1-3-2　石炭フライアッシュからの As，Se，B，F の溶出に対する溶出抑制添加剤の先進的研究

（岐阜大学・工学部）〇ファラ　ファディラ　ハヌム，エルダ　ラフミライラ　デスフィトリ、早川　幸男、神原　信志*

Advanced Study on Additives for Controlling As, Se, B, and F Leaching Concentration from Coal Fly Ash

〇Farrah Fadhillah Hanum, Erda Rahmilaila Desfitri, Yukio HAYAKAWA, Shinji KAMBARA * (Faculty of enginering, Gifu University)

ABSTRACT

Addition of calcium takes an important role in trace elements leaching mechanism. The application of paper sludge ashes as the additives in controlling the leaching of trace elements indicated satisfying effect. In the previous study, PS ash 3 could suppress the arsenic, selenium and boron leaching concentration simultaneously from a coal fly ash, then calcium oxide consisting in PS Ash 3 considered as the calcium compounds that affected the leaching mechanisms. So that, this study aims to verify the effect of suppressing material in leaching mechanism by the addition another kind of paper sludge ashes into two different coal fly ashes. PS ash 8 as the single additives and the mixture of PS Ash 8 with blast furnace cement (BFC) and calcium hydroxide ($Ca(OH)_2$) as the mixture additives have been tested into coal fly ash C and coal fly ash H. The result from ICP-AES analysis, ion chromatography, analysis, XRF analysis and pH meter determined that the mixture additive is more applicable in the decreasing of leaching As, Se, B and F from coal fly ashes.

[1] Introduction

The utilization of paper sludge ashes as the additives to suppress the leaching of trace elements was continuing studied in our laboratory. The previous research found that several paper sludge ashes have positive effect to decrease the As, Se, and B leaching concentration. The role of alkaline condition (pH 9-11) and calcium oxide in paper sludge ash believe to take an important role in the heavy metal stabilizations.

In this study, another kind of paper sludge ash have been tried into two coal fly ashes in order to ensure the effect in paper sludge ashes into trace elements leaching concentration. In this research, paper sludge ashes also will be mixed with another kinds of calcium compounds to learn the effect of heavy metals decreasing. Therefore, this research is an advanced study about the effect of additives into trace elements that proposed to find the applicable additives in trace element leaching concentration especially for As, Se, B, and F.

[2] Experimental

Coal fly ash C (FA C) and coal fly ash H (FA H) tested with single and mixture additives in certain amount of additives ratio. As the single additives, each of calcium hydroxide ($Ca(OH)_2$), paper sludge ash number 8 (PS Ash 8), and Blast Furnace Cement (BFC) added to the both of coal fly ashes samples with the addition ratio from the total sample are 3%, 10%,10% respectively. Then, the mixture of PS Ash 8 and BFC, also the mixture of $Ca(OH)_2$, PS Ash 8 and BFC added to coal fly ashes samples as the mixture additives with the same addition ratio.