

Activation energy and decomposition behavior of ETFE-*g*-PVBC films by thermogravimetric analysis

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In this study, various poly(vinylbenzyl chloride)-grafted poly(ethylene-co-tetrafluoroethylene) [ETFE-*g*-PVBC] films that can be used as precursors for ion-exchange membranes were prepared with a radiation grafting technique and the effect of degree of grafting on the thermal decomposition behavior of ETFE-*g*-PVBC films was evaluated. The DSC results revealed that the crystalline domain contents of ETFE-*g*-PVBC films were reduced with increasing degree of grafting. The DMA results observed that the initiate crosslinking reaction of the PVBC grafted film occurs at over 250 °C. The thermal properties of grafted films were found that the decomposition temperature was increased with increasing degree of grafting. The E_a values for the thermal decomposition of three different DTG peaks of the ETFE-*g*-PVBC films were increasing with increase in degree of grafting. These results indicate that the crosslinking reaction of ETFE-*g*-PVBC films was increased with increasing degree of grafting.