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PLA branching with anhydrides and tri-functional aziridine¹ LIANGLIANG GU, YUEWEN XU, RAJASEKHAR NAREDLA, THOMAS HOYE, CHRISTOPHER MACOSKO, Univ of Minn - Minneapolis — Branched PLA was prepared by melt blending with tri-functional aziridine (T-Az) and pyromellitic dianhydride (PMDA). ¹HNMR, gel permeation chromatography (GPC) and rheology were used to characterize the topological structures of branched PLA. Fast reaction between PLA carboxyl end group and T-Az resulted in 3-arm stars and increased the molecular weight. However, the 3-arm stars did not show strain hardening behavior under extensional flow. After modifying PLA hydroxyl end group with PMDA, PLA can react with T-Az on both chain ends and form long chain branched structure, which showed strain hardening in extension. It was found that that only 10% of the PLA hydroxyl end groups reacted with PMDA.

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