NH P 11

Sinteza praha nanočestica srebra

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Nanočestice plemenitih metala (NPs) od velikog su interesa zbog svojih izvanrednih optičkih, hemijskih i fizičkih svojstava[1]. Nanočestice srebra (Ag NPs) privukle su posebnu pažnju zbog njihove primene u različitim oblastima. Ag NPs čestice najčešće se dobijaju redukcijom jona Ag^+ u vodenim rastvorima. Međutim, koloidne disprezije su stabilne samo pri niskim koncentracijama metala i teško je dobiti prah NPs iz njihovih disperzija. U literaturi je objavljena sinteza praha Ag NPs primenom skroba metodom iz čvrstog stanja[2]. U ovom radu je predstavljena sinteza praha Ag NPs redukcijom jona Ag^+ jonima citrata, hemijskom reakcijom komponenata u čvrstom stanju, odnosno mehaničko-hemijskim postupkom. Sintetisani prah Ag NPs analiziran je fizičko-hemijskim metodama, SEM, UV-Vis i FTIR spektroskopijom, kao i merenjem zeta potencijala. Dobijene NPs čestice su sfernog oblika, prosečnog prečnika 20 nm i negativnog površinskog naelektrisanja.

Solid-state synthesis of silver nanoparticles

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Noble metal nanoparticles (NPs) have attracted attention due to their remarkable optical, chemical and physical properties[1]. Silver NPs (Ag NPs) are of particular interest because of their wide applications, in different areas. The most often Ag NPs were obtained by chemical reduction of Ag^+ ions in aqueous solutions. However, colloidal dispersions are stable only in low metal concentration, and it is very difficult to obtain solid NPs from dispersion. Recently, the solid-state method was reported for Ag NPs synthesis[2] using starch. Here we presented a citrate-capped Ag NPs successfully prepared by solid-state chemical reaction. The Ag NPs were synthesized by the mechanochemical process. Powdered materials were characterized by SEM, UV-Vis and FTIR spectroscopy and, zeta potential measurements. The obtained NPs were spherical, with an average diameter of 20 nm and negative surface charge.

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2. A. Hebeish, Th. I. Shaheen, M. E. El-Naggar, *Int. J. Biol. Macromolecules*. **87**(2016), 70-76.

Acknowledgements: *Authors would like to thank the Ministry of Education and Science of the Republic of Serbia (TR 34025) for their financial support.*