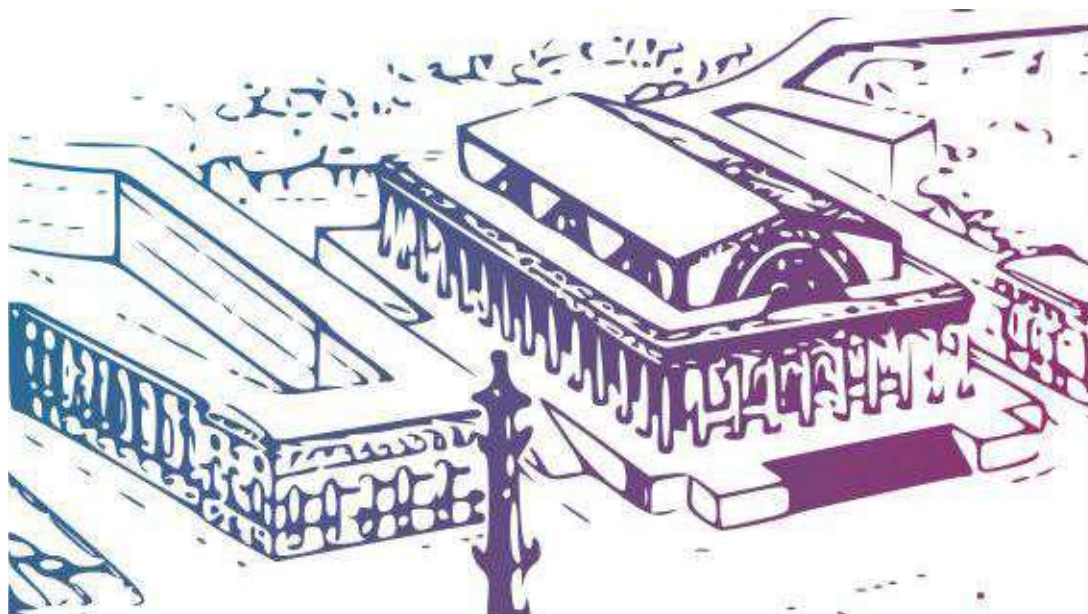


PROGRAM AND ABSTRACT BOOK



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NEW MACROMOLECULAR REACTION OF CROSS-METATHESIS BETWEEN POLYNORBORNENE AND POLYDIENES

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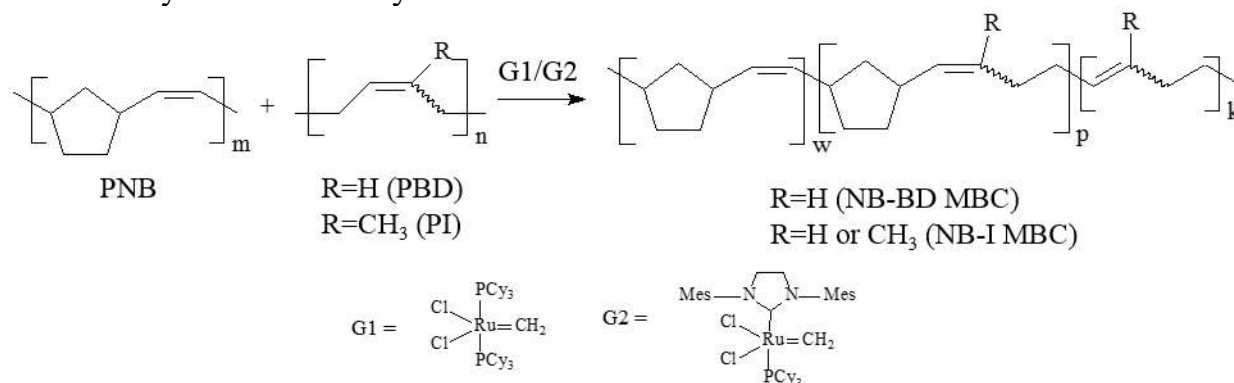
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The macromolecular olefin cross-metathesis reaction between different polymers is a new simple way to statistical multiblock copolymers (MBC) [1]. In this research we realized for the first time the macromolecular cross-metathesis reaction of polynorbornene (PNB) with polybutadiene (PB) and polyisoprene (PI). All the studied polymers are well-known commercial products. Inactivity of butadiene and isoprene in olefin metathesis makes difficulties in their copolymers synthesis with highly active norbornene.

Initial polynorbornene and polybutadiene were prepared by ring-opening metathesis polymerization of norbornene and 1,5-cyclooctadiene in the presence of Grubbs catalysts 1st (G1) and 2nd (G2) generation; *cis*- and *trans*-PI were commercial products. The cross-metathesis between PNB and polydienes was carried out in chloroform solution mediated by G1 or G2 catalysts.



New NB-BD and NB-I copolymers with different block lengths were obtained and characterized by ¹H, ¹³C NMR, GPC, and DSC. It was found the range of polydienes activity in reaction with PNB: PB > *trans*-PI > *cis*-PI. The copolymers thermal and crystalline properties were studied. Glass transition and melting temperatures can be regulated by block length and composition of copolymers. The reasons of differences in polymers activities as well as copolymers thermal properties are discussed in the presentation.

References:

[1] Gringolts M, Denisova Yu., Finkelshtein E., Kudryavtsev Y. Beilstein J. Org. Chem. **15**, 218 (2019).

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