Synthesis of hexagonal close-packed nickel nanoflowers

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Three-dimensional (3D) hexagonal close-packed (hcp) nickel flower-like nanocrystals with average diameter of about 200 nm and the petal thickness between 20-30 nm were synthesized by the thermal decomposition of nickel salt in hot organic solvent. The shape and size control of the hcp Ni nanocrystals could be achieved by simple variations of the reaction time and precursor concentration. In the growth process, the core for nanorod is initially formed, followed by anisotropic growth into a petal that further grows to nanoflower. The petal of the hcp Ni nanoflower exhibit a crystallize direction are preferentially grown along [001] zone axis. The magnetic properties of the flower-like hcp Ni nanocrystals were characterized by SQUID and show antiferromagnetic behavior.

References: