

One-pot synthesis of a polyimide in water as solvent

정진원, 유환철, 최주영, 김범준, 정찬문[†]

연세대학교

(cmchung@yonsei.ac.kr[†])

Polyimides are high performance polymer material with excellent mechanical, electric properties, chemical resistance and heat resistance. They have been used in a lot of industry fields such as aerospace, energy, automotive, machine and electronics. A representative example of the polyimides is PMDA/ODA polyimide, which is was manufactured in powder or film. A conventional two-step method has been used to manufacture the polyimide in organic solvents. These organic solvents are damaging to human health and the environment and also lead to high production costs from using toxic organic solvents. To solve the problem, we developed a new green method to synthesize PI-PMDA/ODA. PI-PMDA/ODA is readily prepared by the reaction of PMDA and ODA via one-pot process in water at reflux under ambient atmosphere. This method is environmentally friendly and can provide economic benefits, because the syntheses are carried out utilizing one-pot process in water at relatively low temperature, and under atmospheric pressure.