

Synthesis of shape-controlled nickel HCP hourglass nanoparticles

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Shape-controlled nanoparticles (NPs) used to be synthesized with novel metals like platinum, palladium, gold and silver. But most of synthetic strategies about shaped metallic nanoparticles cannot be successfully accepted into other 3d transition metal species like iron, copper, nickel, etc. Because these transition metals usually have poor stability for oxidation so they were usually shape-controlled as metal oxides. One of these transition metals, nickel is considered as a promising alternative in various catalytic reactions since its catalytic property and abundance. Besides, nickel also has size-dependent superparamagnetism so it has potential to be applied to drug delivery system. For that needs, Ni nanoparticles had been synthesized and shape-controlled. but nickel is also easy to be oxidized so only some systems could shape-control the metallic nickel nanoparticle successfully. In this research, we could successfully synthesize Ni NPs with unique shape of hourglass and they also has a hexagonal closed-packing structure not a face-centered cubic.