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Preparation of high elastic polyurethanes based on polycaprolactone diol, 1,6-hexamethylene diisocyanate, isosorbide derivative and their biocompatible properties

Suk-Min Hong¹, Jae-Ryung Cha¹, Jun-seop Im², Gwang-seok Song² and Myoung-Seon Gong¹¹Dankook University, South Korea²Samyang Corporation, South Korea

In this study, various chain lengths of 1' isosorbide (IC 22, IC 32, IC 52, IC 102, IC 29, IC 39, IC 59, IC 89) was prepared from isosorbide and ethylene oxide or propylene oxide in the presence of K_2CO_3 . The successful synthesis of 1' isosorbide (IC 22, IC 32, IC 52, IC 102, IC 29, IC 39, IC 59, IC 89) was confirmed by ¹H-nuclear magnetic resonance (¹H-NMR). Bio-based high elastic polyurethanes were made using polycaprolactone diol, various chain lengths of 1' isosorbide and hexamethylene diisocyanate. The polyurethanes were produced by one-shot bulk polymerization without catalyst. The successful synthesis of the polyurethanes was confirmed by FT-IR and GPC. The thermal and mechanical properties were characterized by thermogravimetric analyzer (TGA), differential scanning calorimetry (DSC). The mechanical properties were measured using universal testing machine (UTM). Degradation test was performed using PBS solution and biocompatibilities of PUs were tested using C2C12 for biomedical applications.

Biography

Suk Min Hong is a Doctoral student in the Department of Nanobiomedical at Dankook University. His research interests are in polyurethanes, bio-polyurethanes, isosorbides and natural polymers.

wwwppp@hanmail.net