

Accepted Manuscript

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PII: S0014-3057(17)31790-1

DOI: <https://doi.org/10.1016/j.eurpolymj.2018.01.032>

Reference: EPJ 8265

To appear in: *European Polymer Journal*

Received Date: 10 October 2017

Revised Date: 24 January 2018

Accepted Date: 26 January 2018

Please cite this article as: Mi, D., Hou, F., Zhou, M., Zhang, J., Improving the Mechanical and Thermal Properties of Shish-kebab via Partial Melting and Re-crystallization, *European Polymer Journal* (2018), doi: <https://doi.org/10.1016/j.eurpolymj.2018.01.032>

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Improving the Mechanical and Thermal Properties of Shish-kebab via Partial Melting and Re-crystallization

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Abstract

A fully oriented isotactic polypropylene (iPP) sample containing a large amount of shish-kebab was molded by multiflow vibrate-injection molding. When annealing was performed at a temperature close to the melting temperature of the shish-kebab, thin-kebab can be melted and release chains to the amorphous phase. The released oriented chains can reduce the concentration of the molecule entanglements and facilitate the molecular chains to rearrange on the thick-lamella. Partial melting and re-crystallization greatly enhanced the thermostability and mechanical property of the shish-kebab. In situ small-angle X-ray scattering and wide-angle X-ray diffraction were performed to elucidate the melt-recrystallization process. Results showed that

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