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Controlling the biodegradability of poly(butylene succinate-cobutylene adipate) (PBSA) by solvents used in the dried-gel process¹ HANA YAMAZAKI, SAYA KAMITABIRA, TOMOKI MAEDA, ATSUSHI HOTTA, Department of Mechanical Engineering, Keio University — Considering an environmentally friendly material, poly(butylene succinate-co-butylene adipate)(PBSA) is one of the attractive biodegradable plastics that can be eventually degraded into H_2O and CO_2 by neighboring water molecules and microorganisms after the disposal. In order to expand the application of PBSA, the precise control of the biodegradability of PBSA is necessary. In this study, the dried-gel process was introduced to control the biodegradability of PBSA. The dried PBSA gels were prepared by using three different solvents (toluene, cyclohexanone, and o-dichlorobenzene). The scanning electron microscopy (SEM) micrographs revealed that the PBSA prepared by toluene had smaller spherocrystals than the other PBSA dried-gels prepared by cyclohexanone or o-dichlorobenzene. The biodegradability testing by immersing the three types of PBSA in NaOH aq. showed that the percentage of the weight loss of the PBSA produced by toluene was the highest. The results indicated that the microstructures of PBSA could be controlled by changing solvents during the gel preparations, and that the biodegradability of PBSA could therefore be efficiently modified by changing solvents.

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