

SUPPORTING INFORMATION

Synthesis of Hierarchical Anatase TiO₂ Nanostructures with Tunable Morphology and Enhanced Photocatalytic Activity

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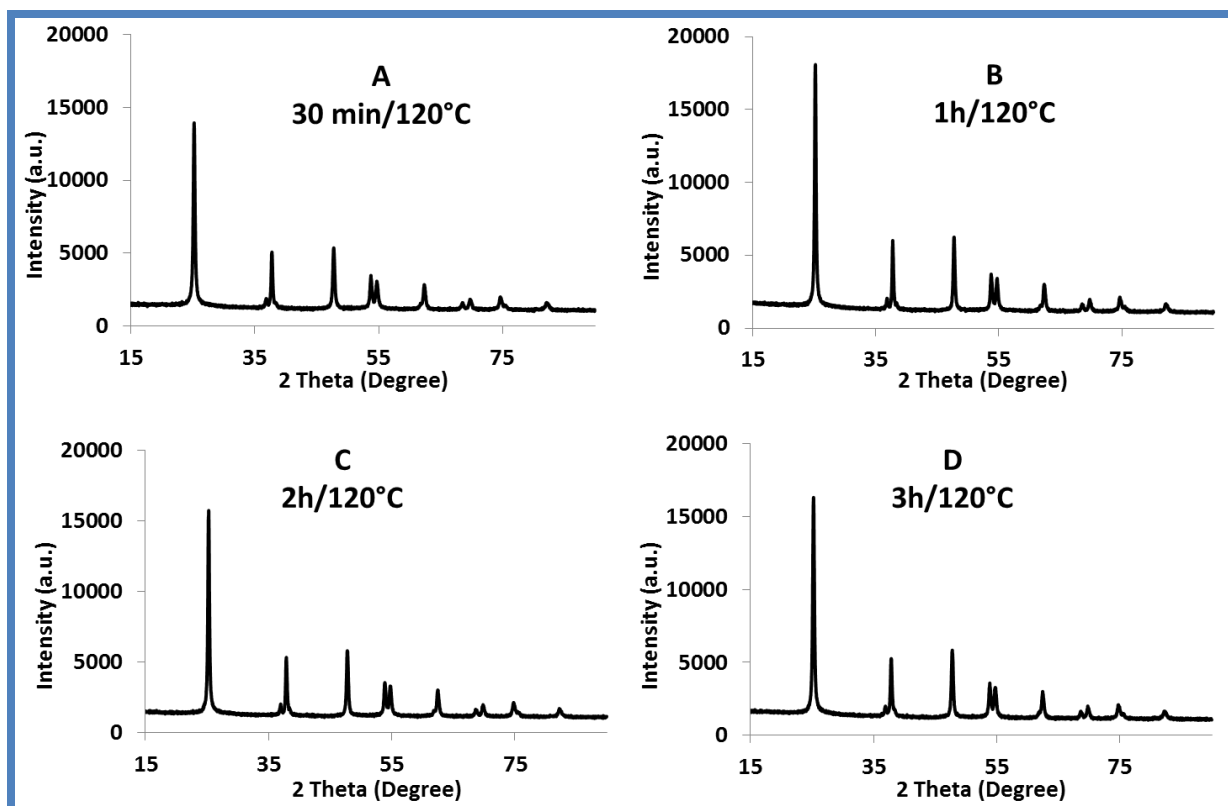


Figure S1. XRD pattern of TiO₂ nano-structures nano-structures obtained after microwave irradiation at 120°C for respectively A) 30 min; B) 1h; C) 2h and D) 3h (TiO₂-II).

