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B-15

ELECTROLUMINESCENCE OF COPOLYFLUORENES IN THE VISIBLE RANGE OF THE SPECTRUM

E.N. Nikonova¹, T.N. Kopylova¹, S.Yu. Nikonov¹, D.M. Il'gach², A.V. Yakimanski², and R.M. Gadirov¹

¹*Siberian Physical Technical Institute, 1 Novosobornaya Sq., 634050 Tomsk, Russia;*

²*Institute of Macromolecular Compounds RAS, 31 Bolshoiy Ave., 199004 St.-Petersburg, Russia, ponyagina@ngs.ru*

Organic electronics in the world has been actively developing for more than 25 years. Synthesis and research of new semiconductor materials for devices of organic electronics (organic light emitting diode – OLED, organic light emitting field-effect transistor – OLET, organic semiconductor lasers – OSLs, etc.) is urgent task.

The report presents the spectral luminescent and electroluminescent characteristics of new copolyfluorenes synthesized at Institute of Macromolecular Compounds RAS.

The electroluminescence of copolyfluorenes in light-emitting diode of the following structure ITO/Pedot:PSS/Copolyfluorene/Ca/Al is recorded in the visible range of the spectrum. Multilayered organic light-emitting diodes based on them were developed and analysis of the current-voltage and current-brightness characteristics was performed depending on the structure of the diode.

B-16

SPECTROSCOPY AND PHOTOCHEMISTRY OF HUMIC ACIDS

I.V. Sokolova¹, N.O. Vershinin¹, G.V. Mayer¹, K.A. Skobezova¹, and O.N. Tchaikovskaya^{1,2}

¹*Tomsk State University, 36 Lenin Ave., 634050 Tomsk, Russia, sokolova@phys.tsu.ru;*

²*Institute of Organic Synthesis UrB RAS, Ekaterinburg, Russia, tchon@phys.tsu.ru;*

Humic substances representing the main fraction of organic matter receive increased attention because of their reactivity as light absorbers. Depending on their origin and structure, humic substances have a remarkable ability to absorb light and transfer this energy to other substrates and in some cases strongly affect photolysis of xenobiotics. In water and in soils humic substances have been found to act as photosensitisers and they have also been reported to produce oxygen species upon irradiation, and be able to photoinduce the transformation of ecotoxicants. The photoquenching effects of humic substances on some chemicals are also known. Also, the possibility of an UV screening by humic substances on chemicals cannot be excluded since the energy-transfer and charge-transfer between the chemical and humic substances can deactivate the excited molecules. Excited singlet and triplet states of dissolved humic acids (HAs), the major component of humic substances, are important players for the transformation of organic chemical contaminants in natural waters. Our knowledge about these processes is still very limited. Spectroscopy and photochemistry of humic acids are discussed.

The results in a flow reactor for photodegradation of ecotoxicants are presented. A specific feature of the reactor is the use of barrier discharge excilamps (Xe₂, KrCl and XeCl) with different radiation wavelengths ($\lambda = 172, 222, 308$ nm). The discussion includes comparative analysis of the direct and indirect photolysis. The samples of HAs fractions were obtained from Aldrich Chemical Co and prepared from peat of Tomsk region.

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