Macromolecular Chemistry and Physics 2016 vol.217 N16, pages 1860-1867

The Structure of Cationic Polyisoprene: Branching versus Cyclization

Rozentsvet V., Kozlov V., Korovina N., Stotskaya O., Gnezdilov O., Kostjuk S.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2016 WILEY-VCH Verlag GmbH & Co. KGaA, WeinheimThe structure, molecular weight, and molecular weight distribution (MWD) of polyisoprene fractions, which were obtained during the fraction of polyisoprene with broad MWD (M w/M n = 25.6) synthesized with tBuCl/TiCl4 initiating system have been investigated. It is established that chain transfer to polymer leading to branched macromolecules is responsible for the formation of polyisoprene with broad MWD and reduced unsaturation. It is shown for the first time that unsaturation decreased while the content of head and end groups in a single macromolecule increased with increasing molecular weight of polyisoprene fraction. The unsaturated part of the polymer chain consists of presumably trans-1,4-units independently of the molecular weight of polyisoprene fraction. (Figure presented.).

http://dx.doi.org/10.1002/macp.201600129

Keywords

cationic polymerization, fractionation, microstructure, polyisoprene