Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Electronic Supplementary Information

Well incorporation of carbon nanodots with silicon nanowire arrays featuring excellent photocatalytic performances

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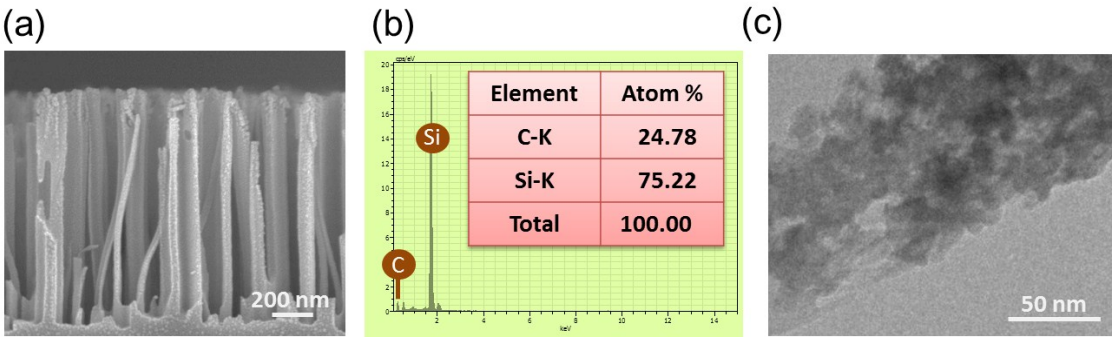

Figure S1 (a) Cross-sectional SEM image of CND/Si nanowire arrays and (b) the corresponding EDS analysized result. (c) TEM image of a as-prepared CND/Si nanowire.

Figure S2 presents the representative cross-sectional SEM images of etched nanowires loaded with Ag and Au nanoparticles. Briefly, the as-prepared Si nanowires were immersed in the aqueous solution containing either $AgNO_3$ (0.005 M) or $HAuCl_4$ (0.005 M) at room temperature for 30 min. After that, the Si nanowire arrays incorporated with metallic ions were withdrawn from solution and subsequently immersed in HF solution (4.8 M) for 20 s. The Si nanowire arrays decorated with Ag and Au nanoparticles were rinsed with DI water and subsequently dried with N_2 gas, as shown in Fig. S2(a) and Fig. S2(b), respectively.

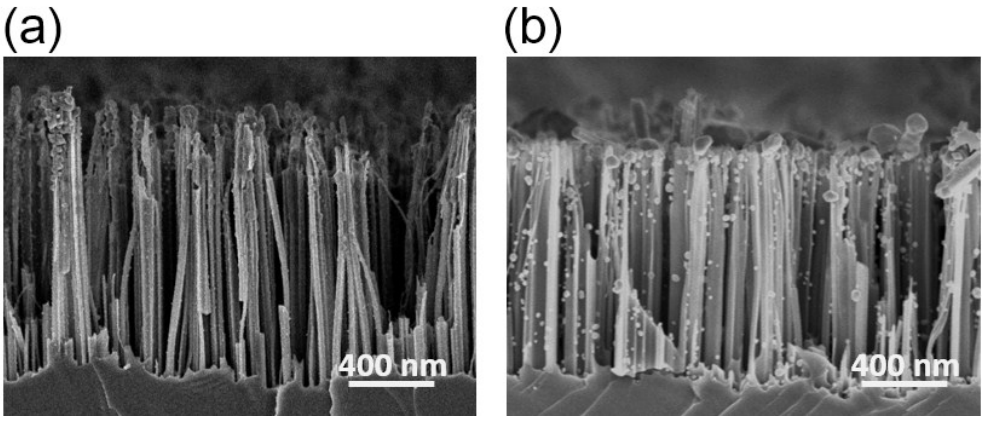

Figure S2 (a) Cross-sectional SEM image of Si nanowire arrays decorated with (a) Ag nanoparticles and (b) Au nanoparticles.

Figure S3 demonstrates the photodegradation results of CND/Si nanowire arrays under 580-nm light illuminations. The remaining phenol molecules were more than 70% after 2-hr illumination process.

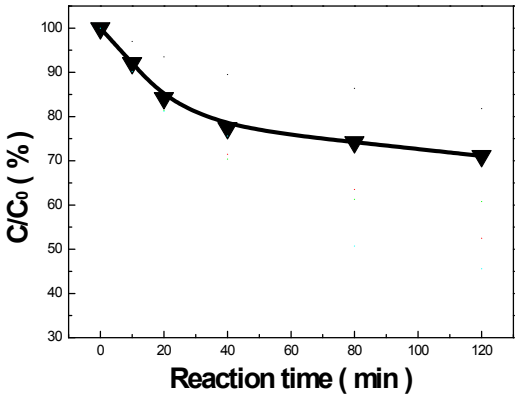

Figure S3 Photodegradation results of CND/Si nanowire arrays obtained through a pressure-induced deposition using phenol as organic targets.