A NOVEL PROCEDURE TO IDENTIFY MERCURY SPECIES IN CARBONACEOUS MATERIALS


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Abstract:
Because mercury causes a wide range of adverse impacts on human health and the environment and coal fired power plants is one of the main sources of mercury emissions to the atmosphere, efficient and economic control technologies to reduce mercury emissions need to be developed. On that point mercury speciation in solids plays a key role in understanding interaction mechanisms and developing an efficient control technology for mercury emissions.

In this study a thermal desorption device [1] was used to identify the mercury species in solids previously employed as mercury sorbents in simulated gas compositions from coal combustion and oxy-combustion processes. The sorbents analyzed were activated carbons and chars from the gasification of biomass. Until now the thermal desorption has been employed to identify mercury species mainly in inorganic samples. This study provides a step further to use this technique in all types of samples. A PYRO-915 pyrolyser coupled to a RA-915 Zeeman mercury analyzer (Ohio Lumex) were used for mercury speciation. These results contribute to define the mechanisms involved in the process of mercury retention in carbonaceous materials, the most widely used materials to mercury retention


Keywords: Mercury speciation, thermal desorption, mercury sorbents, char

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