

生物质黑颗粒纯烧及与褐煤耦合燃烧的实验研究 【上架时间： 2023-03-30】



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详细信息

【标题】 生物质黑颗粒纯烧及与褐煤耦合燃烧的实验研究

【Title】 Experimental Study on Pure Burning of Biomass Black Particles and Coupling Combustion with Lignite

【摘要】 采用热重分析仪及一维沉降炉对生物质黑颗粒以及其与褐煤1:1掺混后的掺混燃料进行燃烧特性、燃尽特性、沾污特性、排放特性的研究。研究表明：该生物质黑颗粒燃料及掺混燃料均属于极易燃烧与燃尽的燃料；燃黑颗粒所造成的沾污对换热的影响较小；出口氧量增加后，燃黑颗粒的换热性能增强，而燃掺混燃料的换热性能减弱；黑颗粒燃烧NO的浓度随温度上升而降低，掺混燃料NO的浓度随着温度的上升而增加；氧量的增加使NO浓度升高；掺混燃料比纯生物质的SO₂释放量高；各工况下的Hg排放浓度均为0；纯烧黑颗粒所产生的HCl浓度较高；且温度的上升会造成HCl更多的释放；氧量增加后，HCl被稀释而造成浓度的下降。此外，燃纯生物质PM_{2.5}的排放浓度低于掺混燃料。

【Abstract】 A thermogravimetric analyzer and a one-dimensional sedimentation furnace were used to study the combustion characteristics, burn-out characteristics, contamination characteristics, and emission characteristics of biomass black particles and their 1:1 blended fuel blended with lignite. Studies have shown that the biomass black particle fuel and blended fuel are both highly combustible and burnout fuels; the contamination caused by burning black particles has little effect on heat exchange; after the amount of outlet oxygen increases, the burning of black particles The heat transfer performance is enhanced, but the heat transfer performance of the fuel blended fuel is weakened; the concentration of NO in the combustion of black particles decreases with the rise of temperature, and the concentration of NO in the blended fuel increases with the rise of temperature; the increase of oxygen increases the concentration of NO High; Blended fuel has a higher SO₂ release than pure biomass; Hg emission concentration under all working conditions is 0; the concentration of HCl produced by pure black particles is higher; and the rise of temperature will cause more HCl release ; After the oxygen content increases, HCl is diluted and the concentration decreases. In addition, the emission concentration of PM_{2.5} from burning pure biomass is lower than that of blended fuels.

【关键词】 生物质黑颗粒；掺混；燃烧；燃尽；沾污；排放

【Keywords】 biomass black particles; blending; combustion; burnout; contamination; emission

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