

超临界CO₂及共溶剂作用下聚碳酸酯的结晶和熔融行为

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摘要 采用差示扫描量法(DSC)研究了在超临界CO₂以及超临界CO₂+乙醇作用下温度和压力对聚碳酸酯的结晶和熔融行为的影响。结果表明超临界CO₂能使聚碳酸酯(PC)在其玻璃化转变温度下结晶。CO₂是非极性流体,加入共溶剂能增加超临界流体的极性,提高流体的溶解能力。与纯CO₂条件比较,少量共溶剂的加入使PC的结晶更加完善,并能使其在更低的温度下和压力条件下结晶。

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Effect of Supercritical CO₂ and Cosolvent on the Crystallization and melting Behavior of Bisphenol-A Polycarbonate

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Abstract The influences of temperature and pressure on the melting behavior of PC treated by supercritical CO₂ and CO₂ + C₂H₅OH have been studied by differential scanning calorimetry (DSC). Supercritical CO₂ depresses the crystallization temperature of PC and induces crystallization below the glass transition temperature. CO₂ has no dipole moment and only a small quadrupole moment and, therefore, is essentially a nonpolar fluid. The addition of a small amount of a polar cosolvent is equivalent to giving the mixed fluid an overall small dipole moment. Similar annealing condition in the presence of supercritical CO₂ + C₂H₅OH leads to more stable crystals. The addition of a small amount of C₂H₅OH as a cosolvent can induce crystallization at much lower temperature and pressure. In addition to its own plasticizing effect, supercritical CO₂ acting as a carrier which delivers the polar component uniformly into the polymer matrix.

Key words [DSC](#) [CARBON DIOXIDE](#) [SUPER-CRITICAL STATE](#) [DSC](#) [CRYSTALLIZE](#) [POLYCARBONATE](#)

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