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流化床污泥热解实验及产物性质研究

### Pyrolysis experiments of sewage sludge in fluidized bed and product characteristics analysis

关键词: [污泥](#) [热解](#) [焦油](#)

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**摘要:** 采用流化床反应器对城市污水污泥在400~600 ℃及800~950 ℃温度区间内进行了热解实验.结果表明,污泥受热升温过程经过干燥脱气、分解解聚和裂解缩聚3个阶段,在此过程中发生复杂的化学反应,生成热解气、焦油和半焦.热解温度为550 ℃时液体产率达到最大值,为50.35%,热解气产率在950 ℃时为51.58%,半焦产率随着热解温度升高而逐渐降低,950 ℃时为36.92%.污泥低温热解焦油含有较高百分含量的脂肪族碳氢化合物和类固醇类化合物,经加工可作为液体燃料利用,高温热解焦油可提取多种化工原料.热解气可作为合成气或燃烧利用.

**Abstract:** Pyrolysis of sewage sludge was investigated in the temperature ranges of 400~600 ℃ and 800~950 ℃ respectively in an electric heated fluidized bed reactor. The pyrolysis process in a fluidized bed included three typical stages, namely drying and degassing, decomposition and depolymerization, and cracking and polycondensation stage. The products of the above process with complex chemical reactions are pyrolysis gas, tar and char. Liquid yield reached a maximum value of 50.35% at 550 ℃. Pyrolysis gas yield was 51.58% at 950 ℃. Char yield decreased gradually with the increase in pyrolysis temperature and it was 36.92% at 950 ℃. The result shows that the low temperature tar containing high percentages of aliphatic hydrocarbons and steroid compounds can be used as liquid fuel. This study also indicates that a variety of chemical raw materials can be extracted from the high temperature tar and pyrolysis gas can be used as synthesis gas or in burning.

**Key words:** [sewage sludge](#) [pyrolysis](#) [tar](#)

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