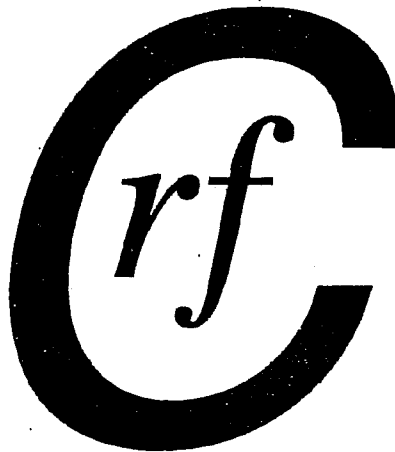


**PROGRAMME
&
ABSTRACTS**

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The Fate of Boron in Pulverized Coal Power Station

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ABSTRACT

In Japanese power stations, most of the steaming coal has been imported from various coal producing countries such as Australia, United States, China, Indonesia, South Africa, Russia and Canada. Since it is required to burn a wide variety of potential imported coals, more than 50 different coals, in a single boiler, evaluation of acceptability of such unfamiliar coals is one of the most critical issues.

Another key issue is to meet emission regulations. NO_x, SO_x and particulates emission from coal power stations are already regulated. In addition, boron emission in wastewater from coal power station was regulated to be less than 230 ppm in April 2002 in Japan. It is a most important issue to know the fate of boron in coal power station for a wide variety of coals. However, only a few attempts have so far been made regarding the fate of boron.

This paper describes the devolatilization of boron during pulverized coal combustion and condensation on fly ash surface after combustion.

The behavior of boron during combustion was examined fundamentally for three different coals by using a drop-tube furnace. It was found that the devolatilization behavior during combustion differed with coal type, and that boron in coal was completely evolved by the final stage of combustion.

Boron condensation behavior onto ash surfaces was investigated for five different coals that were collected from two different coal power stations. The relationship between boron condensation and ash characteristics was studied. It is likely that the sodium and magnesium content of the fly ash affects boron condensation. An empirical equation was developed to estimate boron condensation for a wide variety coals.