

FUTURE TREND OF REUSE AND RECYCLING OF LI-ION BATTERY

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Production of LiBs (Lithium ion batteries) is expected to increase rapidly due to the increase of hybrid vehicles (HV), and electric vehicles (EV) which used secondary batteries as an effective energy storage device. Development of an efficient recycling scheme to recover the valuable parts and safely dispose the harmful one at batteries end life is a necessity. The challenge, however, is how to recover all the valuable metals without sacrificing the economics of recycling process. Although many recycling processes of Li ion Battery have been proposed, even now many discussions has occurred on this matter. So, present status of reuse and recycling of Li ion battery will be discussed and summarized in the moment. Of course, a final fomula of Li ion battery has not decided yet, then systems and recycling processes have not been concluded. A review of reuse by these processes and their development timeline will be presented in this presentaion. Reuse of ion battery is very essential in 2R (Reuse and recycling) because most recycling processes has not been shown an econnomical feasibility. Most difficult part is a logistic of waste Li ion battery which sometimes seems as a dangerous and harmful waste. Therefore, cost of collection of them becomes so expensive. Some of the recycling processes are expensive and designed for specific types of batteries which ignore contamination of recycling stream with impurities and other type of batteries. Using minerals, processing operations such as grinding, sieving, magnetic, electrostatic, and gravity separations to liberate batteries electrodeal materials and concentrate valuable metals is critical step in any recycling process due to their simplicity, efficiency, flexibility, and high throughput. It was found that applying these processes on LiBs scrap reduces its volume, liberate valuables, reduces the need for leachate purification in hydrometallurgical process, and facilitates the decomposing of battery electrolyte.

Biography

Nakamura has completed his PhD from Kyushu University and was an Assisant Professor at Kyushu Institute of Technoligy after his PhD work. He was a Full Professor of Kyushu Institute of Technoligy in 1991. He was a Professor, Institute Multidisciplinary Reasearch For Advanced Materials, Tohoku University from 2001. He was retired from Tohoku University in 2017 and became Profesor Emeritus Tohoku University and he is a Project Professor at Institute of Industrial Science, The University of Tokyo. He was a President of Mineral and Materials Processing Institute of Japan in 2011. He has published more than 200 papers in reputed journals. He is a Member of Science Council of Japan.

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