Properties of metallic nanocrystalline powders

Ivo Marek, Alena Michalcova, Dalibor Vojtech
Department of Metals and Corrosion Engineering, Institute of Chemical Technology, Prague, Technicka 5, 166 28, Prague 6, Czech Republic. Ivo.Marek@vscht.cz

Nanocrystalline metals are advanced materials with structural constituents smaller than 100 nm. With respect to structure, they are characterized by high strength and hardness, gas absorption capability, high specific surface area, catalytic activity or magnetic properties. These properties predispose them for using in wide spectrum of possible applications, namely advanced structural and functional applications, biomedicine, catalysis or electronics. Many methods have been developed for producing nanocrystalline metals or nanocrystalline metallic powders including precipitation from supersaturated liquids, severe plastic deformation, cryo-melting, or inert gas condensation. In this work, another promising method - selective dissolving of aluminium alloy was successfully applied for preparation of nanocrystalline copper powder and this powder was consequently used for producing of bulk nanocrystalline material with enhanced hardness and strength.

Keywords: nanocrystalline metals, metallic powders, structure, hardness

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References


