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Mesoporous C, N-Codoped TiO_2 Hybrid Shells with Enhanced Visible Light Photocatalytic Performance

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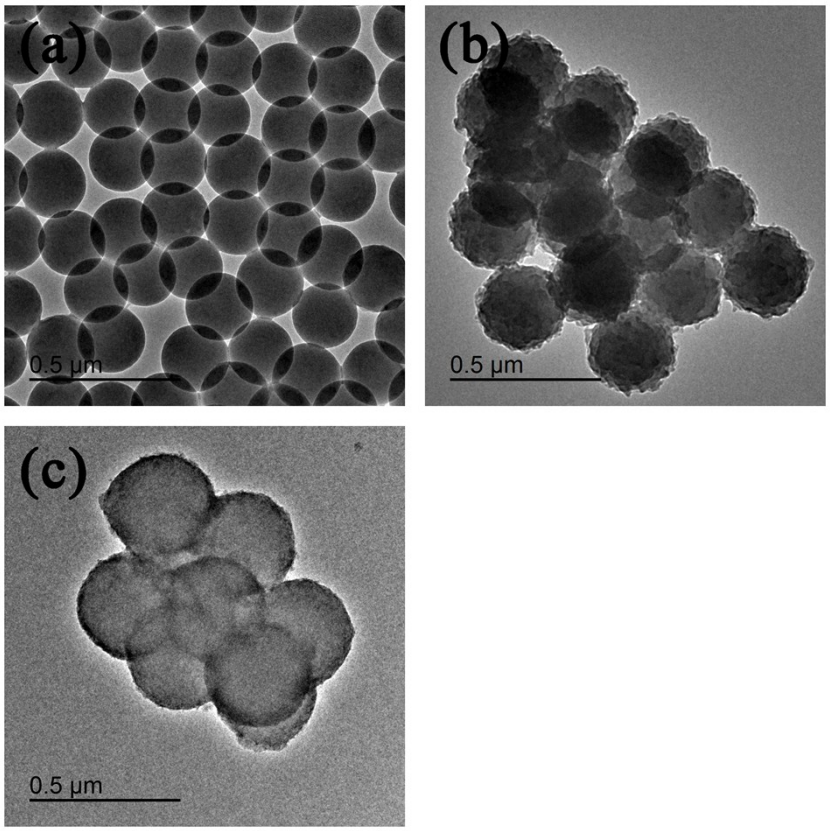

Figure S1 TEM images of (a) PS spheres, (b) PS/PANI hybrids, (c) PS/PANI/TiO_2 hybrids.

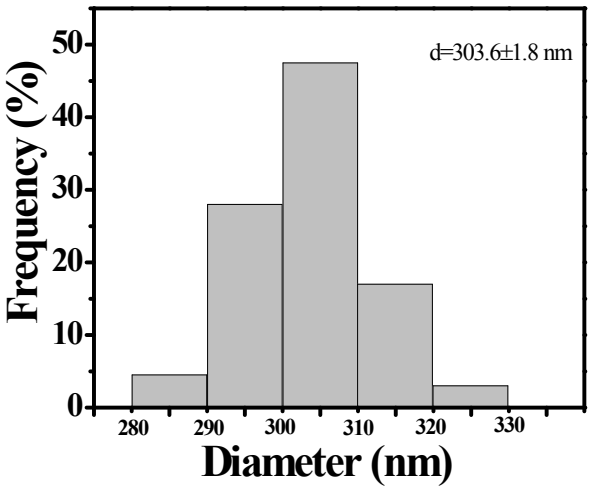

Figure S2 Particle size distribution of C/N-TiO_2(600) hybrid shells from a statistical study of the TEM images.

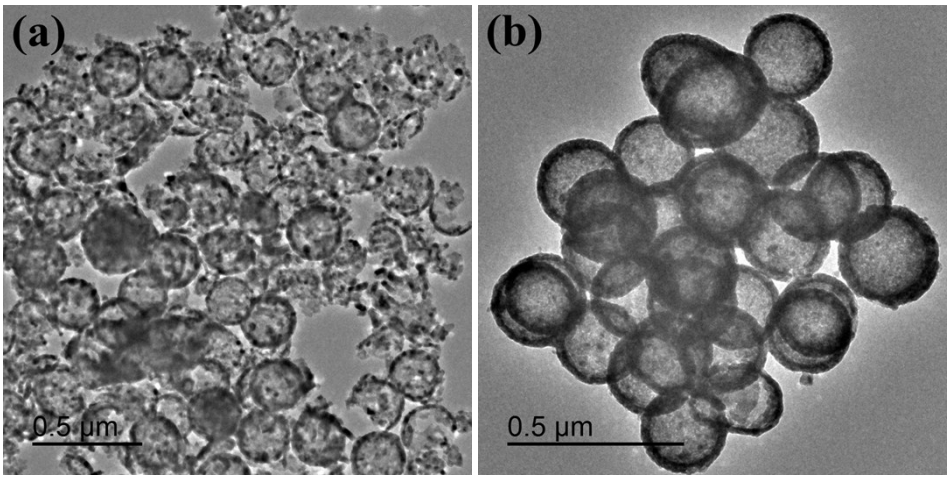

Figure S3 TEM images of (a) TiO_2(600) hollow spheres and (b) C-TiO_2(600) hybrid shells.

