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Interaction between side chain crystalline block co-polymer and wax and its function

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A block co-polymer constructed with two monomers: a monomer with a long alkane side-chain (more than 10 carbon atoms) and another monomer with various function (such as solvent affinity), shows side-chain crystallization (Side Chain Crystalline Block Co-polymer:SCCBC). Recently, we had found that the SCCBC has an adsorption function to polyethylene (PE) crystal and can modify the surface property of PE chemically and easily. By using this function, SCCBC can be a good dispersant for PE particle dispersion. Dispersant mechanism by SCCBC shows adsorption function caused by the construction of pseudo crystal between macromolecules of PE surface and long alkyl side chains of SCCBC. This interaction is called as crystalline supramolecular interaction. The wax is considered to be a low molecular weight PE. In this study, we found that the crystal structure of wax was influenced by SCCBC. Moreover, a concentrated wax/oil mixture was not solidified with a small amount of SCCBC. This result means that the SCCBC can be a good wax dispersant.

Biography

Shigeru Yao is a Doctor of Engineering, currently working as a Professor of Department of Chemical Engineering, Fukuoka University. He has obtained his Engineering Doctor's degree at Kyoto University. Currently, his research focus is on self-organization mechanism of polymer and especially the crystalline supramolecular interaction between side chain crystalline block co-polymer and crystalline polymer. He also focuses on the material recycle of polymers.

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