One-Step Template-free Synthesis of $BaSb_2O_6$ Micro-flowers and Their Associated Photocatalytic Activity

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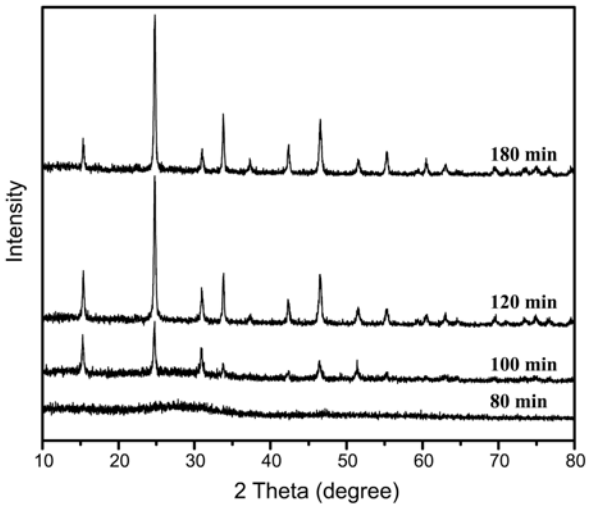

Figure S1. XRD patterns of the R-$BaSb_2O_6$ formed during different reaction time

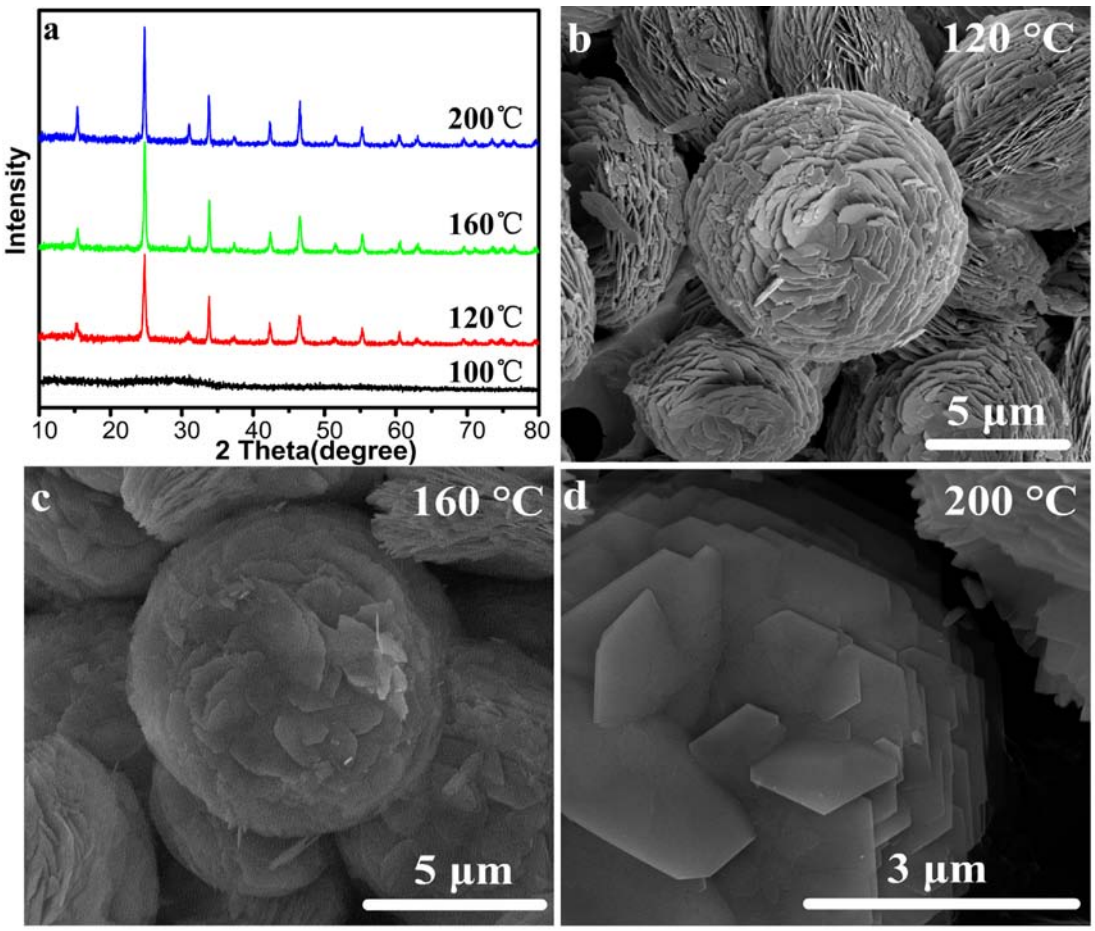

Figure S2. XRD patterns of the R-$BaSb_2O_6$ synthesized at different temperatures (a), variation of R-$BaSb_2O_6$ morphologies with reaction temperature from 120 to 200 °C (b) ~ (d).

The reaction temperature related variation of R-$BaSb_2O_6$ morphologies is investigated. As shown in Figure S2, the rose-flower-like 3D hierarchical structures can be obtained at the range of 120~200 °C reacting for 48 hr at pH=3. However, only the samples synthesized at 200 °C shows the