

- [22] KAWAHARA S, NISHIOKA H, YAMANO M, et al. Synthetic rubber with the tensile strength of natural rubber[J]. ACS Applied Polymer Materials, 2022, 4(4): 2323–2328.
- [23] BREUILLAC A, CAFFY F, VIALON T, et al. Functionalization of polyisoprene and polystyrene via reactive processing using azidoformate grafting agents, and its application to the synthesis of dioxaborolane-based polyisoprene vitrimers[J]. Polymer Chemistry, 2020, 11(40): 6479–6491.
- [24] WANG Z K, ZHANG Y Q, JIANG F, et al. Synthesis and characterization of designed cellulose-graft-polyisoprene copolymers[J]. Polymer Chemistry, 2014, 5(10): 3379–3388.
- [25] HUANG Y S, LI J, QI M Z, et al. In situ modification to reinforce isoprene rubber by sacrificial bonds[J]. ACS Applied Polymer Materials, 2023, 5(6): 4080–4087.
- [26] HUANG G S, GUO J, LIU B C, et al. Promoted strain-induced-crystallization in synthetic cis-1, 4-polyisoprene via constructing sacrificial bonds[J]. Polymer, 2016, 97: 580–588.

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Research Progress of Isoprene Rubber Functionalization Modification

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Abstract: The research progress of three methods of isoprene rubber (IR) functionalization modification was summarized, including copolymerization functionalization modification, post functionalization modification and physical blending to introduce functional components. The modification mechanisms of different modification methods were analyzed. It was suggested to increase research efforts on IR functionalization modification, achieve the autonomy of functionalized IR production technology as soon as possible, and replace the application of natural rubber in some fields.

Key words: IR; functionalization; modification; copolymerization; grafting; physical blending

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