

SMaRT Center Weekly Digest
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News

[Turkey uncovered the world's second largest rare earth element reserve](#)

Turkey uncovered the world's second largest rare earth element reserve in the Beylikova district of Eskisehir in central Anatolia, Turkish media reports. "Eskisehir Beylikova, one of the important rare element fields of our country, is the second largest reserve area in the world after China. We are establishing a production facility that will process ore. After the trial production results, we will start the industrial facility investment. Our goal is to process 570 thousand tons of ore annually when this facility reaches full capacity, 10 thousand tons of rare earth oxides, 72 thousand tons of barite, 70 thousand tons of fluorite and 250 tons of thorium," Recep Erdogan noted. "Of the 17 known rare elements, we will be able to produce 10 here," he said. He also declared that 250 tons of thorium will be produced.

[GT Voice: Global rare-earth exploration won't affect China's advantage](#)

Turkey discovered a rare-earth reserve estimated to contain about 694 million tons of rare-earth reserves, sufficient to cover the global demand for 1,000 years. Although some questioned the accuracy of the data, many might think that the reported uncovering of a new large-scale rare-earth reserve could have certain impact on China's position as a dominant player in the global rare earths supply chain. However, it needs to be pointed out that the reality is that China currently is the only country in the world with a complete industrial chain for producing rare earths, a processing advantage that will not be simply diminished by uncovering of any amount of rare-earth reserves.

[Mercedes strikes second-life battery pact with Canadian startup](#)

Mercedes-Benz Group AG subsidiary that focuses on electric vehicle battery storage has reached an agreement with a Canadian startup to repurpose partly-spent EV batteries. Mercedes-Benz Energy will supply used batteries from the automaker's electric vehicles to Vancouver-based Moment Energy Inc., which will convert them to modules that provide rechargeable power to commercial and industrial buildings. A major challenge of electric vehicles is what to do with the batteries once the car ends its useful life. Those supplied to Moment Energy by Mercedes-Benz will have at least 70% of their capacity. That's enough for energy-storage systems that can be deployed to reduce consumption at commercial sites.

[Pensana Plc - World's first rare earth offshore wind processing hub](#)

Pensana has signed a letter of intent securing private wire connection to battery storage operated by Yorkshire Energy Park under which it will have access to 4 MW rising to 10 MW of low carbon electricity for 10 years. Pensana will use the low-cost and resilient supply of low-carbon electricity to power the Saltend separation facility and then later to power the conversion of NdPr Oxide into magnet metal, making it the first in the world to use offshore wind to produce ultra-low carbon magnet metal. The Yorkshire Energy Park will include up to 200 MW of battery storage and is located adjacent to Pensana's site within the Saltend Chemicals Park.

Select Articles

[Leaching characteristics of rare earth elements from coal ash using organosulphonic acids](#)

In the present study, the leaching potential of methanesulphonic acid (MSA) and p-toluenesulphonic acid was compared towards extraction of REEs from coal ash. MSA imparted good selectivity in leaching, wherein, it leached out 70% of REE along with minimal quantities of other coal ash elements (<10%). The leaching kinetics studies under varying temperature concluded the process to be diffusion controlled, following the shrinking core model. The leaching potency of organosulphonic acid was found to be at par with mineral acids (HNO₃ and HCl), and hence it could be considered as a green alternative.

[Efficient Recovery of Niobium and Tantalum from Ferrocolumbium Tantalum by a Continuous Leaching Process Using HF – H₂SO₄ – HNO₃ Synergistic System](#)

[Ferrocolumbium is made by smelting the ore with iron, and can be sold as a product or further processed to produce tantalum and columbium products.] A stable and continuous leaching process for niobium and tantalum extraction from ferrocolumbium tantalum (FT) was developed. The effects of initial concentration of HF and H₂SO₄, grinding fineness, leaching time, and temperature on the leaching rate of Ta, Nb, Fe, and Si were studied. [A method based on optimum doses and operating conditions was developed.] A high Nb extraction rate of 99.8% was achieved. The established method provides a promising technique for the high-efficiency separation of niobium and tantalum from FT.

[Rare earth recovery from fluoride molten-salt electrolytic slag by sodium carbonate roasting-hydrochloric acid leaching](#)

Fluorinated rare earth molten-salt electrolytic slag contains a considerable amount of rare earth elements, as well as a variety of heavy metals and fluorides that cause environmental pollution. In this study, the transformation mechanism of fluorinated rare earth molten-salt electrolytic slag roasted with sodium carbonate, and the regulation mechanism of rare earth leaching under different roasting conditions were investigated. The optimum experimental conditions were: a roasting temperature of 700 °C, roasting time of 2 h, and sodium carbonate to molten salt electrolytic slag mass ratio of 0.6, followed by leaching at 80 °C with a liquid-solid ratio of 10:1 by adding 3 mol/L hydrochloric acid with stirring for 2 h. Under these conditions, the rare earths in the molten salt electrolytic slag were biologically transformed at a lower temperature and the leaching efficiency of rare earths exceeded 98%.

Funding Opportunities

[DE-FOA-0002803: NOTICE OF INTENT TO ISSUE FOA DE-FOA-0002804 - INDUSTRIAL EFFICIENCY AND DECARBONIZATION FOA](#)

Funding entity:	DoE, Office of Energy Efficiency and Renewable Energy
Purpose	The RD&D activities anticipated to be funded under this FOA would support the governmentwide approach to the climate crisis by driving the innovation that can lead to industrial decarbonization. Specifically, this anticipated FOA would fund high-impact, applied research and development and prototype or pilot-scale demonstration projects in order to expedite the adoption of transformational industrial technology necessary to reduce energy usage and GHG emissions from high GHG-emitting industrial subsectors.
Areas of Interest:	<ul style="list-style-type: none">• Topic 1 – Decarbonizing Chemicals Anticipated focus on unit operations including advanced separations and advanced reactors, and alternative production and process heating technologies to reduce carbon impacts from the production of high volume chemicals.• Topic 2 – Decarbonizing Iron and Steel Anticipated focus on advancements that enable decarbonization in ore-based or scrap-based iron and steelmaking operations, and that convert other existing iron and steelmaking ancillary and thermal processes in order to utilize clean fuels or electricity.• Topic 3 – Decarbonizing Food and Beverage Products Anticipated focus on innovative technologies that decarbonize existing process heating operations within the food and beverage sector.• Topic 4 – Decarbonizing Cement and Concrete Anticipated focus on next generation cement formulations and process routes, utilization of low carbon fuels, and carbon capture technologies.• Topic 5 – Decarbonizing Paper and Forest Products Anticipated focus on novel paper and wood drying technologies, and innovative pulping and paper forming technologies.• Topic 6 – Cross-sector Decarbonization Technologies Anticipated focus on innovations in low temperature waste heat to power, thermal energy storage, and industrial heat pump technologies.
Notes:	EERE plans to issue the FOA in or about August 2022.