研究论文

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分级燃烧工况下高岭土对煤中微量元素排放的影响研究

Study on the effect of kaolin on the emission of trace elements during staged-combustion of coal

关键词： 微量元素 分级燃烧 燃烧产物 吸附剂

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摘要： 通过在一维煤粉燃烧炉上进行肥煤、无烟煤添加高岭土吸附剂的燃烧实验, 研究了肥煤、无烟煤及其燃烧产物中18种微量元素的含量和分布;计算了高岭土在分级燃烧工况条件下对每种微量元素的吸附率.结果表明:高岭土对中、低挥发性微量元素具有不同的吸附作用, 吸附效率与煤种、元素种类、燃烧温度等因素有关, 无烟煤燃烧比肥煤燃烧吸附效果更好.

Abstract： This paper reports the effects of kaolin addition on concentrations and distribution of 18 trace elements (Hg, As, Cd, Pb, Zn, Sb, Sn, Ba, Co, Be, Cr, Ni, Mo, Tl, V, U, Mn, Th) in the fatty coal and anthracite and their burnt products based on a coal combustion experiment in one-dimensional coal-fired furnace. The Coefficients of adsorptions of each trace element on kaolin during air-staged combustion were calculated. The results showed that kaolin had a different adsorptive capacity to different trace elements, especially for those with medium and low volatile trace elements. Experimental results indicated that adsorptive capacity was related to the types of coal, trace element, combustion temperature, the content of carbon in fly ashes, and anthracite combustion is better than fatty coal combustion.

Key words： trace elements air staged combustion burnt product sorbent