

Supporting information

Multi-components in-situ and in-step formation of response visible-light C-dots composite TiO₂ mesocrystals

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1 Preparation of C-dots/P25

(1) Preparation of C-dots:

The preparation of C-dots used a modified method reported by Liu et al¹. 1g L-ascorbic acid was added into 50 ml ethanol and stirred, after then the mixture was transferred into Teflon-lined stainless autoclave and kept 4h at 180°C, the solution was collected and denoted as CDs.

(2) Preparation of C-dots/P25 composite:

C-dots/P25 composite was prepared following a two-step method reported by Zhang et al². 1g P25 was mixed with 10ml CDs solution and 20ml deionized water thoroughly and stirred for 12h at room temperature. Then the mixture was transferred into Teflon-lined stainless autoclave and kept at 140°C for 4h. After centrifugation and vacuum drying at 40°C for another 12h, the solid product was achieved.

2 The photocatalytic experiment for C-dots/P25 was carried out using the same procedures for the sample A-F.

1. B. Zhang, C.-y. Liu and Y. Liu, *Eur. J. Inorg. Chem.*, 2010, **2010**, 4411-4414.
2. H. Yu, Y. Zhao, C. Zhou, L. Shang, Y. Peng, Y. Cao, L.-Z. Wu, C.-H. Tung and T. Zhang, *J. Mater. Chem. A*, 2014, **2**, 3344.