clear edges and sharp angles. While the samples synthesized at 160 °C and 120 °C are round and their edges are fuzzy. So, all the other samples in this paper were synthesized at 200 °C.

Table S1 The scales of samples synthesized at different pH values of precursor solution at 200 °C for 48 hr

pH values	1	2	3	4	5
Scale of the hexagonal plate or the hierarchical structures[1] (μm)	16	11	7	8	7
Thickness of one layer (μm)	1	0.7	0.1	0.1	----

1 Length of the longest diagonal of the hexagonal plate or the diameter of the hierarchical structures (μm).

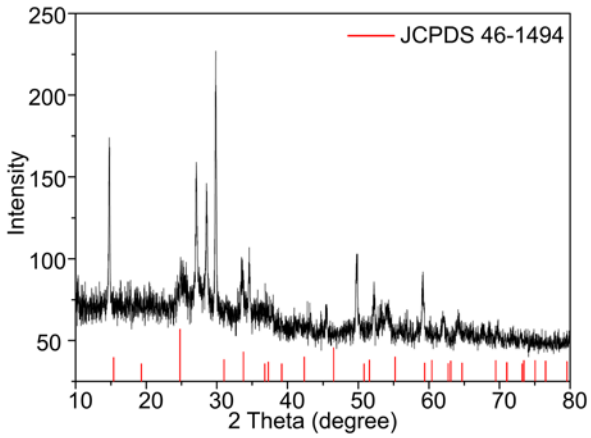

Figure S3. XRD pattern of the white precipitate at 200 °C with pH=0.5 for 48 hr.

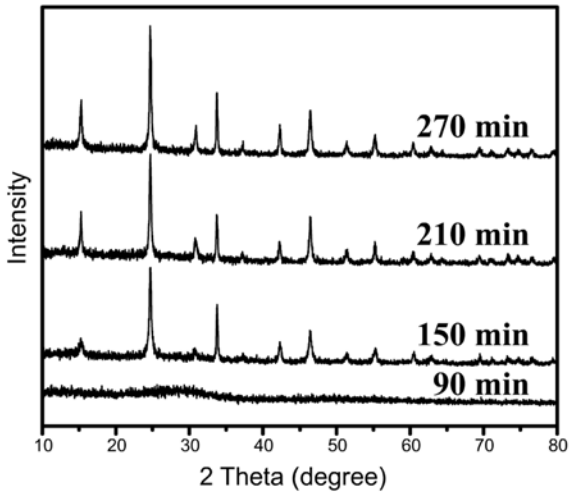

Figure S4. XRD patterns of M-$BaSb_2O_6$ formed during different reaction time.

