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Effect of nucleating agent supported on zeolite via the impregnation on the crystallization ability of isotactic polypropylene

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Addition of nucleating agent is a simple and effective method to increase nucleation property of isotactic polypropylene (iPP). However, severe agglomeration and poor dispersibility of sodium 2,2'-methylene-bis(4,6-di-tertbutylphenyl)-phosphate (NA11) melt insensitive nucleating agent decrease the nucleation efficiency in iPP, so much more nucleating agent is needed to maintain the nucleating property. As a result, decreasing the size of NA11 becomes the key to increase the nucleating property. The dispersed NA11 system (NA11-Z4A) was firstly obtained through the supporting of zeolite 4A (Z4A) for NA11. The results showed that the nucleating system NA11-Z4A at a lower usage of NA11 (0.265wt‰) showed the comparable nucleation property with that of NA11(0.8wt‰) alone. Furthermore, the study on the interaction of NA11 and Z4A verified by FT-IR indicates that there are hydrogen bondings between NA11 and Z4A, which inhibits the agglomeration of NA11 and improves the nucleating inefficient. Based on the research work, the solution impregnation strategy can potentially be applied to other systems to inhibit the agglomeration and improve the dispersibility of additives in iPP.

Biography

Chao Li has completed his Bachelor's degree from Wuhan University of technology when she was 22 years old and she is now a graduate student mainly engaged in the field of modified polypropylene properties in East China University of Science and Technology, China.

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