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Effect of Side Chain Substitution on Crystal Structure of Comb-like Polymers

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Long alkyl side chains of comb-like polymers adopt different crystal structures when the polymer has different degrees of side chain substitution. FTIR spectroscopy studies were employed to show various molecular structures, such as orthorhombic, hexagonal, and random phases, formed in the comb-like copolymer system. DSC and X-ray experimental results are consistent with the findings of our FTIR spectroscopy study and indicate that the molecular structure of the long alkyl side chain is dependent on the degree of side chain substitutions in the comb-like copolymer.