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Changes of photoluminescence emission from metal/organic hybrid thin films with metal nanoparticle concentration MEGUMI KIMURA, Japan Women's Univ-Facul Sci, NAOKI TARUTANI, MASAHIDE TAKAHASHI, Department of Materials Science, Graduate School of Engineering, Osaka Prefecture University, ARUP NEOGI, Department of Physics, University of North Texas, RYOKO SHIMADA, Japan Women's Univ-Facul Sci, JAPAN WOMEN'S UNIVERSITY TEAM, OSAKA PREFECTURE UNIVERSITY COLLABORATION, UNIVERSITY OF NORTH TEXAS COLLABORATION — Metal nanoparticles (NPs) have been attracting research interest in the field of nanophotonics due to the localized surface plasmon (LSP) effect that enhances the electric field around metal NPs. This localization leads to enhancement of light emission from fluorescent molecules in the vicinity of the metal NPs. This study focuses on hybrid thin films consisting of metal NPs (silver: Ag-NPs), organic molecules (anthracene) and a polymer matrix (polyphenylsiloxane glass: PSS) to investigate changes of the enhancement of photoluminescence (PL) emission from anthracene molecules at various Ag-NPs concentration. The integrated PL enhancement factor was reduced at high Ag-NPs concentration due to the aggregation of Ag-NPs, and the LSP resonant energy of Ag-NPs exhibited red-shift for this case.

Megumi Kimura
Japan Women's Univ-Facul Sci

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