

## 褐煤在离子液体1-丁基-3-甲基咪唑氯盐中热溶及热溶产物的分离与分析

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### Thermal extraction of lignite in ionic liquid and separation and characterization of its extracts

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**摘要** 基于离子液体对煤的高效解聚性能,对先锋褐煤(XL)、锡林郭勒褐煤(XLGL)和胜利褐煤(SL)在离子液体1-丁基-3-甲基咪唑氯盐([Bmim]Cl)中的热溶性能进行了研究.同时,对XL在离子液体[Bmim]Cl中的热溶产物进行了分离,并对分离所得各组分进行了分析表征来研究褐煤的结构信息.研究发现,在相同条件下离子液体[Bmim]Cl对不同褐煤的萃取性能显著不同,其顺序为XL>SL>XLGL.先锋褐煤离子液体热溶物可分离为丙酮可溶物、吡啶可溶物和吡啶不溶物,其中,丙酮可溶物(AS)为15.9%、吡啶可溶物(PS)为56.0%、吡啶不溶物(PI)为28.1%.分析表明,丙酮可溶物中含有长链的脂肪化合物及部分三环、四环等芳香化合物,吡啶可溶物和吡啶不溶物中大多以三环及五环芳香化合物的形式存在.

**关键词:** 褐煤 离子液体 热溶

**Abstract:** Based on the high efficient depolymerization performance of lignite in ionic liquids, thermal dissolution behaviors of 3 lignites Xianfeng (XL), Xilinggele (XLGL) and Shengli (SL) were investigated. And the thermally dissolved products from XL extracted by ionic liquid 1-butyl-3-methyl imidazole chloride ([Bmim]Cl) were separated and analyzed to explore the structure information of the lignite. It is found that the extraction yield of 3 lignites in ionic liquid [Bmim]Cl is significantly different under the same extraction conditions. The order of extraction yield is: XL > SL > XLGL. The thermally dissolved products of XL during extraction in [Bmim]Cl can be separated into acetone-soluble (15.9%), pyridine-soluble (56.0%), and pyridine-insoluble (28.1%), respectively. Acetone soluble (AS) mainly contains long chain fatty compounds, tricyclic aromatics and tetracyclic aromatic compounds. Pyridine soluble (PS) and pyridine insoluble (PI) mainly contain tricyclic aromatics and pentacyclic aromatics.

**Key words:** lignite ionic liquid thermal dissolution

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