UNIVERSITY OF WYOMING
Wyoming Technology Transfer and Research Products Center

Extraction of Rare Earth Elements with Wasted Renewable Resources

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Inventor:
Maohong Fan
Zaixing Huang
Kai Li

Patent Status:
Patent Pending

Description of Technology

Rare earth elements (REEs) refers to a group of 17 elements that usually coexist in minerals due to their chemical similarity. These elements are being increasingly used in renewable energy and energy-efficient technologies because they have unique electronic, magnetic, optical, and catalytic properties. Once the minerals that contain these elements are mined, the REEs must be extracted. The current way of extracting and separating the REEs has a high consumption of acids and organic solvents, a large production of wastewater, and is complicated.

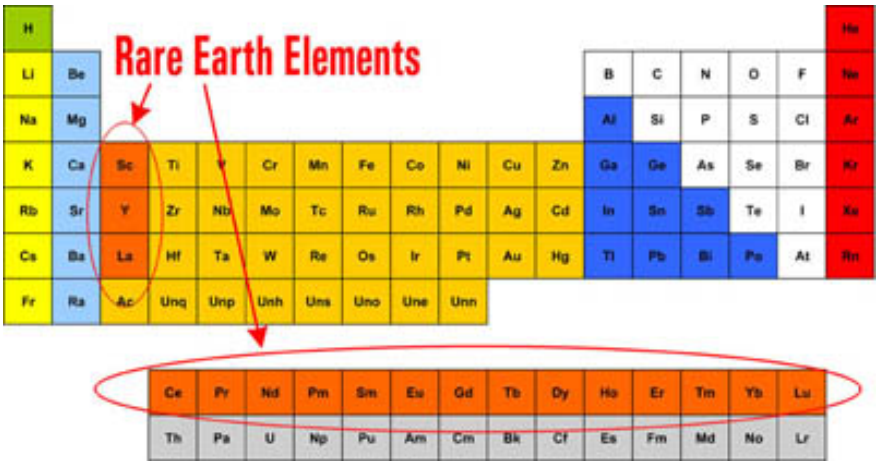
Researchers at the University of Wyoming have created a way to recover, extract, and separate the REEs that is environmentally friendly and benign. This method uses renewable organic acid and is considered a "green" alternative to the traditional method. The University of Wyoming researchers have initial data showing different amounts of REEs extracted from coal using either formic or acetic acid over different time periods. The data shows that as the extraction time increases, so does the extraction concentration of REEs from the coal. Also, increasing the acid concentration from 5% to 10% can also increase the amount of extraction concentration of the REEs.
(Data is available upon request)

Applications

This invention can be used as a replacement of the current way to recover, extract, and separate REEs. Since the acid used in the extraction process is renewable, it is considered "green."

Features & Benefits

- A green alternative to the traditional extraction method
- Uses renewable acid
- Still an efficient method of extraction



http://www.pgm-blog.com/wp-content/uploads/2013/07/Rare-Earth-Elemements.jpg

Contact Us:
Wyoming Technology Transfer and Research Products Center
1000 E. University Ave
Laramie, WY 82071

Tele: 307-766-2520
Fax: 307-766-2530
Email: Wyominginvents@uwyo.edu