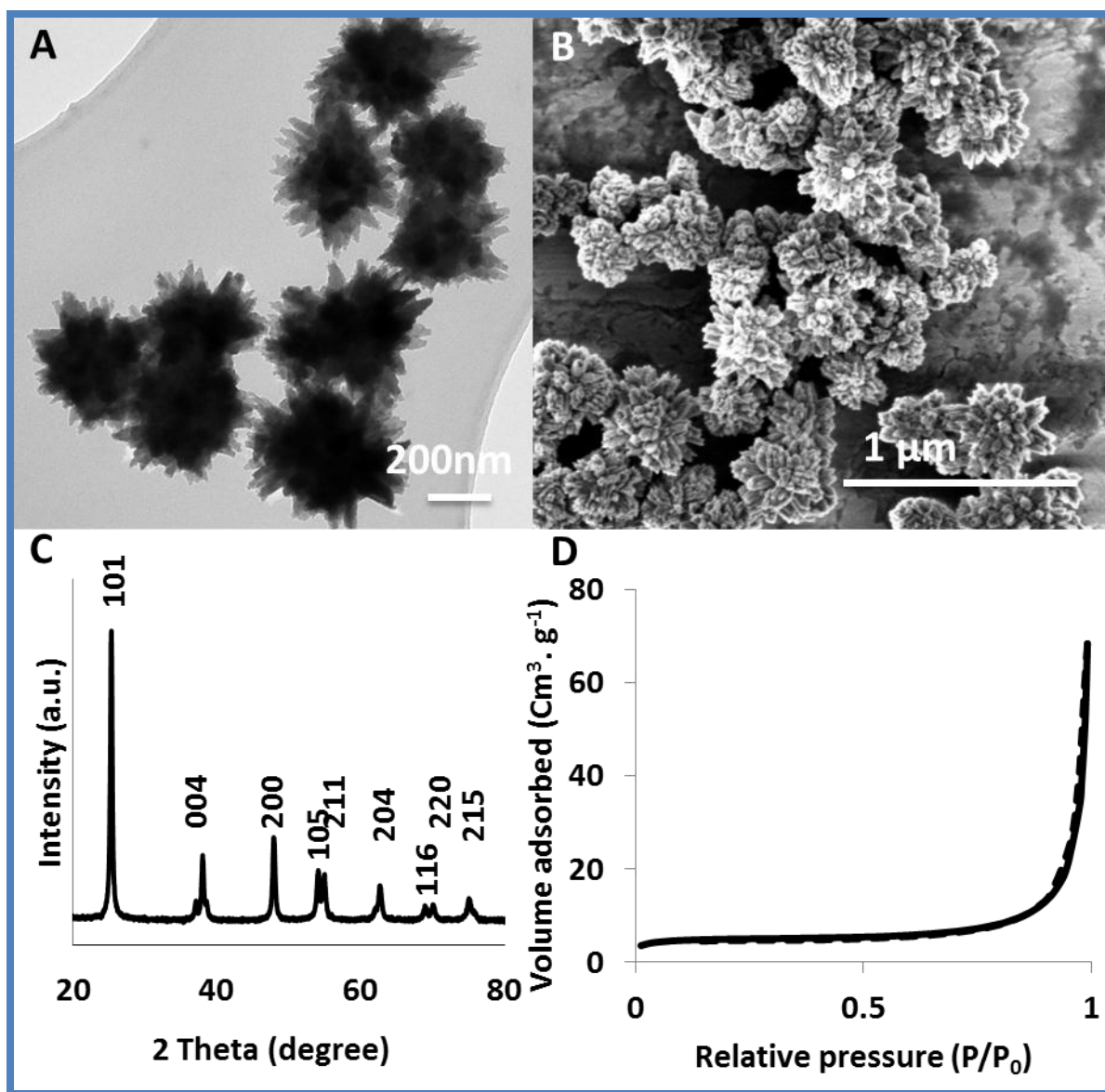


Figure S2. (A) TEM, (B) SEM, (C) XRD and (D) N₂ adsorption-desorption isotherm of the TiO₂-III.

