



NO_x AND PAHS REMOVAL FROM INDUSTRIAL FLUE GAS BY USING ELECTRON BEAM TECHNOLOGY IN THE ALCOHOL ADDITION

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The preliminary test of NO_x and Polycyclic Aromatic Hydrocarbons (PAHs) removal from flue gas were investigated in the alcohol addition by using electron beam irradiation in EPS Kawęczyn. Experimental conditions were as follows: flue gas flow rate 5000 nM³/hr; humidity 4-5%; inlet concentrations of SO₂ and NO_x, which were emitted from power station, were 192 ppm and 106 ppm, respectively; ammonia addition is 2.75 m³/hr; alcohol addition is 600 l/hr. It was found that NO_x removal efficiency in the presence of alcohol was increased by 10% than without alcohol addition when the absorbed dose was below 6 kGy. The NO_x removal efficiency was decreased when the absorbed dose was higher than 10 kGy.

In order to understand PAHs' behavior under EB irradiation, inlet PAHs (emitted from coal combustion process) sample and outlet PAHs (after irradiation) sample were collected by using a condensed bottle connected with XAD-2 adsorbent and active carbon adsorbent and were analyzed by a GC-MS. It is found that: at the 8 kGy absorbed dose, concentrations of PAHs with small aromatic rings (≤ 3 , except Acenaphthylene) are reduced and concentrations of PAHs with large aromatic rings (≤ 4) are increased. A possible mechanism is proposed.

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