

**The 3rd International Conference on the Physics
of Optical Materials and Devices**

BOOK OF ABSTRACTS

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TWO-PHASE BOUNDARY SYNTHESIS AND OPTICAL PROPERTIES OF SILVER/POLYANILINE NANOCOMPOSITES

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Nanocomposites containing metal nanoparticles, dispersed in electrically conducting polymers such as polyaniline, show enhanced sensing, electrical and catalytic properties as compared with those of neat polymer. These composites have generated increasing interest as advanced technological materials due to synergistic effects of both components. Here, we report silver/polyaniline (Ag/PANI) nanocomposites obtained through a two-phase water/toluene interfacial reaction. As prepared silver nanoparticles in toluene with oleylamine as a reducing and stabilizing agent, were used as nucleation centers for the polymerization of aniline. Once the polymerization occurs at the interface of the organic (containing the aniline and the silver nanoparticles) and aqueous (containing the oxidizing ammonium persulfate agent) phase, the polymer grows around the silver nanoparticles and forming the nanocomposite structure. The formation of Ag/PANI nanocomposite was characterized by UV–Vis and FTIR spectroscopy, and transmission electron microscopy. In contrast to pure PANI, the absorption spectrum of Ag/PANI nanocomposite showed additional strong band assigned to surface plasmon resonance absorption of the electrons in the conducting silver bands.