

### Copper recovery platform based in vitro selected DNA aptamer

이상희, 안지영, 엄현주, 권순동<sup>1</sup>, 민지호<sup>2</sup>, 김양훈\*

충북대학교; <sup>1</sup>한국광해관리공단; <sup>2</sup>전북대학교

(kyh@chungbuk.ac.kr\*)

Increasing industrialization and urbanization worldwide had substantially ravaged our environment through the discharge of industrial and domestic wastes. Although it becomes mandatory for industries to treat these wastes before disposal, it is very difficult to solve Cu recovery from the environmental waste because the nature of Cu waste appeared to become very complex and hazardous. For these reasons, this study reports a reusable aptamer-based copper recovery platform for simple, sensitive and highly selective capture of copper. They are generated by an in vitro selection process called SELEX. Through 9 rounds of selection, high affinity ssDNA aptamers Cu-A1 to Cu-A11 were isolated and the affinity of each was analyzed by surface plasmon resonance (SPR). Here we demonstrate aptamer integrated recovery platform (AIRP) to make recovery of copper from mine samples collected from Dalseuonng mine in Korea. Moreover, AIRP can be easily regenerated at least 20 times without significant deterioration of the retrieval performance. The AIRP can be effectively applied for the development of new environmentally friendly Cu recovery process from the various environmental waste solutions.