

Fourteenth Annual Conference

YUCOMAT 2012

Hunguest Hotel Sun Resort Herceg Novi, Montenegro, September 3-7, 2012

<http://www.mrs-serbia.org.rs>

PROGRAMME & THE BOOK OF ABSTRACTS

Organised by

MATERIALS RESEARCH SOCIETY OF SERBIA

under the auspices of

FEDERATION OF EUROPEAN MATERIALS SOCIETIES (FEMS)

MATERIALS RESEARCH SOCIETY (MRS)



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P.S.B.24.

LIFETIME ANALYSIS OF RHODAMINE B/PMMA FLUORESCENCE EMISSION

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In this work we study the fluorescence lifetime characteristics of Rhodamine B using polymethylmethacrylate (PMMA) as a host medium and compare it to the characteristics of Rhodamine B dissolved in ethanol and tetrahydrofuran (THF). The excitation part of our time resolved laser induced fluorescence (TR-LIF) spectroscopy system is based on Nd:YAG laser and Optical Parametric Oscillator (OPO). The pulse length of tunable OPO output (320-475 nm) could be reduced to about 1 nanosecond, so by means of a correct deconvolution procedure it is possible to measure the fluorescence lifetimes in the range of interest in this study. The published data for lifetime of Rhodamine B are up to a few nanoseconds. The fluorescence detection part of the system is based on the picosecond streak camera. We show that optical characteristics of Rhodamine B are not impaired when using PMMA as host medium.

P.S.B.25.

DISPERSION OF REFRACTIVE INDEX AND OPTICAL BANDGAP OF THE NON-CRYSTALLINE CHALCOGENIDES IN CdS-As₂S₃ SYSTEM

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In this paper we present the results concerning the dispersion of refractive index and optical bandgap of bulk samples from the amorphous CdS-As₂S₃ system. The refractive index behaviour of investigated glasses was determined by the prism method and analyzed. Measurements were performed in the wavelength range between the absorption edge and 1800 nm at room temperature, with an error of ± 0.01 . To calculate and discuss the parameters of dispersion in the bandgap region two different approaches were used (Sellmeier and Wemple-DiDomenico single-oscillator model). It was found that the glasses have a relatively high index of refraction (about 2.55 at the wavelength of He-Ne laser), and exhibit normal dispersion dependence. Also, it was determined that the optical bandgap changes for about 0.1 eV with a change of CdS content in the material.