

Removal of metal ions from spiked aqueous solutions using a sorbent produced by slag and red mud.

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The present study investigates the removal of metal ions from spiked aqueous solutions using a sorbent produced from red mud and slag. The sorbent was prepared after a chemical and thermal treatment, during which amorphous silica sol and FeOOH sol are produced simultaneously and form, after treatment, Fe-Si complexes on the surface of the slag. The slag sample used in this study and the red mud sample used as the iron source for the sorbent production was obtained from metallurgical plants in Greece. The surface area (BET method) and the Point of Zero Charge (PZC) of the sorbent were determined, while its surface morphology was examined by Scanning Electron Microscopy (SEM). The sorption efficiency of the sorbent produced was investigated with equilibrium and kinetic studies, performed in batch conditions. Sorption isotherm studies were conducted by varying the initial concentration of the elements. Among the metal ions studied were Cr, Pb, Cu, and As, while for an initial concentration 1000 ppm the amount of metal ions adsorbed was up to 98% of the metal added. The results of the study showed

that with the described process, using metallurgical wastes, an effective sorbent for removal of metal ions from aqueous system was produced.

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