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Thermal decomposition behaviors and kinetics of carrageenan-poly vinyl alcohol bio-composite film

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Abstract

Pyrolysis characteristics of carrageenan-polyvinyl alcohol (CG-PVA) composite films were studied on a thermo gravimetric analyzer in N₂ atmosphere. A stepwise procedure based on model-free Flynn-Wall-Ozawa (FWO), Kissinger-Akahira-Sunose (KAS) and Friedman-Reich-Levi (FRL) methods were applied to calculate the apparent activation energies (E). The range of E for CG-PVA/LBP/K film was 16.92~171.53 kJ/mol. Coats-Redfern and master-plots methods were utilized to investigate the most probable mechanisms for CG-PVA/LBP/K film. Further kinetic analysis was performed and revealed that five independent parallel reactions were

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