

Abstract Submitted  
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**Novel ZnO nanostructures grown by the templation of SiO<sub>2</sub> photonic crystals** HSIA YU LIN, YANG FANG CHEN, Department of Physics — ZnO nanostructures were grown on assembled silica nanoparticles by vapor-liquid-solid (VLS) method. It is found that high aspect ratio of nanotips can be obtained. Besides, the nanotips can only be grown along some restricted axial orientations. As the tip length increases, the tip shape gradually transfers from hexagonal to circular. The optical measurements show that in addition to the band edge emission, two defect states are found, which locate at different regions along the growth direction. Moreover, we show that the ZnO nanotips exhibit an excellent waveguide for steering light beam generated from the Tb nanoparticle incorporated in the central core of SiO<sub>2</sub> particle. Therefore, it is pointed out that the core-shell Tb- SiO<sub>2</sub> with the growth of ZnO nanotips on its surface can act as an optical hub.

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