生物质气化过程的热力学模型研究　Research on Thermodynamic Model of Biomass Gasification Process

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关键词：　生物质 气化 热力学 平衡模型

摘　要：　在综合考虑系统散热和碳不完全转化等因素的情况下，基于物质平衡、能量平衡和化学反应平衡建立了生物质气化过程热力学模型，并用Newton-Raphson方法对模型进行了求解。模型计算结果与文献数据基本吻合。最后，利用所建模型分析了空气预热温度、原料含水率、反应温度、空气当量比对气体成分、热值等指标的影响程度。　Considering carbon partial conversion and heat loss of the system, a thermodynamic model of biomass gasification was established based on mass balance, energy balance and chemical equilibrium, which was solved with Newton-Raphson method. The model is validated by comparison with the literature data. The effects of air preheat temperature, moisture content, reaction temperature and equivalence ratio on gasification performance were analyzed by the model. The detailed process of modeling and the calculating results are valuable for the development of the biomass gasification.

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