An economic analysis of the recovery of gold from CPU, boards, and connectors using aqua regia

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\textbf{ABSTRACT}

The recovery and recycling processes for the management of electronic wastes should be determined accurately. The processes applied to e-waste recycling are continually developing. These processes are applied using different methods, and thus, economic analysis is required in order to select the preferred choice. In particular, the aqua regia process for the recycling of gold can usually be implemented efficiently. In our study, the inputs and outcomes of the physical separation and chemical reactions that are conducted with the aqua regia for CPU, board, and connectors in the real scale plant were discussed. The rent, equipment, and labor costs, as an expense, have mainly been determined in the economic analysis of the aqua regia, and $16.55 is calculated as kg waste per month. However, the benefits obtained from CPU, board, and connectors were determined as $274, $104, and $94 for kg waste per month, respectively.

\textit{Keywords:} Gold recovery; E-waste; Aqua regia; Economic analysis

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