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Dynamic Enzyme Degradation and Characterization of Bacterial Cellulose/RDX Composite

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Abstract: The factors affecting dynamic enzyme degradation of bacterial cellulose/RDX(BC/RDX) composite were investigated and the optimum conditions were obtained by orthogonal experiments. The pre- and post-degradation materials were characterized by SEM, FTIR and XRD. The results show that the degradation of the composite subsequently decreases with the content of the composite, the concentration of enzyme and temperature, but the influences of all the factors are not significant ($F < F_{0.05}$). For 1.00 g BC/RDX composite, the optimum conditions for dynamic enzyme degradation are 0.7% of enzyme degradation concentration at 40 ℃ and 5.0 of pH value for 25 h. The morphology and structure of BC in the composite are decomposed partly or completely by enzyme, but the degradation of the composite has no any influence on the property of RDX in the composite.

Key words: polymer chemistry; composite; bacterial cellulose; RDX; dynamic enzyme degradation

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