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发电

醋酸钙镁高温脱硫脱硝实验研究

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摘要： 为了控制燃煤污染气体的排放，研究了醋酸钙镁脱硫脱硝机理。采用热天平研究醋酸钙镁高温煅烧质量变化特性，利用红外光谱仪定性分析煅烧析出气体，在一维沉降炉进行钙煤混燃脱硫脱硝实验。醋酸钙镁煅烧过程中析出丙酮气体，热力学平衡计算表明，低温下丙酮的热解产物主要以CO和CH4为主，而在高温下，热解产物主要以H2、CO和C2H2为主。高温煅烧后，钙基颗粒中空多孔，孔隙主要以中孔为主，比表面积主要集中在孔径为4.7 nm的孔，比表面积远大于石灰石钙基。一维炉实验表明，高温低氧有利于脱除NOx，而低温高氧有利于脱除SO2，高温下醋酸钙镁表现出良好的脱硫脱硝效果。因此，醋酸钙镁是一种具有同时脱硫脱硝能力的优良吸收剂。

关键词： 醋酸钙镁 煅烧 孔隙 脱硫脱硝 燃烧

Laboratory Study on the High-temperature Capture of SO2 and NOx by Calcium Magnesium Acetate

Abstract: In order to control the emission of pollution air from coal combustion, the mechanism of simultaneous reduction of NOx and SO2 emissions by calcium magnesium acetate(CMA) were studied. Mass change of CMA during its calcinations was studied by thermogravimetric analysis and the exhausted gas was qualitatively analyzed by infrared spectral method. Experiments of simultaneous reduction of SO2 and NOx were carried in an entrained flow reactor. Acetone, exhausted from calcination of CMA, decomposed to reductive gas, which mainly were composed of CO and CH4 at low temperature and of H2, CO, C2H2 at high temperature, as thermodynamics calculation forecasted. CMA developed a high porous cenospheric structure during its calcinations. The surface area of the particle was more biger than common calcium and it was chiefly composed of pore whose diameter was 4.7 nm. As proved by experiments on an drop furnace, High temperature and low oxygen concentration benefited to denitrification and reverse condition benefited to desulfurization. A favourable reduction efficiency of SO2 and NOx were achieved by CMA. Therefore CMA is an excellent absorbent for simultaneous reduction of SO2 and NOx.

Keywords: calcium magnesium acetate calcination pore desulfurization and denitrification combustion kinetics

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