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Biodegradability of poly(butylene succinate-co-butylene adipate) (PBSA) controlled by temperature during the dried-gel process[1] HANA YAMAZAKI, TOMOKI MAEDA, ATSUSHI HOTTA, Department of Mechanical Engineering, Keio University — Currently there is a growing interest in biodegradable plastics that can be readily degraded into H_2O and CO_2. Among them, poly(butylene succinate-co-butylene adipate)(PBSA) is one of the mechanically attractive materials that can be biodegraded by surrounding water molecules and microorganisms after the disposal of the plastics. In order to expand the use of PBSA, the proper and effective control of the biodegradability of PBSA should be realized. In this work, the dried-gel process of the PBSA was carefully studied considering the temperature of the process. Three different types of dried PBSA gels were prepared at three different gel-process temperatures. From the biodegradability testing by immersing the PBSA samples in NaOH aq., it was found that the percentage of the weight loss of the PBSA was increased, indicating that the biodegradability was enhanced as the gel preparation temperature became lower. In fact, smaller spherocrystals were observed in PBSA dried at cooler temperature, studied by the scanning electron microscopy (SEM). It was therefore concluded that the microstructures of PBSA could be well controlled by changing the gel preparation temperatures for the precise control of the biodegradability of PBSA.

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