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## Comparison of thermal and physical properties of fossil and bio-based polycarbonates

Min-Young Lyu<sup>1</sup>, Jung Hyun Park<sup>1</sup>, Hyung Jin Nho<sup>2</sup>, Myung Sool Koo<sup>2</sup> and Sung Hwan Cho<sup>2</sup><sup>1</sup>Seoul National University of Science & Technology, South Korea<sup>2</sup>Samyang Central R & D Center, South Korea

Bio-based polymer has advantages as an environmentally friendly material. It is obtained from corn or other plants. Fossil-based polycarbonate (PC) is polymerized using bisphenol-A (BPA), whereas bio-based PC is polymerized using isosorbide monomer. The thermal and physical properties have been studied for bio-based and fossil-based PC. The thermal properties were measured by differential scanning calorimetry, differential thermal analysis, and thermal gravimetric analysis. Bio-based PC showed a low glass transition temperature and weak thermal resistance compared with those characteristics of fossil-based PC. Bio-based PC exhibited a higher optical property, which was verified by transmittance, haze, and birefringence. Bio-based PC showed higher transmittance and lower haze than those characteristics of fossil-based PC. The birefringence of injection molded specimens of bio-based and fossil-based PC were also compared and the bio-based PC showed lower birefringence. Bio-based PC shows weak thermal resistance than that of fossil-based PC, whereas bio-based PC shows higher optical characteristics than those of fossil-based PC.

### Biography

Min-Young Lyu has completed his PhD at the age of 33 years from The University of Akron, Ohio, USA. He is the professor in the Department of Mechanical System Design Engineering at the Seoul National University of Science and Technology. He was a chief researcher in Samyang Central R&D Center and an associate engineer in LG Production Research Center. He has published more than 90 papers in the world and has been serving as an editorial board member of Polymer(Korea) and Elastomers & Composites.

mylyu@seoultech.ac.kr

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