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以模型化合物吡啶研究煤中氮转化成HCN和NH₃的机理

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摘要 以吡啶作为煤的含氮模型化合物,在石英管常压平推流反应器中进行了600~1300℃范围内的热分解和水蒸气汽化实验,使用气相色谱质谱联用仪对反应中的液体产物进行了分析和表征。探讨了煤中氮转化为HCN和NH₃的机理,在吡啶热解与水蒸气汽化的液体产物中发现了2,4-戊二烯腈,并在汽化产物中检出了2-甲氧基吡啶。结果表明:HCN来源于吡啶环的热裂解,NH₃则来源于氰基的水解。

关键词 [煤](#) [吡啶](#) [HCN](#) [NH₃](#) [气相色谱质谱\(GC/MS\)](#) [机理](#)

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Formation Mechanism of HCN and NH₃ during Coal Pyrolysis and Gasification from Fuel-N Using Model Compound's Pyridine

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Abstract Pyridine was used as a model compound to study on the formation mechanism of HCN and NH₃ from coal-N. Some experiments were carried out in a tubular quartz reactor at the temperature of 600-1300 °C, and gas chromatography-mass spectrometry (GC/MS) was used to measure the liquid products from experiments. Some useful results and conclusions were acquired as following: 2,4-pentadienenitrile could be detected in the samples of pyridine experiments; and the 2-methoxy-pyridine can be detected in the sample of pyridine gasification. All of the results seemly reveal that HCN comes from the thermal cracking of pyridine and NH₃ is the product of the hydrolyzation of nitrile.

Key words [coal](#) [pyridine](#) [HCN](#) [NH₃](#) [gas chromatography-mass spectrometry \(GC/MS\)](#) [mechanism](#)

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