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Synthesis of Anisotropic CdS Nanostructures via a Single-Source Route

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ABSTRACT

A cadmium tetrahydroisoquinoline dithiocarbamate (DTC) complex has been used as single-source precursor for the synthesis of highly faceted hexadecylamine (HDA) capped CdS nanoparticles. Hexagonal and close to cubic shaped particles with distinct lattice fringes are visible in the high resolution transmission electron microscopy images. Crystalline particles in the shape of a hexagon are clearly visible in the high resolution TEM images. The X-ray diffraction pattern of the particles is indexed to the stable wurtzite phase of CdS. The optical absorption spectrum of the particles is blue shifted from bulk CdS and the photoluminescence (PL) spectrum shows a relatively narrow emission peak.