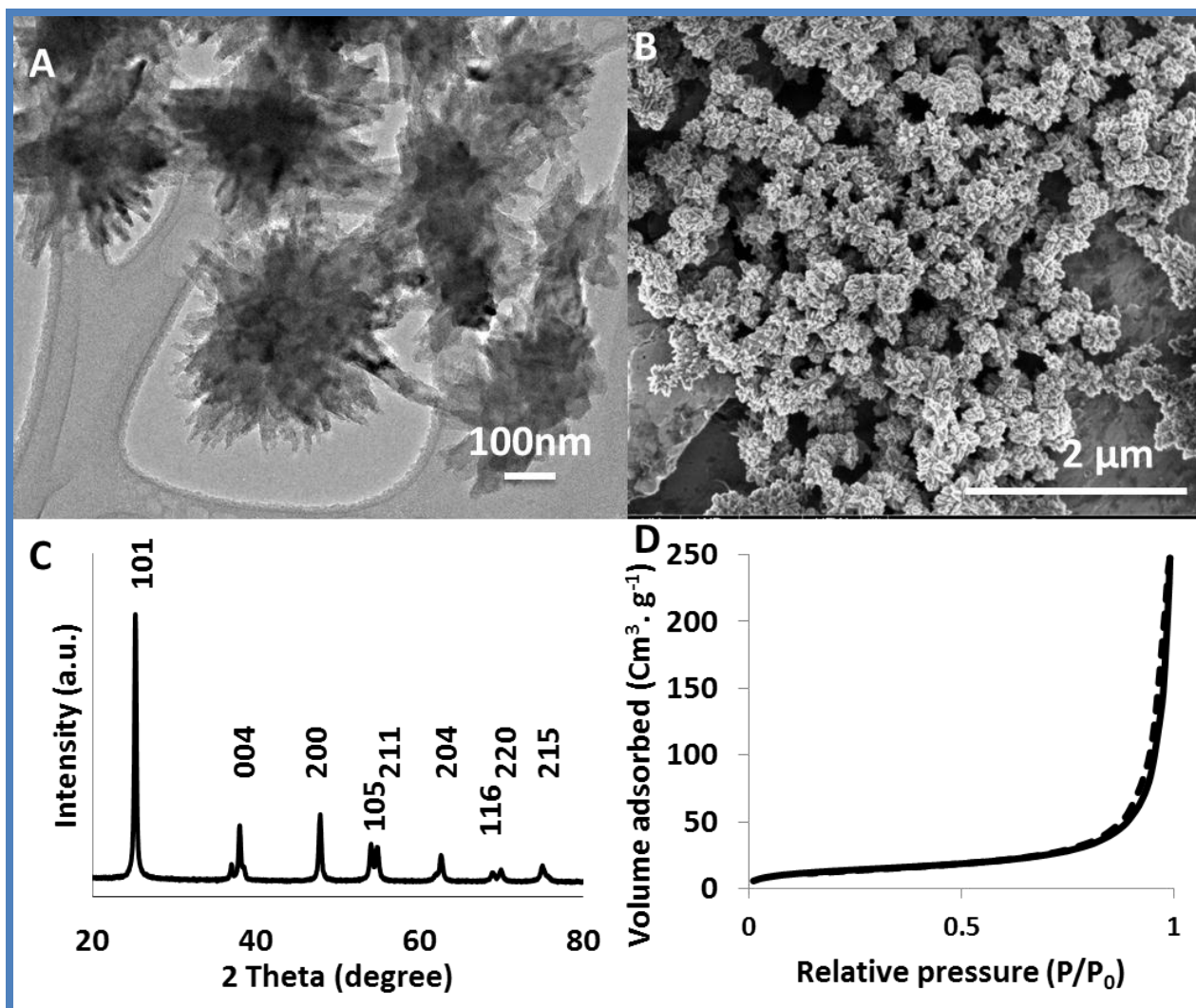


Figure S3. (A) TEM, (B) SEM, (C) XRD and (D) N₂ adsorption-desorption isotherm of the TiO₂-IV.

