

Effect of ionic liquids on oil palm biomass fiber dissolution

ABSTRACT

Ionic liquids (ILs) were used in the dissolution of oil palm biomass, primarily empty fruit bunches (EFB), oil palm fronds (OPF), and oil palm trunks (OPT). These ILs acted as alternative solvents that could dissolve biopolymer molecules up to 5 wt.%. The IL, [emim][OAc] was the best solvent, dissolving EFB, OPF, and OPT of 99%, 100%, and 97%, respectively, at 100 °C and 16 h. The lignin content of the regenerated oil palm solids for all biomass was quantified and showed significant reduction up to 35%; fiber length was also reduced as the heating time increased after IL dissolution. Also, the effect of ILs on the different parts of oil palm biomass fibers was thoroughly studied. The lignin content was quantified.

Keyword: Biomass; Dissolution; Empty fruit bunch; Ionic liquids; Oil palm fronds; Oil palm trunk