

STUDY OF SURFACE EFFECTS ON AG-CU NANOPARTICLES BY KNUDSEN EFFUSION MASS SPECTROMETRY

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Abstract

Surface effects on bimetallic nanoparticles have been studying by Knudsen effusion mass spectrometry during slow heating by our research team for two years and this issue is a spontaneous continuation. This time we focused our attention on two Ag-Cu nanoparticle systems. Nanoparticles were synthesized in aqueous and non-aqueous environment and as a protective capping agent against nanoparticle coagulation polyvinyl alcohol and oleylamine were used. As follows from the measurements, the capping agent is quantitatively evaporated at elevated temperatures during the heating process. The other trend, which can be observed, is its simultaneous oxidation. A careful comparison of the measurements for both systems is performed and the results are summarized and discussed in view of previous studies. Study of surface processes is useful for understanding thermal stability and nature of nanoparticle systems.

Keywords: Nanoparticle, evaporation, Knudsen effusion mass spectrometry, surface analysis

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