Nano-Brass: Bimetallic Copper/Zinc Colloids by a Nonaqueous Organometallic Route Using $[Cu(OCH(Me)CH_2NMe_2)_2]$ and Et_2Zn as Precursors

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We present a synthetic approach toward alloyed Cu/Zn nanoparticles using $[Cu(OCH(Me)CH_2NMe_2)_2]$ and Et_2Zn as precursors. The thermolysis in the hot coordinating solvent hexadecylamine, HDA, leads to the formation of nanoscale, colloidal Cu/Zn systems with zinc contents (by EDX) of 5, 30, and 65%, respectively. All systems have been analyzed using UV/Vis spectroscopy, transmission electron microscopy, EDX, and selected area electron diffraction (SAED). These analytical data suggest that alloying between zinc and copper takes place, revealing crystalline phases of CuZn and $CuZn_2$ besides Cu as components of the particles in the case of higher zinc concentrations. The characteristic surface plasmon resonance (UV) for pure HDA-capped copper colloids at 558 nm, still observed for copper-rich alloy particles, disappears for zinc-rich particles.