Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information

The synthesis of 3D InN architectures via chemical vapor deposition and their optical properties

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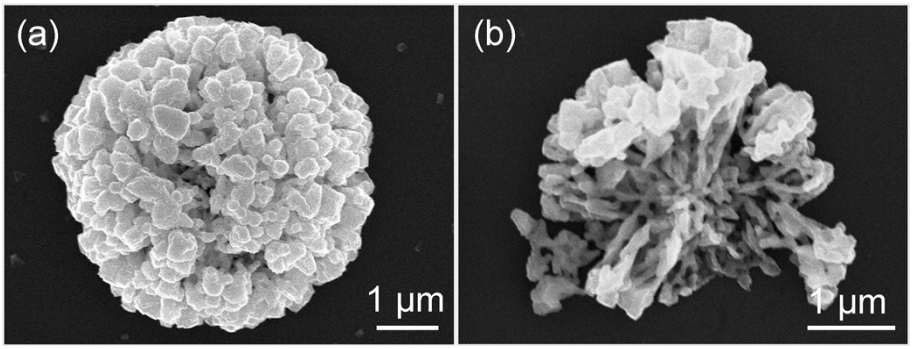

Fig. S1 The typical high-magnification SEM images of (a) the intact and (b) the broken InN microsphere.

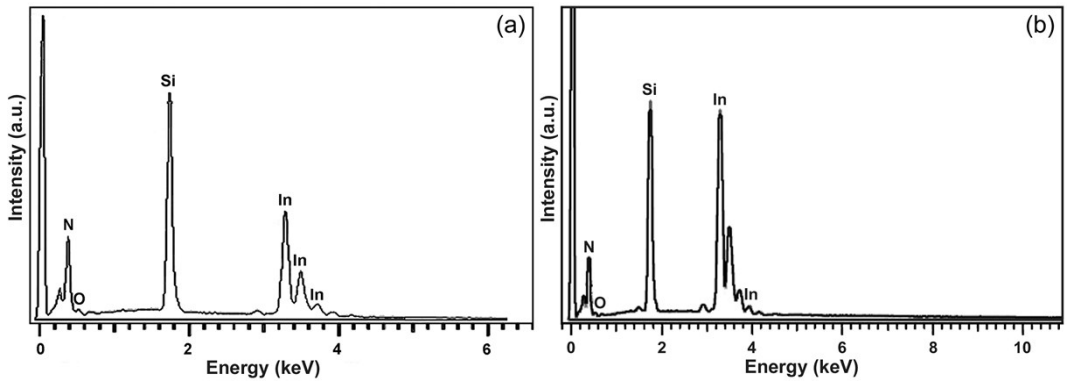

Fig. S2 The EDS spectra of (a) the InN microspheres and (b) the split octahedron-like microstructures.

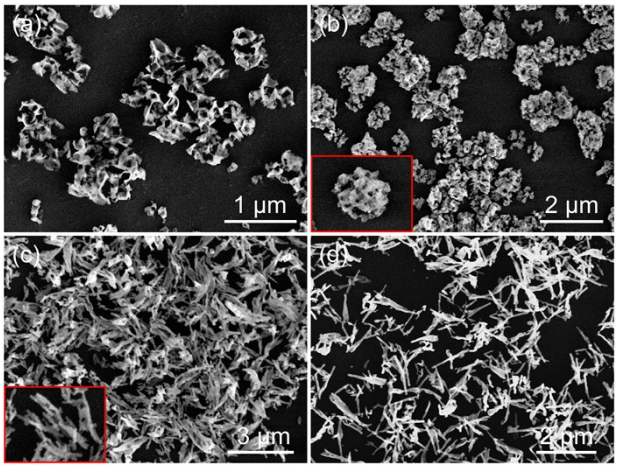

Fig. S3 SEM images of the InN nanostructures grown at the flow of the ammonia of (a) 200 sccm, (b) 250 sccm (inset: the corresponding high-magnification SEM image), (c) 350 sccm (inset: the corresponding high-magnification SEM image), (d) 400 sccm.

To investigate the role of nitrogen concentration in the formation of the two microstructures, the controlled experiments of the growth process with different flow rate of the ammonia had been carried out, keeping other experimental conditions constant. When the flow rate of ammonia was set at 200 sccm, some irregular InN network-like architectures were observed (Fig. S3a). As shown in Fig. S3b, upon the flow of 250 sccm, the obtained products consisted of irregular micrometer particles aggregated from dozen of nanoparticles. As the flow rate of the ammonia was increased to 350 sccm, the InN nanowires bundles is obtained (Fig. S3c). If the flow rate of the ammonia was further increased to 400 sccm, the samples completely consisted of monodisperse nanowires, as shown in Fig. S3d. According to the above

results, it can be concluded that nitrogen concentration has a decisive influence on the morphology of different InN architectures.