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Review of nanofiber fibrillation of LCP/PET blend by spinning factors and droplet distribution by repetitive extrusion

This research introduces the continuity through the way to regulate the fibril size of sea-island nanofiber formation by spinning. A special method to make a nanofiber, a droplet formation of LCP and PET blend by repetitive extrusion is suggested in this study, where the droplet size and dispersion are important factors. To control droplet formation process in the repetitive extrusion, the effect of extrusion number of times was observed that in the process of analysis on blending condition and weight ratio. The droplet behavior change is supposed that relate with flow property, miscibility, surface property of LCP and PET. In this study, firstly, it is planned to verify the possibility to make a sea-island type nanofiber by variation spinning factor and secondly, the behavior of PET/LCP blend droplet by repetitive extrusion to make nanofiber not through spinning, respectively. Effect of LCP/PET blending and spinning parameters on sea-island fibrillation to make nano fibers was investigated through morphological and crystallographical analysis. For the sea-island nanofiber by spinning, nanofiber formation is reviewed based on the size change of fibril shape by spinning process. This fibrillation changes show fibril formation and morphology according to the spinning parameters including nozzle and spinning related condition. Distribution of nanofiber fibrillation were observed by LCP and PET blending process for conjugate spinning. Fibrillated fibers of sea-island morphology were distributed relatively evenly in the spinning parameters. For droplet formation, distribution of droplet was observed by repetitive extrusion. Droplets were distributed relatively evenly in the initial extrusion process. But for the secondary and third process, the size of the droplet was increased and the phenomenon it was found that the droplet was gathered in the center. is phenomenon was assumed that the miscibility of LCP/PET and the flow characteristics correlate with the phenomenon, so conducted the analysis and this phenomenon was due to the miscibility of LCP/PET and the flow characteristics.

Biography

Han-Yong Jeon, geosynthetics/technical organic materials researcher and he was the 32nd President of Korean Fiber Society (2014~2015). He has published more than 882 papers in domestic and international conferences. He wrote 21 texts including 'GEOSYNTHETICS;(Korean Version)' and also published 147 papers in domestic & international journals. He has awards of Marquis Who'sWho - Science and Engineering in 2003~2018 and also, he got the 33rd Academy Award of Korean Fiber Society in 2006 and "Excellent Paper Award of 2012" by The Korean Federation of Science and Technology Societies.

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