Journal of Luminescence
Volume 110, Issue 4 , 10 December 2004, Pages 296-302
325th Wilhelm and Else Heraeus Workshop. Organic Molecular Solids : Excited Electronic States and Optical Properties

doi:10.1016/j.jlumin.2004.08.024

Surface enhanced Raman scattering in organic thin films covered with silver, indium and magnesium

Georgeta Salvan, , Dietrich R.T. Zahn and Beynor Paez

Institut für Physik, Technische Universität Chemnitz, Reichenhainerstrasse 70, D-09107 Chemnitz, Germany

Available online 7 October 2004.

Abstract

In situ resonant Raman spectroscopy was applied for the investigation of the interface formation between silver, indium and magnesium with polycrystalline organic semiconductor layers of 3,4,9,10-perylene tetra-carboxylic dianhydride (PTCDA). The spectral region of internal as well as external vibrational modes was recorded in order to achieve information related to the chemistry and the structure of the interface as well as to morphology of the metal layer. The experiments benefit from a strong enhancement of the internal mode scattering intensities which is induced by the rough morphology of deposited metals leading to surface enhanced Raman scattering (SERS). The external modes, on the other hand, are attenuated at different rates indicating that the diffusion of the metal atoms into the crystalline layers is highest for indium and lowest for magnesium.

Keywords: PTCDA; Surface enhanced Raman spectroscopy

Material index: Ag; In; Mg
PACS: 68.60.−p; 68.35.Dv; 78.30.Jw; 78.66.Qn; 81.15.Ef

Corresponding author. Tel.: +49-371-531-3171; fax: +49-371-531-3060.