

材料化学工程与纳米技术

两种咪唑类离子液体对杉木粉的溶解性能

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摘要

合成了氯化1-(2-羟乙基)-3-甲基咪唑 ([HeMIM] Cl) 和氯化1-烯丙基-3-甲基咪唑 ([AMIM] Cl) 两种离子液体, 并用红外和核磁谱图对其结构进行表征。以不同浓度的NaOH对杉木粉进行活化预处理, 比较了这两种离子液体对活化后的杉木粉的溶解能力, 并用红外光谱和X射线衍射分析了溶解前和溶解后杉木粉的化学结构与结晶结构的变化。结果表明, 两种离子液体对木材中的纤维素表现出一定的溶解能力, 且 [HeMIM] Cl对杉木粉的溶解能力优于 [AMIM] Cl, 当选用浓度为25%的NaOH对杉木粉进行活化时, 溶解性能最佳, 且溶解后再生纤维素的结晶度变低。

关键词

[离子液体](#) [杉木粉](#) [溶解率](#) [再生率](#)

分类号

Solubilities of two kinds of imidazolium ionic liquids for fir powder

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Abstract

Two kinds of ionic liquids, 1-(2-hydroxyethyl)-3-methyl imidazolium chloride ([HeMIM] Cl) and 1-allyl-3-methyl imidazolium chloride ([AMIM] Cl) were synthesized, and the chemical structures of the ionic liquids were confirmed by FT-IR and NMR spectrum. The solubilities of the ionic liquids for fir powder activated with different concentrations of NaOH were studied respectively. The chemical structure and crystalline form of fir powder before and after dissolution were analysed by FT-IR and XRD. It showed that the ionic liquids all had a good solubility for cellulose in activated fir powder, and the solubility of [HeMIM] Cl was better than that of [AMIM] Cl. When the concentration of NaOH to activate fir powder was 25%, the solubility was the best, and the crystallinity of the regenerated cellulose after dissolution decreased.

Key words

[ionic liquids](#) [fir powder](#) [dissolution ratio](#) [regeneration ratio](#)

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