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A HYDROMETALLURGICAL PROCESS FOR RECOVERING RARE EARTHS AND METALS FROM SPENT FLUORESCENT LAMPS

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Abstract

The recovery of raw materials from waste represents a sustainable growth opportunity for those countries with limited mineral resources availability. A case study for an integrated approach to recover raw materials from spent fluorescent lamps is presented, with the aim of improving the current treatments which are only able to recover the glass fraction. In particular a hydrometallurgical process was developed to obtain valuable metals such antimony, copper, and rare earths (yttrium and europium). Grinded powders were leached with several inorganic acids, then antimony and copper were recovered by electrodeposition; Y and Eu were finally precipitated as oxalates. The precipitate was dissolved and the rare earths were separated by solvent extraction. This approach, based on the holistic view of all elements contained in an End–of–Life complex product, ensures both environmental and economic sustainability since it allows waste reduction and materials recovery.

Key words: fluorescent lamps, hydrometallurgy, rare earths, WEEE

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