

SILICA-COATED COBALT BORIDE NANOPARTICLES SYNTHESIS, MAGNETIC CHARACTERIZATION AND FUNCTIONALIZATION

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Herein we present a colloidal chemistry method for the synthesis of environmentally stable silica-coated cobalt boride nanoparticles, prepared combining the sodium borohydride reduction in aqueous solution and the silica precipitation in basic medium.^[1,2] Size of monodispersed silica-coated cobalt boride nanoparticles is controlled by this method. Additionally we highlight the further functionalization of the silica-coated cobalt nanoparticles using (3-aminopropyl) tris(trimethylsiloxy) silane. These attached amino groups are used as bridges (coupling chemistry) between the magnetic nanoparticles and gold and silver seeds, in such a way that we render the nanoparticles bifunctionalized (magnetic and optically active).

Figure 1 shows a TEM image of the gold/silver-decorated silica-coated cobalt boride nanoparticles and their UV-vis spectrum (red, yellow), maintaining the surface plasmon band of individual gold and silver nanoparticles (black) but red-shifted to 560 for gold (red) and 402 for silver (yellow).^[3]

References

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Figures:

