Recovery of zero-valent precious metals by using biosorption followed by incineration

곽인섭*, 김영애, 구정분, 권현지, 오경준, 신장식
RTI Engineering R&D Center
(kwak@rtieng.com*)

This study introduces a simple process for the recovery of zero-valent precious metals form by a combined method of biosorption and incineration. Conventional methods for the recovery of precious metals from solution phases include extraction, precipitation and evaporation. These methods have significant disadvantages, including high capital costs, reagent and energy requirements and secondary waste products that require disposal. To overcome such disadvantages, the recovery of precious metals from solution phase was performed using combined biosorption and incineration. To recover precious metal as a metallic form, the metal ions sorbed exhausted biosorbents were incinerated. The result of X-ray photoelectron spectroscopy (XPS) and X-ray diffraction (XRD) analysis indicated that the precious metals ion was able to be reduced into zero-valent precious metals during incineration. In this study, a biosorption-incineration combined recovery method offers the potential for the simple and efficient recovery of zero-valent precious metals.