

# New Separation and Recovery Process of Platinum Using Chlorinating Agents

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## Abstract

In order to develop a new process for the effective recovery of platinum group metals (PGMs) from scrap, we studied a new fundamental technique that utilizes the selective alloying of PGMs with collector metals followed by chlorination/oxidation. As a part of the preliminary experiments, platinum (Pt) was reacted with magnesium (Mg) at 1173 K to synthesize Mg-Pt compounds, and the obtained Mg-Pt compounds were then chlorinated by exposing the compounds to a vapor of chlorinating agents (e.g., Cl<sub>2</sub>, ferric chloride, and copper chloride gases) at temperatures ranging from 673 K to 923 K. The experimental results revealed that Pt was effectively chlorinated after Mg alloying and the successive chlorination treatment. In a certain condition, Pt in the compounds was extracted and transported through the gas phase. By combining the present chlorination methods and the conventional dissolution methods of the chlorinated Pt in acid solutions, an effective separation and recovery process of Pt can be established.

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