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Recovery of copper and non-metallic fractions from waste printed circuit base boards

In the recent years, recycling technologies were focusing on the recovery of Cu from waste Printed Circuit Boards (WPCBs), due to the high economic potential and eco-toxicity of copper found in relatively high concentration in WPCBs. However, many recycling technologies do not offer an overall treatment of WPCBs, leaving behind unprocessed fractions like WPCBBs (Waste Printed Circuit Base Boards = electronic component free WPCBs) which could be used for further Cu production. Therefore, the current study presents an original and environmental friendly technological solution for the separation of Cu and non-metallic fractions found in WPCBBs followed by the recovery of a high purity metallic Cu through electrochemical processing. The obtained results revealed the influence of the main operating parameters (current density, temperature, etc.) on the most important technical key performance indicators. One of the major advantages of the developed process consists in the recycling and regeneration of the materials used in the process, reducing significantly the use of auxiliary materials and the amount of new reagents fed to the process. Based on the obtained results it can be concluded that the separation of high purity Cu and non-metallic fractions found in WPCBBs has an overall low environmental impact and high efficiency.

Biography

Szabolcs Fogarasi completed his PhD in 2012 in chemical engineering targeting the recovery of gold and silver from WPCBs. Currently, he is lecturer at Babes-Bolyai University being responsible of the following academic disciplines: Heat transfer and heat transfer equipments (HTHTE), Fluid mechanics and Mass transport. His research activities are mainly focused on the recovery of metals of economic and industrial interest from WEEE. He published more than 24 ISI scientific articles and 1 book in the field of HTHTE. He participated in various national and international projects emphasized on environmental issues such as technical and economic assessment of fossil fuel based power generation and recycling and treatment of e-waste.

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