

由图4可知,PAMMO在265.71℃时发生热分解,说明PAMMO是较稳定的预聚物。

4 结 论

(1)以二氯甲烷为溶剂,丁二醇为引发剂,三氟化硼乙醚为催化剂,3-叠氮甲基-3-氧丁环为单体,成功合成出了含能粘合剂PAMMO,并对其进行了结构鉴定和性能表征。

(2)常温下PAMMO的聚集态为无定形粘稠液体。DSC、TGA表明:PAMMO均聚物的玻璃化转变温度(T_g)为-40℃,热分解温度为265.71℃,是较稳定的聚合物。

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Synthesis and Property of Energetic Binder PAMMO

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Abstract: Using butanediol as initiator, boron-trifluoride etherate as catalyst, 3-azidomethyl-3-methyloxetane homopolymer (PAMMO) was synthesized by the cationic polymerization of 3-azidomethyl-3-methyloxetane (AMMO) which was carried out in dichloromethane. The effect of catalyst concentration on polymerization was studied by experiment. The structure and properties of PAMMO were also characterized by DSC, TGA and IR measurements. The results show that the polymerization can be controlled by decreasing catalyst's concentration. The glass transition temperature (T_g) of PAMMO was 40.3℃. PAMMO can be used as the liquid energetic binder of cast propellant and the soft segment of energetic thermoplastic elastomer.

Key words: organic chemistry; energetic binder; oxetane; homopolymer; PAMMO



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