

Abstract Submitted
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Chlorine atom concentration determination via gas phase titration SREERUPA BASU, Ohio University — Chlorine oxidizes elemental mercury in coal flue gas. Addition of chlorine gas into an electrostatic precipitator, used to clean the flue gas, will thus increase the mercury removal efficiency in the precipitator. Determination of the chlorine atom concentration, formed inside the chamber, is a key to evaluate this efficiency. A series of experiments are performed to dissociate the chlorine gas in a corona-discharge field formed inside a 15X3 cm flow pyrex tube at $P=1\text{atm}$, and the chlorine atoms formed are measured by reacting them with butane. The reaction products are quantified using a GC-FID. The quantification of the chlorine atoms formed under varying parametric conditions like the voltage supplied, amount of chlorine gas injected into the reaction chamber and the distance between the electrodes will thus help in optimizing the amount of chlorine reagent gas needed to be added to a precipitator to obtain enhanced mercury removal efficiency.

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