

SMaRT Center Weekly Digest

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News

[US invests over \\$74 million in federal-state partnership for critical minerals mapping](#)

The Department of the Interior announced today that, thanks to a substantial investment from President Biden's Bipartisan Infrastructure Law, over \$74.6 million will be distributed in 30 states to invest in geoscience data collection, mapping, data preservation, and scientific interpretation of areas with potential for critical minerals, under the U.S. Geological Survey (USGS) Earth Mapping Resources Initiative, or Earth MRI.

[European fund for critical minerals projects to launch next year](#)

The European Raw Materials Fund is due to start with around €2-billion (\$2.09 billion), but eventually the region will need more than €100-billion (104.70 billion) in investment to produce enough critical minerals, Bernd Schaefer, chief executive of EU-funded EIT Raw Materials, told Reuters this week.

[New Wyoming facility to boost extraction of REEs from coal](#)

Non-profit Energy Capital Economic Development officially opened the Wyoming Innovation Center (WyIC), a 5,500-square-foot coal commercialization facility located on a reclaimed mine site in the United States' coal-rich "Carbon Valley" region. The WyIC features two buildings and seven demonstration sites for pilot plants. "It's the perfect destination for us to fulfill our mission— to research and develop the commercialization of rare earth elements," Tom Tarka, an engineer at the National Energy Technology Laboratory (NETL), said in a statement.

[Congress seeks to more than double the net worth of the national strategic mineral stockpile](#)

The Senate's annual defense authorization bill, which the Armed Services Committee advanced Thursday, would authorize \$1 billion in funding for the National Defense Stockpile in fiscal 2023 to "acquire strategic and critical minerals currently in shortfall," per a summary of the legislation. This would more than double the value of the stockpile of rare earth minerals, which includes many essential to defense supply chains, including titanium, tungsten, cobalt, and antimony.

[Redevelopment of a historic oil field into a potential source of lithium in Canada](#)

E3 Lithium has entered a collaboration with Imperial Oil for the purpose of advancing a lithium extraction pilot in the province of Alberta. The pilot plant will support E3 Lithium's Clearwater project, which will draw lithium from under the Leduc oil field, Imperial's historic discovery that first launched major oil and gas development in Western Canada. E3 Lithium's proprietary technology is designed to extract the critical mineral from the lithium-rich brine, with potential for commercial development of battery-grade products.

Select Articles

[Recovery of water and valuable metals using low pressure nanofiltration and sequential adsorption from acid mine drainage](#)

A chromium-based metal organic framework (MOF) modified with N- (phosphonomethyl) iminodiacetic acid (PMIDA) and an amine-grafted mesoporous silica (SBA15) material was synthesized for selective recovery of REE and Cu, respectively. The two adsorbents were used sequentially to selectively adsorb REE (91%) and Cu (90%) from pH adjusted concentrated feed.

[Lithium extraction from shale gas flowback and produced water using \$H_{1.33}Mn_{1.67}O_4\$ adsorbent](#)

$H_{1.33}Mn_{1.67}O_4$ is a promising adsorbent for lithium extraction from SGFPW, and precipitation before adsorption can improve its performance significantly. Na_2CO_3 precipitation pre-treatment was employed to improve the adsorption capacity and selectivity of lithium. After four cycles of adsorption and desorption, the adsorption capacity of lithium was stable and showed only a slight decrease.

[Selective separation of iron and scandium from Bayer Sc-bearing red mud](#)

The Sc-bearing red mud was treated by a novel deep reduction roasting and magnetic separation process that includes the addition of coke and CaO to extract Fe and enriching Sc from the Sc-bearing red mud. The test results show that utilizing the new process a Fe concentrate with a TFe content of 81.22% and Fe recovery of 92.96% is obtained. Furthermore, magnetic separation tailings with Sc content of 0.0062% and Sc recovery of 98.65% were also obtained.