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Enhancement of light emission from anthracene-doped polyphenylsiloxane glass films containing Ag nanoparticles RYOKO SHIMADA, MEGUMI KIMURA, Japan Women's Univ-Facul Sci, NAOKI TARUTANI, MASAHIDE TAKAHASHI, Osaka Prefecture Univeristy, SANJAY KARNA, ARUP NEOGI, University of North Texas — Metal-nanoparticles can induce the localized electric filed in the narrow inter-particle gap. This localization can significantly enhance light emission from fluorescent materials embedding metal nanoparticles. In this phenomenon, the important factors are optical absorption and emission. However, the mechanism of enhancement has not been fully elucidated. In this work, anthracene-doped polyphenylsiloxane (PPS) glass films containing Ag nanoparticles (AgNPs) were prepared for the characterization of enhanced photoluminescence properties. AgNPs of $\sim$ 30nm diameter were synthesized by the polyol process, and mixed in the anthracene-doped PPS glass film. The anthracene-doped PPS thin films of thickness $\sim$ 200 nm, with/without AgNPs, were prepared by spin-casting method. The photoluminescence (PL), measured for these films at room temperature, changed with the anthracene and/or AgNPs concentrations. In the optimum condition, the integrated PL intensity enhancement factor was found to exceed 50.

Ryoko Shimada
Japan Women's Univ-Facul Sci

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