

### Adsorption Characteristics of Pb<sup>2+</sup> ion on the water-cooling steel slag

김동수\*, 이진숙, 이정언<sup>1</sup>  
이화여자대학교 환경학과; <sup>1</sup>섬진 EST  
(dongsu@ewha.ac.kr\*)

This study investigated the characteristics of water-cooling slag, produced in steel making processes as wastes, to determine the feasibility of its employment as adsorbent for lead ion contained in wastewater. Kinetic and equilibrium features of Pb<sup>2+</sup> adsorption were examined and the effects of temperature and pH on those aspects were determined. In addition, changes in the adsorbability at different ionic strength was measured. Desorption characteristics was also determined for reuse of the adsorbent. The adsorption of Pb<sup>2+</sup> on water-cooling slag followed a 1st order reaction and the isotherm was well explained by Freundlich Model. In addition, the decreases in the equilibrium adsorption of Pb<sup>2+</sup> by increases in pH appeared to be caused by the changes in electrokinetic potential of steel slag. Adsorption capacity of the slag increased as temperature increased, and we calculated the thermodynamic parameters employing van't Hoff equation. Increases in ionic strength induced decreases in the adsorbability of Pb<sup>2+</sup>. Most of the adsorbed Pb<sup>2+</sup> could be desorbed rapidly by complexing agent, which suggested the feasibility of recycling as well as reuse of water-cooling slag as adsorbent for Pb<sup>2+</sup>.