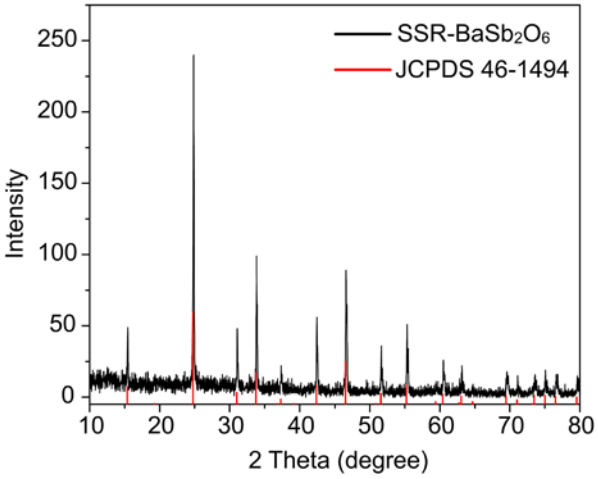

Figure S5. XRD pattern of SSR-$BaSb_2O_6$

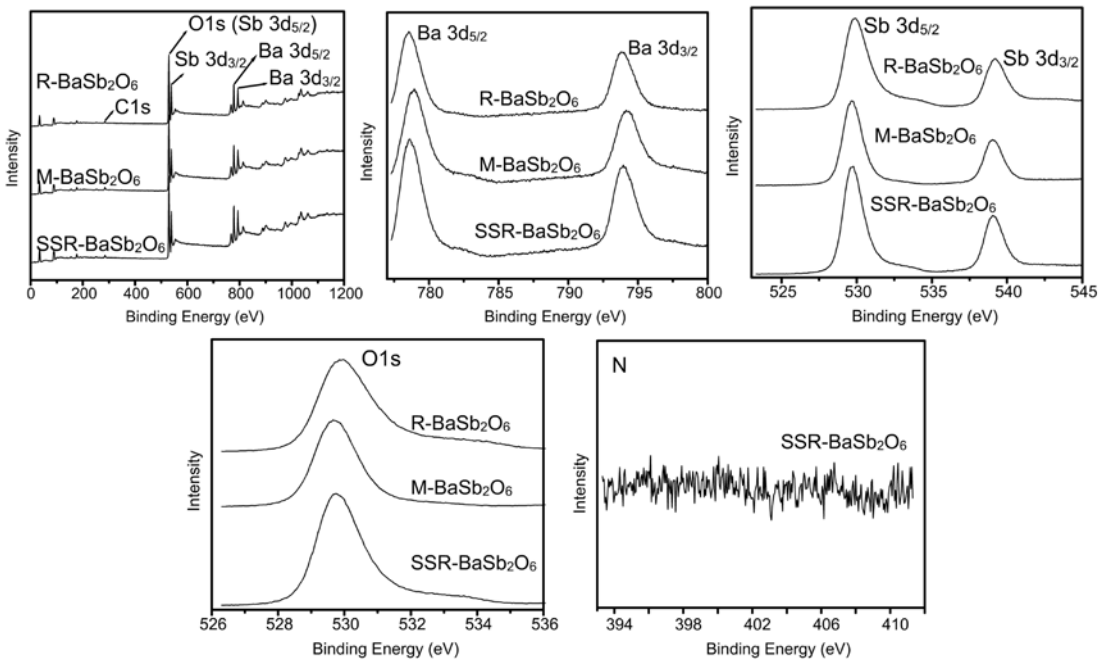

Figure S6 XPS of SSR-$BaSb_2O_6$ and flower-like $BaSb_2O_6$

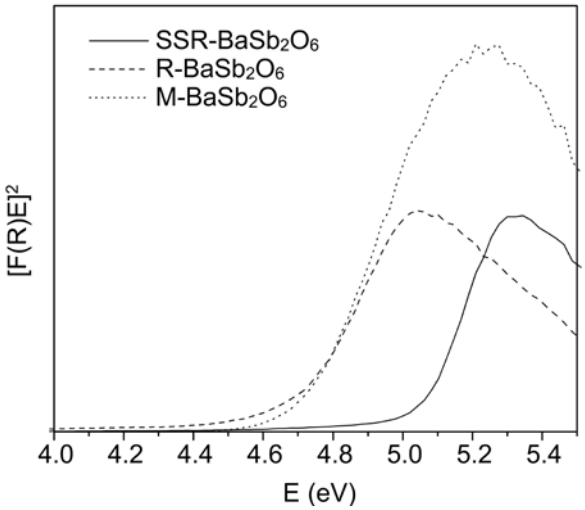

Figure S7 DRS of flower-like $BaSb_2O_6$ and SSR-$BaSb_2O_6$