PET Degradation Assay

The degradation of PET was evaluated using PET-NP derived from bottle neck material with a crystallinity of approximately 9.4%. PET-NP was cut into uniformly sized fragments and sequentially washed with 20% (v/v) ethanol and deionized water to remove surface impurities and potential contaminants. The cleaned PET fragments were air-dried prior to use.

Degradation assays were carried out in 50 mM glycine-NaOH buffer (pH 9.0) containing 300 nM purified enzyme at 30 °C. Samples were withdrawn at designated time intervals, and the reactions were immediately quenched. The concentrations of degradation products were subsequently determined by high-performance liquid chromatography (HPLC) to evaluate enzymatic degradation efficiency toward PET.

All PET degradation assays were performed in triplicate, and the results are expressed as mean values ± standard error of the mean (SEM).