

Supporting Information for
Facile preparation of micro-mesoporous carbon-doped TiO₂ photocatalysts with anatase crystalline walls under template-free condition

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Fig. S1 Wide-angle XRD pattern of TiC nanopowders (TiC nanopowders are of khamrabaevite phase (PDF No. 32-1383). The average grain size, calculated from the full width at half-maximum (FWHM) of main diffraction peak (200) by the Scherrer equation, is about 26 nm.)

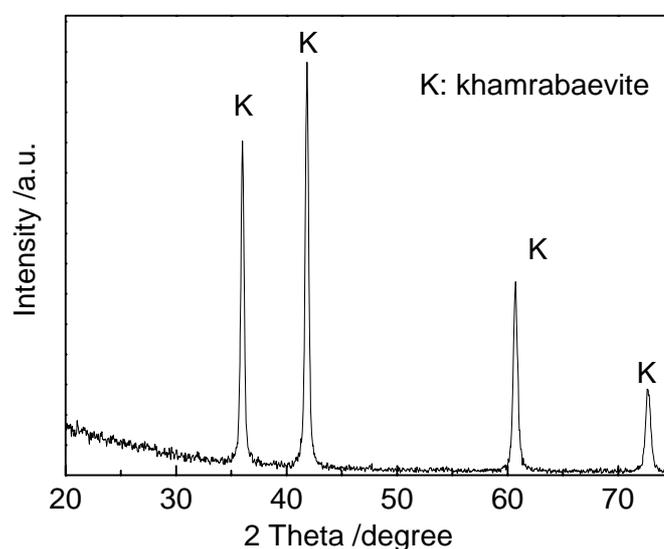


Fig. S2 Cumulative surface area vs. pore width

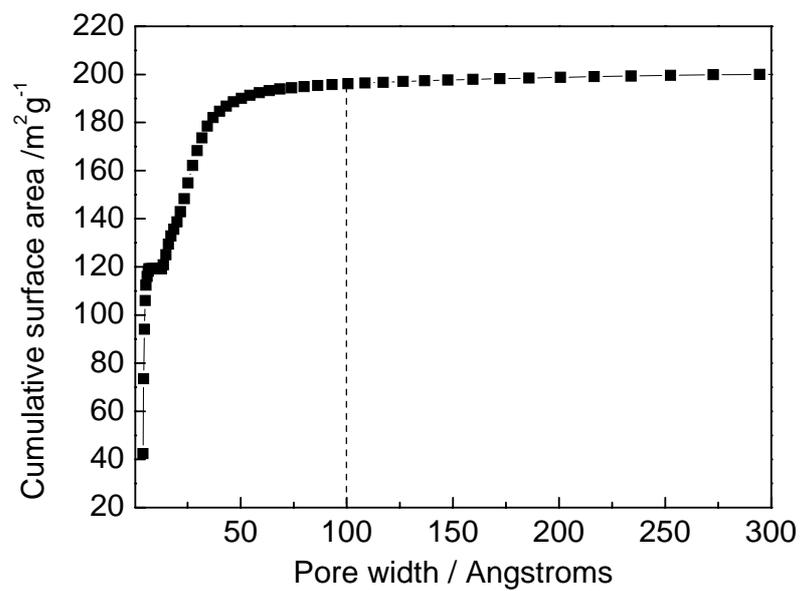


Fig. S3 Wide-angle X-ray diffraction pattern of MC-TiO₂ (MC-TiO₂ is of anatase phase (PDF No. 84-1286). The average grain size, calculated from the full width at half-maximum (FWHM) of main diffraction peak (101) by the Scherrer equation, is around 3-5 nm.)

