

Nano-copper recycled from waste printed circuit boards by electrolysis

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Waste electric and electronic equipment (WEEE), also called as electronic waste or e-waste, now is proliferating because of technological innovation. Printed circuit board, as an essential part of almost all electric and electronic equipment, also is obsoleting sharply as the waste stream of e-waste. Waste printed circuit boards (WPCBs) is attracting more and more attention from the government and researchers because it is hazardous but resource rich. Thus, we should recycle the valuable metals from the the angle of pollution control. Here, we propose a novel technology of slurry electrolysis to separate metals and non-metals first and then to recover nano-copper using the separated metals as raw materials. With this technology in the first step, metals could be successfully seperated from non-metals as micro-metal powder with a metal recovery rate up to 98%. Then, the obtained micro-metal powder maily copper about 86.6% were slurry electrolyzed for preparing nano-copper. Experiments showed that the obtained nano-copper was smaller than 80 nm with a purity of about 98% and a yield coefficient of about 98%. This technology provides a new approach to completely separate metals and non-metals from WPCBs and also a high added value product i.e, nano-copper. Of course, envrionmental issues in this process should be considered for field experiment.

Biography

Mengjun Chen has completed his PhD from Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences. He visited the University of California, Irvine as a Researcher with a reward from the China Scholarship Council. Now, he is serving as the Vice-Director of Key Laboratory of Solid Waste Treatment and Resource Recycle, Ministry of Education. He has published more than 30 papers in reputed journals.

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