

## VAPOUR PHASE GROWTH OF SILICON CARBIDE BASED NANOSTRUCTURES

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Several techniques have already been developed for synthesising silicon carbide (SiC) material in the form of nanospheres and nanowires/rods. Here, we report the synthesis of a distinctly different kind of SiC nanostructure in the form of three-dimensional crystalline nanowire based flower-like structures and arrays of coaxial rods. Interest in such structures centres around the combination of a simple growth process based on SiC nanowire formation, with a resultant complex structure having potentially complex mechanical and optical properties; the latter a consequence of the wide band gap of bulk SiC. The synthesis of these SiC nanostructures is via a vapour-liquid-solid (VLS) process, on which a detailed study of both the chemical and structural composition has been carried out. In addition, we demonstrate the unique physical properties of the films through a photoluminescent study of the optical properties and a dynamic wetting study of the surface chemical/mechanical properties.