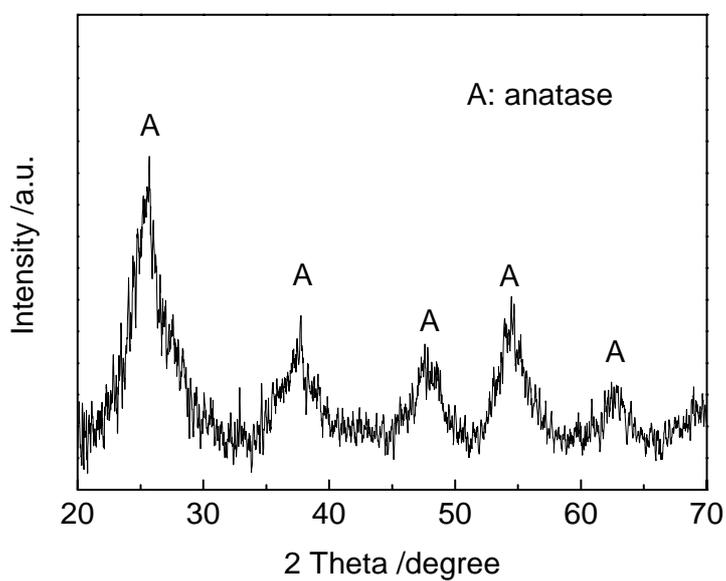


Fig. S4 A representative TEM overview image of MC-TiO₂ particles

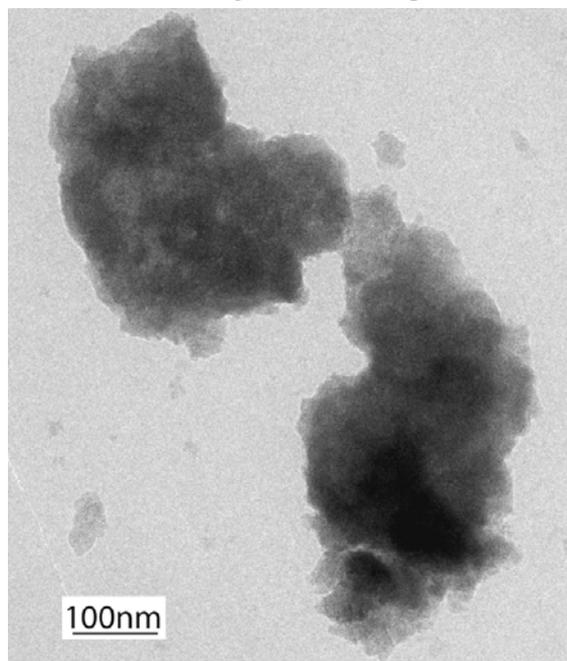


Fig. S5 X-ray photoelectron spectroscopy (XPS) survey spectrum of MC-TiO₂

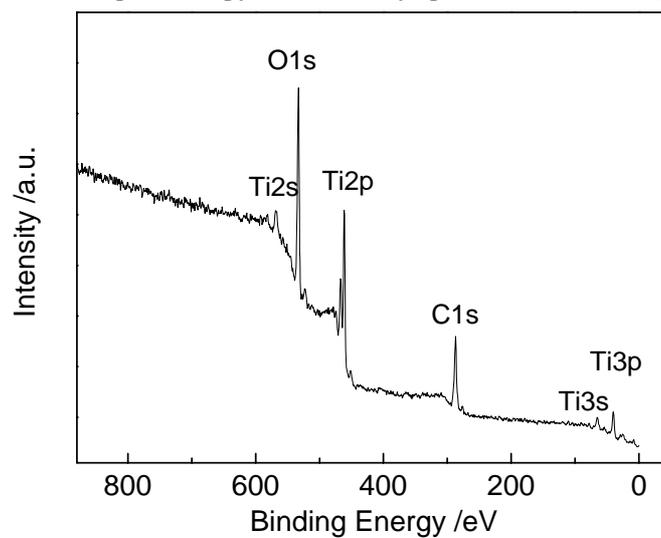
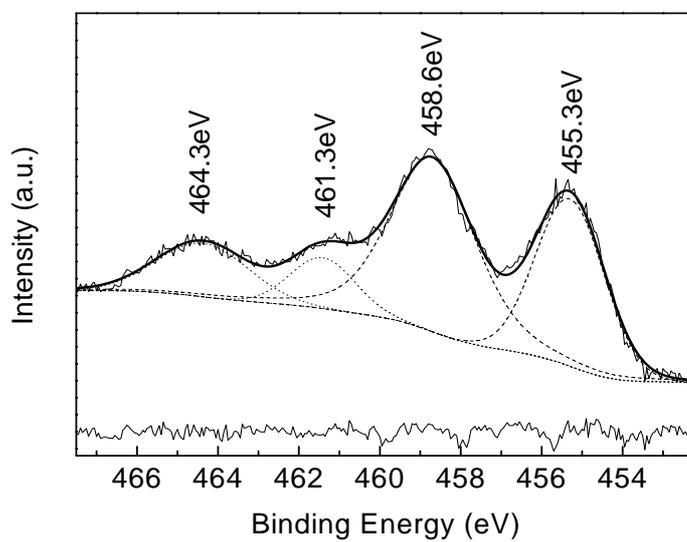


Fig. S6 Ti2p XPS spectrum for TiC nanopowders



Preparation of R-TiO₂: R-TiO₂ was prepared through the controlled hydrolysis of Tetrabutyl titanate in deionized water. A 5.0 mL sample of tetrabutyl titanate, dissolved in isopropyl alcohol with the volume ratio of 1:9, was added dropwise to 500 mL aqueous solution at pH 2.0 (adjusted with HNO₃) under vigorous stirring at room temperature (about 20 °C). After continuous stirring for 24 h and then evaporating at 50 °C, as-prepared products were collected. R-TiO₂ powders were obtained after calcinating at 500 °C for 3h in air. The XRD analysis reveals that R-TiO₂ is only of anatase form.

Table S1 The BET specific surface areas and vis-photocatalytic activities of the five batches of MC-TiO₂ samples for the reproducibility of the synthesis method (Five batches of samples (MCT1, MCT2, MCT3, MCT4, MCT5) have been prepared five times under the same condition as described in the fourth paragraph of the main text. The relative concentration of MB was obtained at 270min after turning on the irradiation source.)

Samples	S _{BET} (m ² /g)	C/C ₀ (%)
MCT1	238.3	15.6
MCT2	221.3	16.0
MCT3	253.8	13.3
MCT4	223.1	15.7
MCT5	246.7	14.6