

## **New Process for Separation and Recovery of Platinum Group Metals**

Tsuyoshi Yukawa<sup>1</sup>, Kazuki Morita<sup>2</sup> and Toru H. Okabe<sup>3</sup>

<sup>1</sup>Graduate Student, Department of Materials Engineering  
Graduate School of Engineering, the University of Tokyo;  
7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan

<sup>2,3</sup>Professor, International Research Center for Sustainable Materials,  
Institute of Industrial Science, the University of Tokyo;  
4-6-1 Komaba, Meguro-ku, Tokyo 153-8505, Japan

### **Abstract**

In order to develop an environmentally-sound materials recycling process, we investigated a new recycling process of platinum group metals (PGMs), particularly Rh, Ru, and Ir. The sustainable recycling process consist of a series of new pretreatment methods and a successive leaching step in aqueous solution without using any harmful oxidizing agent. During pretreatment, PGMs were reacted with Mg at 1193 K to obtain PGM-Mg alloys, which were then chlorinated using CuCl<sub>2</sub> or other chlorination agents in the temperature range of 673–873 K. Finally, the obtained samples were dissolved in aqueous solutions of HCl or NaCl, which are free from strong oxidizer. The experimental results showed that valuable PGMs could be recovered by using a combination of the proposed pretreatment method and subsequent dissolution in HCl or NaCl solution. Currently, studies are underway for developing an effective pretreatment-dissolution combination for the successful recovery of PGMs.

(145 words, this abstract should be within 150 words.)

*Keywords: Recycling, Platinum group metals, Chlorides*

Phone: +81-3-5452-6314

Fax: +81-3-5452-6313

e-mail: t-yukawa@iis.u-tokyo.ac.jp