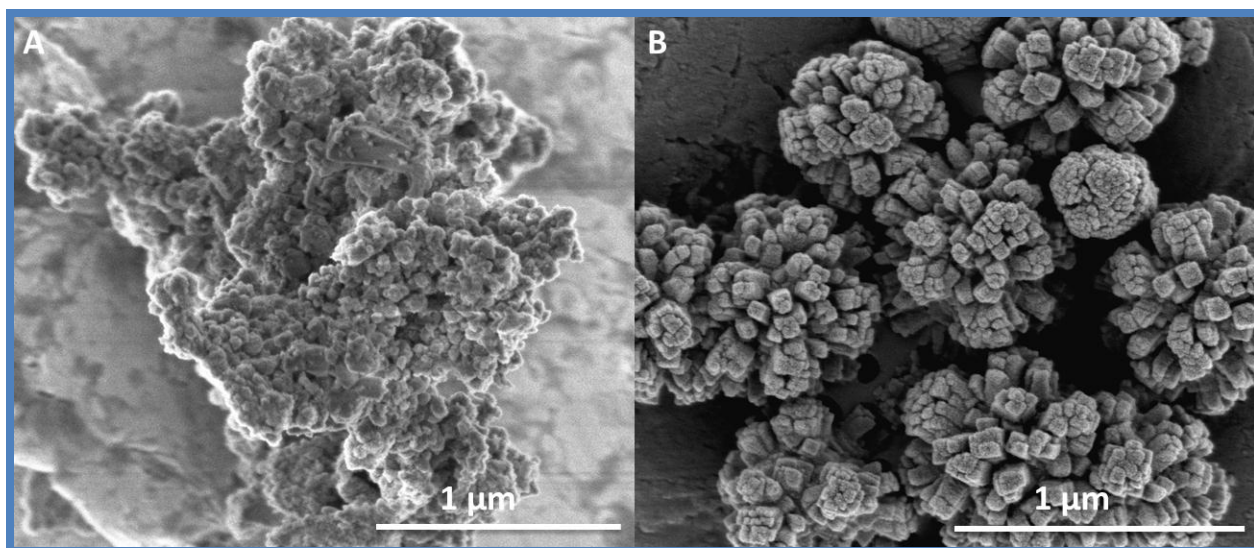


Figure S4. SEM images of TiO₂ nanostructures obtained after microwave irradiation at 120°C A) Without CTAB; B) only in pure water without using urea, pentanol and cyclohexane (TiO₂-V).

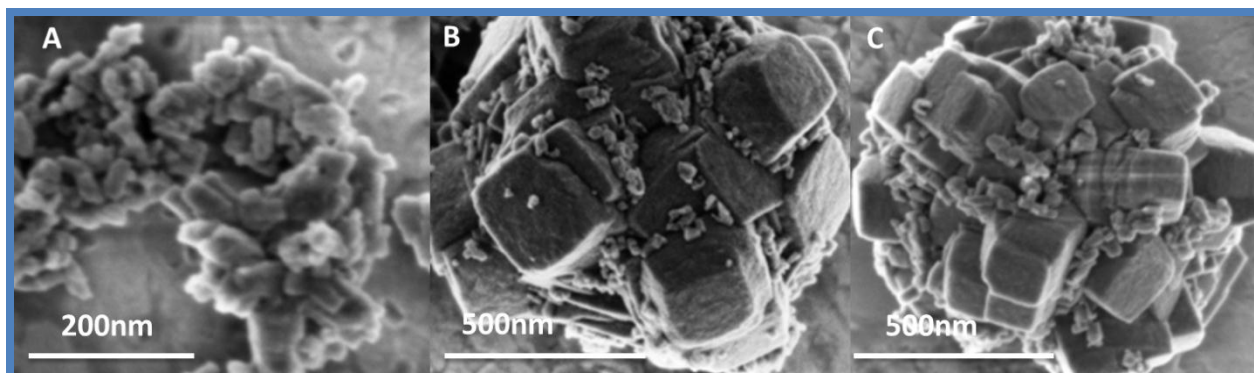


Figure S5. SEM images of the samples obtained in an autoclave after heating at 120°C a) 5 h; b) 10 h and c) 18 h.

