



## Short Communication

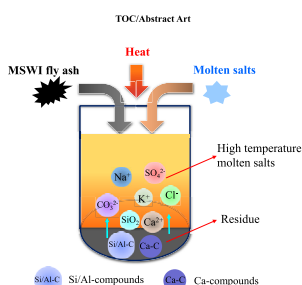
## A novel method for salts removal from municipal solid waste incineration fly ash through the molten salt thermal treatment

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## HIGHLIGHTS

- Molten salts thermal treatment were proposed for salts removal from MSWI fly ash.
- Molten carbonates showed greater capability in the salts extraction.
- Molten chlorides showed better selectivity in alkali metal chlorides removal.
- Si/Al and undissolved Ca-compounds were precipitated from molten salts as residues.
- The reacted molten chlorides could be reused for salts removal for several cycles.

## GRAPHICAL ABSTRACT



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## ABSTRACT

The disposal of the hazardous municipal solid waste (MSW) incineration fly ash is a critical environmental issue in China and the high contents of salts in the fly ash make the ash disposal extremely difficult. The present study proposes a novel method for the salts removal from MSW incineration fly ash using molten carbonates and chlorides at moderate temperatures from 773 K to 1073 K. The results showed that molten salts could effectively extract alkali and alkaline earth metals chlorides and sulfates from the fly ash. Other ash components, like Si/Al-compounds, were precipitated from the molten salts and concentrated in residues. By comparison, molten carbonates showed greater capability in the salts extraction while molten chlorides showed better selectivity in chlorides removal from MSW incineration fly ash. These findings suggest that the optimization of molten salts system could further prove the potential applicability of molten salts thermal treatment method for the salts removal from MSW incineration fly ash.

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## 1. Introduction

Incineration technology has been a conventionally preferred method for the disposal of municipal solid waste (MSW) in China,