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Compatibility and hydrolytic behaviors of polymer mixtures by the Langmuir technique

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Abstract

The compatibility and hydrolytic behaviors of the monolayer mistures of biodegradable stereochemical polylactide (*l*-PLA or *dl*-PLA) and poly(butylene succinate) (PBS) were studied by the Langmuir technique at the air/water interface. The π-A behaviors of two binary systems, well mixed and unmixed, were compared with each other to demonstrate their compatibility. From the changes in the occupied area and the transition region, the compatibility of *l*-PLA/PBS monolayer mixtures decreased with PBS composition while *dl*-PLA/PBS monolayer mixtures showed better compatibility than *l*-PLA/PBS monolayer mixtures. The hydrolytic behaviors of the homopolymer and mixed monolayers on an alkaline subphase were monitored at a constant surface pressure as a function of exposure time. The compatible monolayer mixtures showed much slower hydrolytic kinetics than their arithmetic averages.