Technical trends for the valorization of heavy metal containing hyperaccumulators in China

Jieyi Wen[1], Jiawen Zhou[2], Rui Zhang[3], Wenqiang Ren[4], Jianbo Zhao[5], and Di Cai[1]

[1]Beijing University of Chemical Technology
[2]Institute of Soil Science Chinese Academy of Sciences
[3]Hunan University of Science and Technology
[4]Chinese Academy of Sciences
[5]Tarim University

March 29, 2023

Abstract

With high biodiversity and a large demand for environmental restoration, China has become a global hotspot for the investigation and application of hyperaccumulator plants aiming to effectively decontaminate polluted soils. After harvesting, the abnormally high content of heavy metals (HMs) in the aboveground tissues of hyperaccumulators requires proper treatment in downstream processes to boost the economic potential and avoid secondary pollution. This paper covers the significance of phytoextraction research in the remediation of HM-contaminated soil in China. The technical trends and the major scientific advances for the eco-friendly valorization of HM-enriched hyperaccumulators are comprehensively reviewed. A systematic survey of the thermochemical and biological routes to upcycle the hyperaccumulator biomass is conducted by emphasizing the transformation strategies for green and valuable products, along with the safe recovery of HM streams. In addition, challenges and perspectives on the valorization of hyperaccumulators in the future are presented.

Hosted file

`Manuscript .doc` available at https://authorea.com/users/601136/articles/632454-technical-trends-for-the-valorization-of-heavy-metal-containing-hyperaccumulators-in-china

Hosted file

`Figure.doc` available at https://authorea.com/users/601136/articles/632454-technical-trends-for-the-valorization-of-heavy-metal-containing-hyperaccumulators-in-china