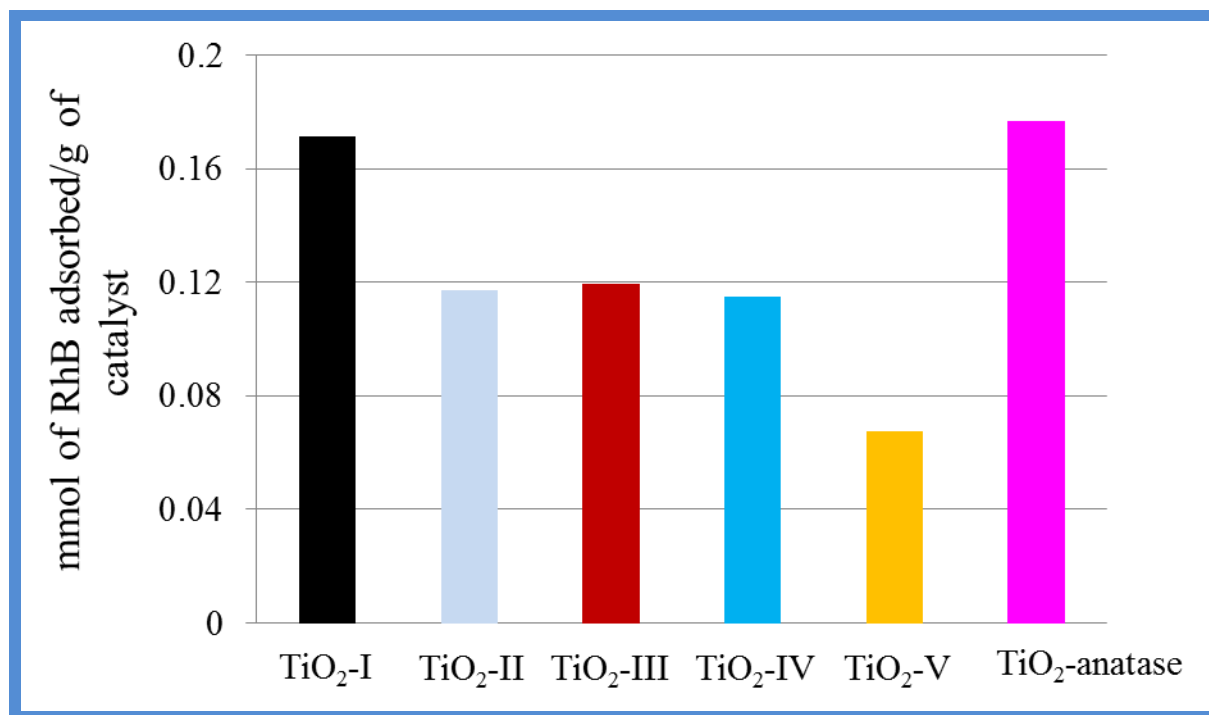


Figure S6. Adsorption amount of RhB per weight of catalyst, in photocatalytic degradation test of RhB in UV light.

Figure S6 shows adsorption amount to RhB on the various synthesized catalysts. TiO₂-I shows higher adsorption than its other versions, which indicates that surface morphology also plays the role for the adsorption of reactant. Thus, RhB molecules enriched more around TiO₂-I as compare to others, which in turn helped for its better catalytic performance.

Interestingly, standard TiO₂-anatase shows similar adsorption as that of TiO₂-I, but it has much lower photocatalytic activity. This again indicates the key role of shape and morphology of nanostructured TiO₂ in deciding its photocatalytic activity.