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High Selective Extraction Ability for Platinum-group Metals Based on Thiocalix[6]arene Derivatives

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Two kinds of new thiocalix[6]arene (TC6A) derivatives, TC6A-CH₂COOH (**1**) and TC6A-CSN(CH₃)₂ (**2**), were synthesized through modify at the lower rims of TC6A. The extraction of **1** or **2** for rare metal ions from platinum-group metals (PGM) solution containing eight rare metals (Rh, Pd, Pt, Zr, Ce, Ba, La, Y) and one base metal (Al) were investigated. Compound **1** showed selective extractability for Pd and Zr ions, which the extraction rates were 70% and 91%, respectively. The extraction rates of the other metal ions were below 5% by using **1** and **2**. Compound **1** also showed stripping extraction ability of Pd ion by 7N HCl where the stripping ratio was ca. 70%. On the other hand, compound **2** indicated high selectivity of almost 100% Pd ion extraction from PGM solution.

Key Words : Thiocalix[6]arene, Host-guest chemistry, Platinum-group metals, Liquid-liquid extraction, Metal complex