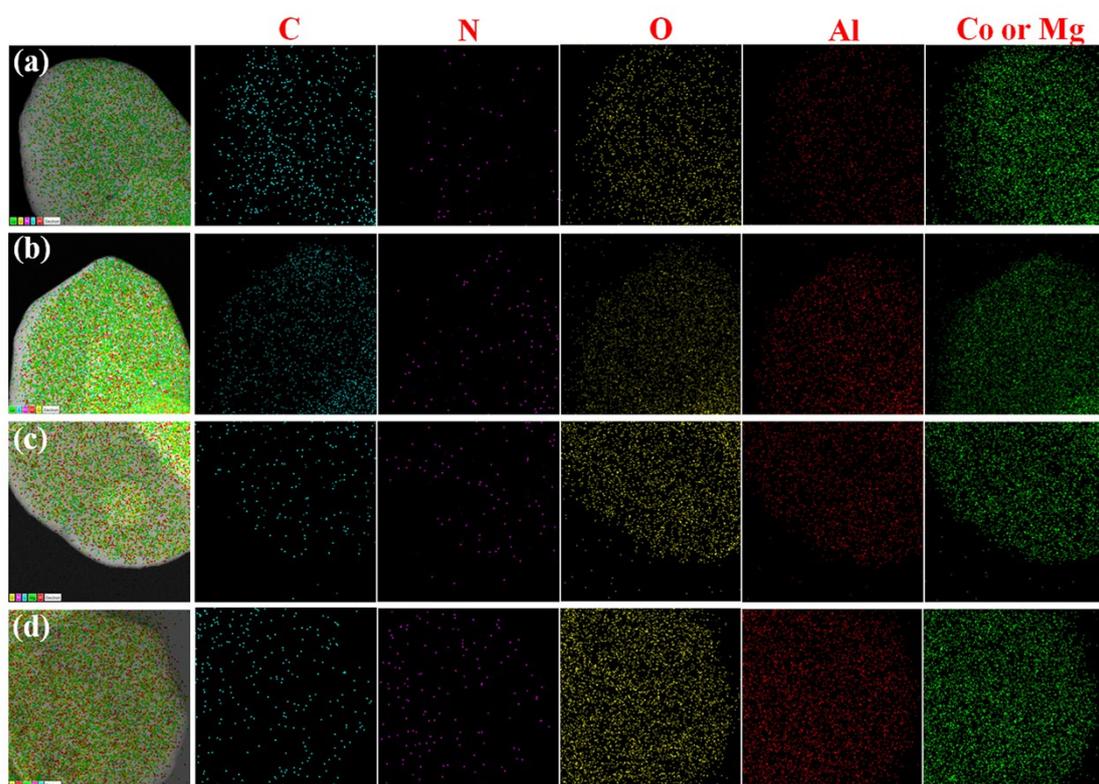


Fig. S3. Elemental mapping data of PDA/LDH nanocomposites; (a) CAN-PD1, (b) CAN-PD2, (c) MAN-PD1, and (d) MAN-PD2.

