中国化学工程学报 2005 13 (3) 318-323 ISSN: 1004-0366 CN: 44-1063/R

TRANSPORT PHENOMENA & FLUID MECHANICS

进口甲烷存燃烧对煤粉燃烧以及NO_x生成影响的数值模拟

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收稿日期 修回日期 网络版发布日期 接受日期

摘要 A full two-fluid model of reacting gas-particle flows and coal combustion is used to simulate coal combustion with and without inlet natural gas added in the inlet. The simulation results for the case without natural gas burning is in fair agreement with the experimental results reported in references. The simulation results of different natural gas adding positions indicate that the natural gas burning can form lean oxygen combustion enviroment at the combustor inlet region and the NOx concentration is reduced. The same result can be obtained from chemical equilibrium analysis.

关键词 煤；燃烧方法；数值模拟；NOx；燃烧反应；天然气；

分类号

DOI:

Numerical Simulation of NOx Formation in Coal Combustion with Inlet Natural Gas Burning

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Received Revised Online Accepted

Abstract A full two-fluid model of reacting gas-particle flows and coal combustion is used to simulate coal combustion with and without inlet natural gas added in the inlet. The simulation results for the case without natural gas burning is in fair agreement with the experimental results reported in references. The simulation results of different natural gas adding positions indicate that the natural gas burning can form lean oxygen combustion enviroment at the combustor inlet region and the NOx concentration is reduced. The same result can be obtained from chemical equilibrium analysis.

Key words coal combustion; natural gas; burning; NOx formation; numerical simulation;

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