Biological treatment technology for batteries

What is the environmental impact of battery treatment?
Among the tested 18 environmental impact parameters,the two parameters namely human toxicity(62.7 kg 1,4- dichlorobenzene equivalent per kg of battery treatment) and marine ecotoxicity (0.46 kg 1,4-dichlorobenzene equivalent per kg of battery treatment) were the main components of the environmental impact that get much attention.

Could algae be used to make a biological photovoltaic battery?
When thrown away,the metals and solution within the battery may be toxic to the environment. Based on the research conducted by the University of Cambridge,algae could be used to make a biological photovoltaic battery(BPV),a battery that uses photosynthesis from microorganisms to remain charged.

Who are the authors of sustainable bioleaching of lithium-ion batteries?
Majid Alipanah, Hongyue Jin, Qiang Zhou, Caitlin Barboza, David Gazzo, Vicki Thompson, Yoshiko Fujita, Jiangping Liu, Andre Anderko, David Reed. Sustainable bioleaching of lithium-ion batteries for critical metal recovery: Process optimization through design of experiments and thermodynamic modeling.

Why do we recycle lithium ion batteries?
This is due to the ubiquitous use of lithium-ion batteries (LIBs) in large-scale energy and transportation sectors as well as portable devices. Recycling of the LIBs for being the supply of critical metalshence becomes environmentally and economically viable.

Can hydrometallurgy and pyrometallurgy be used to recycle batteries?
Currently,the combined use of hydrometallurgy and pyrometallurgy as a new recycling process has been widely reported,but further in-depth research is still needed. In the process of recycling batteries,Sony Corporation (Japan) employs a combined technique of hydrometallurgy and pyrometallurgy (Meng et al.,2021).

How are Biophotovoltaic batteries made?
For this experiment, 16 biophotovoltaic batteries (BPV) were made using copper and zinc, saltwater, and each type of algae. The copper wire was measured and turned into equal sizes of spring to increase conductivity. Both metals were sandpapered before being put into the saltwater.

Implantable medical materials are increasingly important in the medical field due to illnesses and injuries caused by various accidents [1].An increasing number of organs, including artificial hearts, cochlear implants, and artificial pancreas, are equipped with various bionic implants to meet their specific needs [2].Implantable medical devices are electronic ...

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6 ???· Integrating these materials into battery components reflects the interdisciplinary nature of modern materials science, drawing inspiration from both biological systems and conventional engineering principles to drive innovation in energy storage technologies. For instance, hydroxyapatite, resembling calcium phosphate, stabilizes and coats electrodes. Calcium ...

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Here, we comprehensively review the biological and chemical mechanisms of the bioleaching process with a conclusive discussion to help how to extend the use of bioleaching for lithium extraction and recovery from the spent LIBs with a focus on recovery yields improvement.

Edward D. Schroeder, in Encyclopedia of Physical Science and Technology (Third Edition), 2003. IV.B.2.b Biological wastewater treatment. In biological wastewater treatment organic material is oxidized by microbial communities maintained in either a suspended growth or an attached growth reactor. Both types of reactors make use of mixed cultures ...

The biological metallurgy process has been regarded as the most environmentally favorable technique, which is achieved through the use of inorganic and organic acids produced by the metabolism of different microorganisms and strains to ...

This paper discusses the technologies for S-LIBs cascade utilization, including new techniques for battery condition assessment and the combination of informatization for different battery identification and dismantling. After complete scrapping, the most crucial ...

In recent decades, therefore, much attention has been paid to the removal of high ammonia nitrogen from aquaculture water. Unfortunately, traditional physiochemical methods (blow-off treatment, zeolite deamination, membrane separation technique, magnesium ammonium phosphate (MAP) deposition, chemical oxidation) usually serve in the raw bleaching process ...

Mechanical biological treatment (MBT) is considered as a perspective pre-treatment way for resource utilization of MSW. The mechanical and biological processes involved in MBT lead to the emission of odors, which are harmful to human health and the environment. Odor control received much attention in the MBT

treatment plant of MSW. The paper ...

Biological-based methods (e.g., bioprecipitation) can be applied for metal recovery from the bioleaching solution. There are several potential operational challenges and knowledge gaps which should be addressed in future studies to scale-up the bioleaching process.

Spent Li-ion batteries (LIBs) are highly rich in cobalt and lithium that need to be recovered to reduce shortages of these valuable metals and decrease their potential environmental risks.

batteries. The main objective of such technologies is to enable the recycling of valuable elements present in the batteries, such as cobalt, nickel and copper, in a way which is both profitable and environmentally friendly. All the technologies used in the manufacture of lithium-ion batteries are constantly changing

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The lithium batteries contain a wide range of recalcitrant organics, and our Nyex technology can remove over 95% of TOC from the battery wastewater. This means water reuse in any recycling plant will increase considerably, and water sent to the sewers or watercourses will be well within current environmental limits.

Web: https://nakhsolarandelectric.co.za