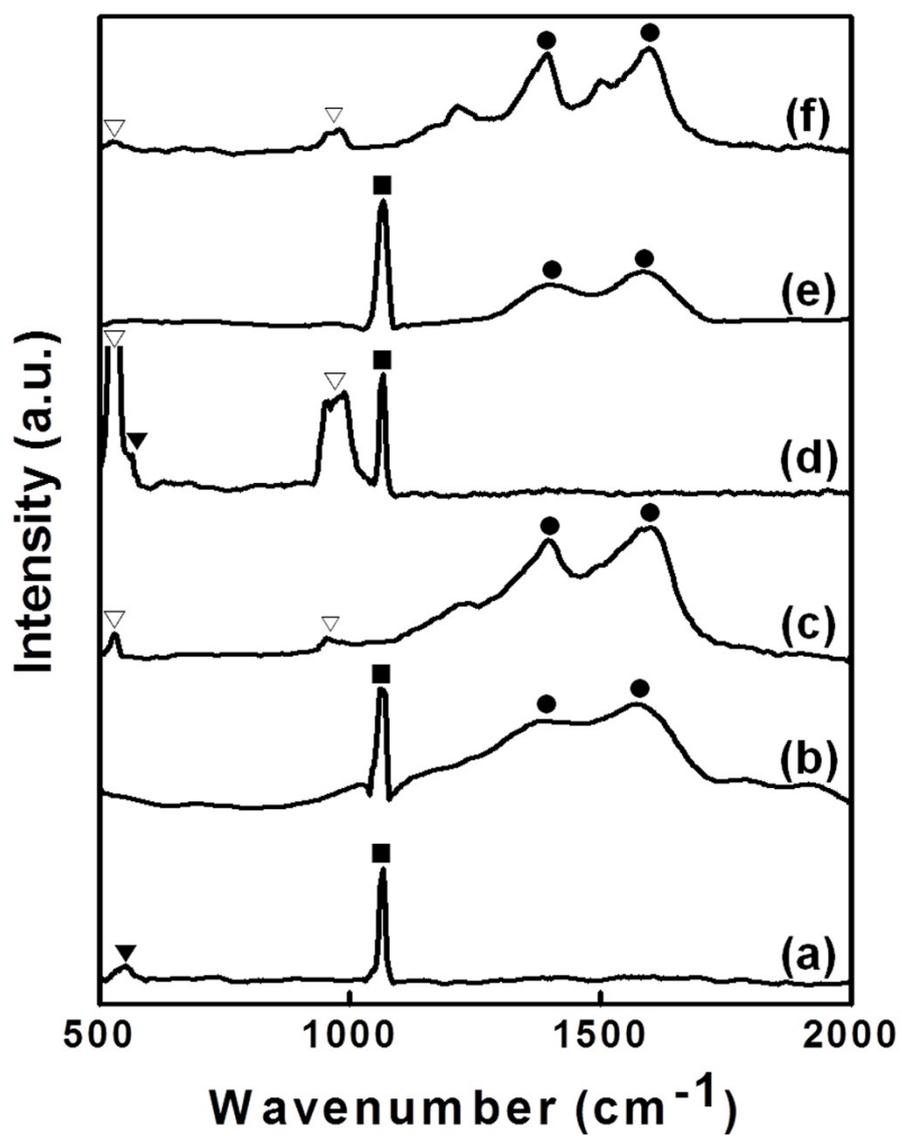


Fig. S4. Raman spectra of PDA/LDH nanocomposites: (a) CAN, (b) CAN-PD1, (c) CAN-PD2, (d) MAN, (e) MAN-PD1 and (f) MAN-PD2 (absorption band of ∇ : silicon, \blacktriangledown : Al-OH, \bullet : PDA, \blacksquare : NO_3^-).

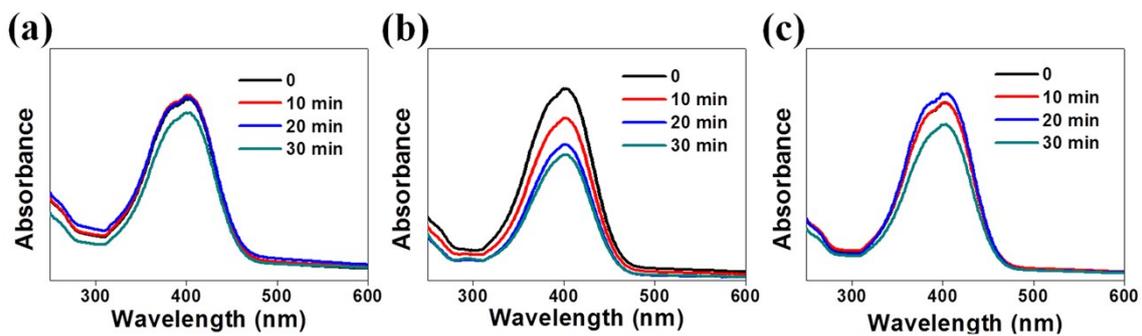


Fig. S5. UV/vis spectra for the reduction of *p*-nitrophenol with excess NaBH₄ using PDA/LDH nanocomposite catalysts: (a) MAN, (b) MAN-PD1, and (c) MAN-PD2.

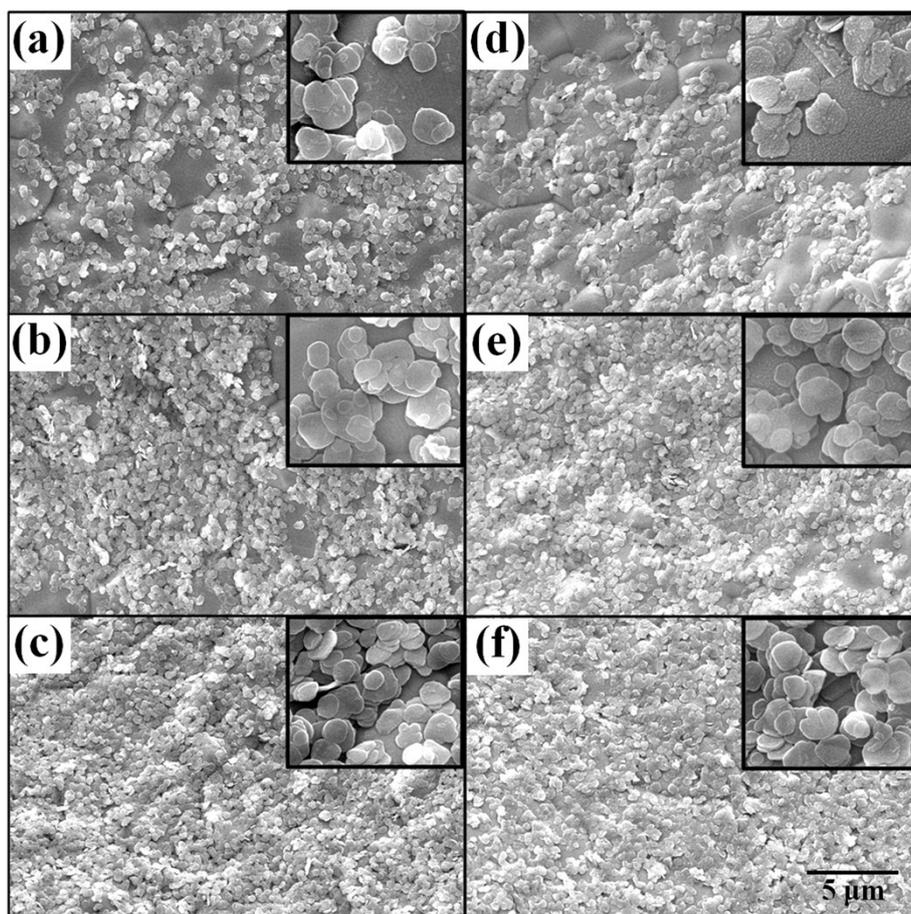


Fig. S6. SEM images of the CAN, CAN-PD1, and CAN-PD2 nanocomposites deposited on the Ni foam electrodes, showing the morphologies before (a-c) and after (d-f) cyclic voltammetry.