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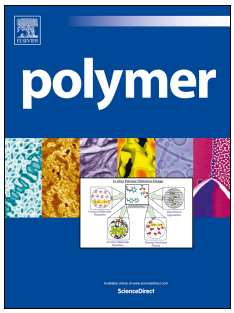

Research on architecture and composition of natural network in natural rubber

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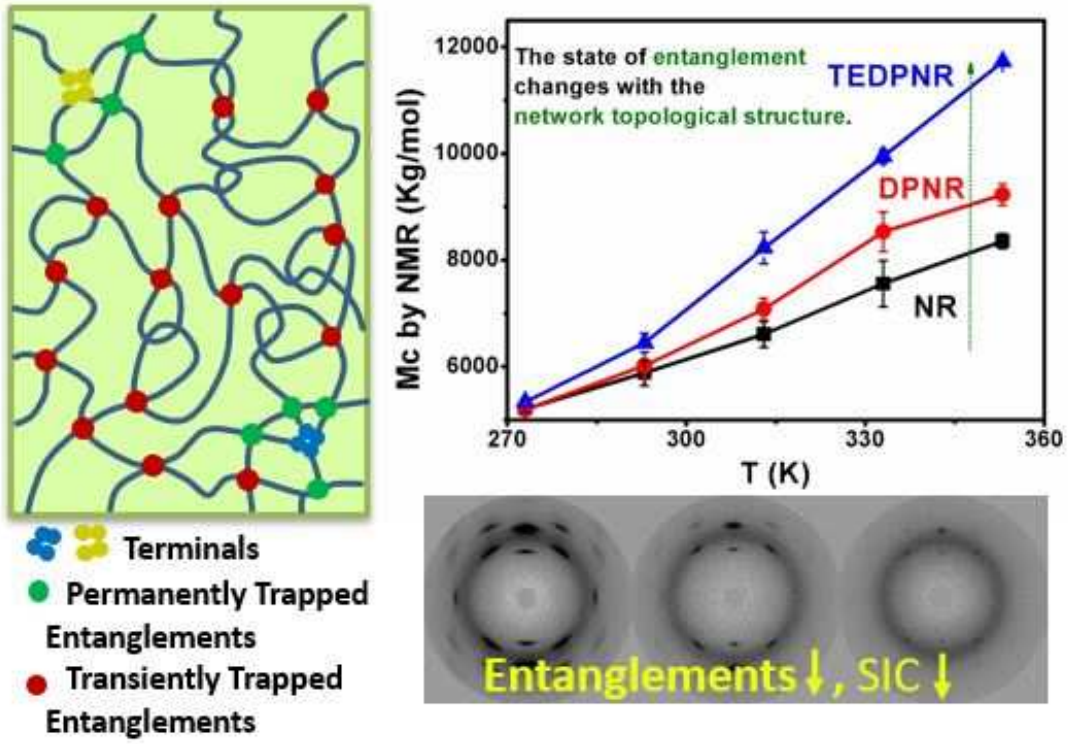
KEYWORDS: *Entanglement, natural rubber, WAXD, ^{1}H-DQ NMR*

Abstract



Though the superior properties of natural rubber (NR) have been attributed to its special network architecture, the currently accepted model “naturally occurring network” is far from describing its authentic network structure. In this paper, we focused on the composition of the chain entanglements in the network structure of unvulcanized NR. By using synchrotron wide-angle X-ray diffraction (WAXD), the evolution of strain-induced crystallization (SIC) behaviors was real-time traced, and the stress-strain behaviors at various strain rates and temperatures were also tested. The results demonstrated that the entanglements can act as crosslinking points to