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8th International Conference
of the Chemical Societies
of the South-East European Countries

BOOK OF ABSTRACTS

organized by

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UCB - Union of Chemists in Bulgaria
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The effect of silver nanofillers on the thermal properties of polystyrene

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Nanocomposites (NCs) comprised of metal nanoparticles (NPs) embedded in polymer matrices usually exhibit a simple combination of the physical properties of the polymer, along with the specific optical or electrical characteristics associated with the NPs. However, novel behavior can arise thanks to synergistic effects between the NPs and polymer matrix. The present work represents the continuation of our study on the interaction between silver nanoparticles (Ag NPs) and polystyrene (PS) matrix that govern the properties of polymer. Namely, in order to achieve homogeneous distribution of Ag NPs in the PS matrix, the *in situ* bulk radical polymerization of styrene was performed in the presence of monodisperse surface modified Ag NPs. The influence of the presence of Ag NPs and their concentration on the glass transition temperature and thermal stability of PS matrix was investigated in details using differential scanning calorimetry (DSC) and thermogravimetric analysis (TGA) performed in argon and air atmosphere. The results indicated that thermal and thermo-oxidative stability of PS were improved upon incorporation of Ag NPs. The Ag/PS NCs have lower glass transition temperatures than neat PS because loosely packed oleylamine molecules at the interface caused the increase of free volume and chain segments mobility near the surface of Ag NPs.