

Study of the mechanism of the modification of polyisoprene by the phospholipid concentrate

© Marina E. Tsyganova,¹ Alevtina P. Rakhmatullina,¹ and Vladimir G. Uryadov^{2*+}

¹Department of the Technology of the Synthetic Rubber. ²Department of Organic Chemistry.

Kazan National Research Technological University.

K. Marx St., 68. Kazan, 420015. The Republic of Tatarstan. Russia.

Phone: +7 (843) 231-43-81. E-mail: vguryadov@mail.ru, uryadov@kstu.ru

*Supervising author; +Corresponding author

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Abstract

A chemical modification of synthetic isoprene rubber with phospholipids was carried out in a solution of toluene at a temperature of 90 °C. It was found that during the interaction of polyisoprene with phospholipid concentrate, the content of double bonds decreases, which indicates the occurrence of chemical reactions. The samples of modified synthetic isoprene rubber were studied by IR spectroscopy, ¹H and ¹³C NMR spectroscopy. In particular, the IR spectroscopic data showed that the bands of absorption of groups characteristic of the phospholipid concentrate are fixed in the spectrum of the modified polyisoprene: hydroxyl and amine (3200-3450 cm⁻¹), carbonyl groups in the carboxyl and ester groups (1711 cm⁻¹ and 1744 cm⁻¹, respectively). In addition, the appearance of a new band of 1775 cm⁻¹ corresponding to the carbonyls in γ -lactones and a decrease in the intensity of the peak characteristic of the vibrations of the groups >C=C< are noted, which indicates the interaction of fragments of phospholipids with macromolecules of polyisoprene. On the basis of an analysis of the change in the position of the bands and their intensities, an assumption is made about the mechanism of modification.

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