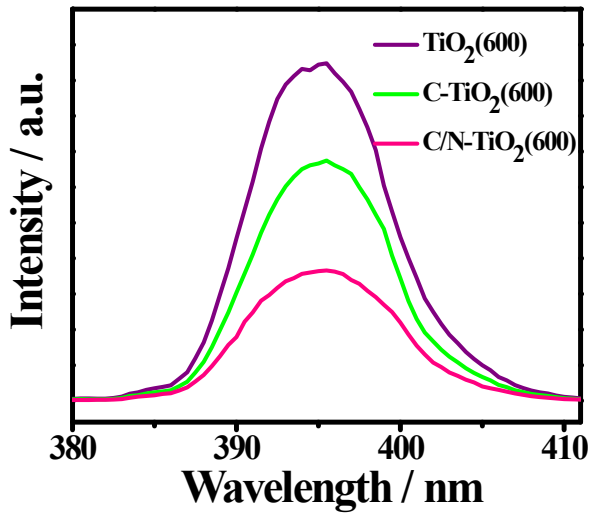

Figure S4 PL spectra of TiO_2(600) hollow spheres, C-TiO_2(600) and C/N-TiO_2(600) hybrid shells.

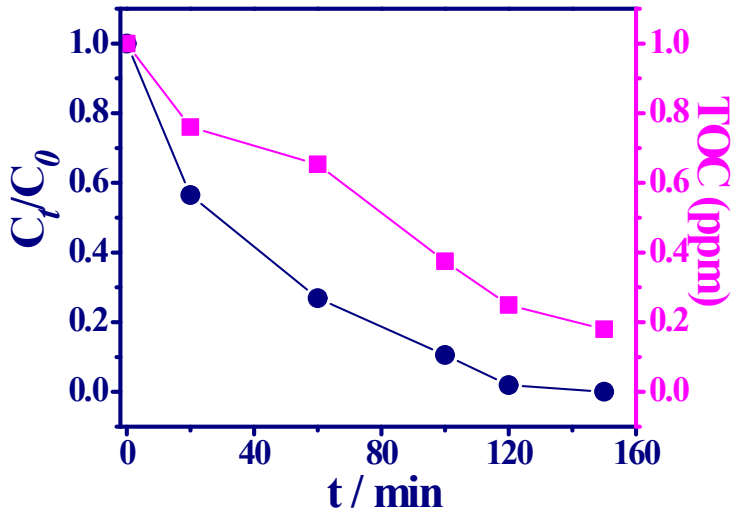

Figure S5 Evolution of RhB concentration and TOC values of reaction solution with reaction time under visible light using C/N-TiO_2(600) hybrid shells as photocatalysts.

Table S1 Content of C, N and TiO_2 in TiO_2(600) hollow spheres, C-TiO_2(600), and C/N-TiO_2(600) hybrid shells.

Samples	TiO_2 (wt%)	C (wt%)	N (wt%)
TiO_2(600)	100	0	0
C-TiO_2(600)	85.9	14.1	0
C/N-TiO_2(600)	85.0	13.9	1.1

Table S2 Comparison of photocatalytic activities on dye degradation using different C or/and N doped TiO_2 photocatalysts under visible light irradiation.

Sample	Dye degradation (min^{-1})	Ref
N doped TiO_2 powder	0.00446	1
N doped TiO_2 nanofibers	0.0065	2
GR-N/TiO_2 composite	0.0154	3
N doped TiO_2 powder	0.0040	4
C-TiO_2(600) hybrid shells	0.0138	this work
C/N-TiO_2(600) hybrid shells	0.0222	this work

Table S3 TOC result for the degradation of RhB using C/N-TiO_2(600) as catalyst under visible light.

Time (min)	0	20	60	100	120	150
TOC (ppm)	11.28	7.984	6.852	3.941	2.813	1.885

Reference

1. Y. L. Kuoa, T. L. Su, F. C. Kung and T. J. Wu, *J. Hazard. Mater*. 2011, **190**, 938-944.
2. H. P. Li, W. Zhang, S. Y. Huang and W. Pan, *Nanoscale* 2012, **4**, 801-806.
3. N. R. Khalid, E. Ahmeda, Z. L. Hong, Y. W. Zhang and M. Ahmad, *Current Appl. Phys.* 2012, **12**, 1485-1492.
4. T. L. Su, Y. L. Kuo, T. J.Wu and F. C. Kung, *J. Chem. Technol. Biotechnol.* 2012, **87**, 160-164.