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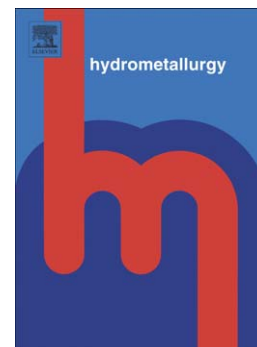
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Leaching behavior of metals from copper anode slime using an alkali fusion-leaching process

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Abstract

The leaching behavior of metals from copper anode slime was investigated using an alkali fusion-leaching process for the preliminary separation of metal values. The slime was fused with sodium hydroxide (NaOH) and sodium nitrate (NaNO₃) followed by water leaching. Various parameters of the process were studied, including NaOH/slimes mass ratio, NaNO₃/slimes mass ratio, fusion temperature and time, slimes/water ratio, leaching temperature and time. More than 97% Se, 98% As, 86% Sn and 76% Pb are leached under optimum conditions while only 1.5% Cu and 3.5% Sb are dissolved. Copper, lead, antimony and silver in residue exist as CuO, PbO, NaSb(OH)₆ and Ag, respectively. Almost all the tellurium, silver, gold and platinum are left in the residue. Based on the experimental results, a flowsheet for comprehensive recovery of metal values from copper anode slime was proposed.

Keywords: Copper anode slime; Alkali fusion; Leaching; Metal values

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