

HERMES: HASTENING THE EXPLORATION AND RECOVERY OF MINERALS FROM EARTH & ENERGY SYSTEMS



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In line with the strategic goals of the U.S. Department of Energy (DOE) Office of Critical Minerals & Energy Innovation (CMEI), the DOE Hastening the Exploration and Recovery of Minerals from Earth & Energy Systems (HERMES) initiative is designed to bolster the reliable, domestic supply of critical minerals and materials (CMMs) essential for national energy and economic security. Led by NETL's Critical Minerals & Advanced Alloys Center of Excellence and supported by DOE's Advanced Mining and Mineral Production Technologies Office (AMMPT), HERMES draws on expertise and advanced capabilities from seven partnering national labs (Argonne, Berkeley, Los Alamos, NETL, Pacific Northwest, Sandia, and SLAC) to establish the technical basis and methods to derisk the recovery of CMMs from abundant domestic secondary and unconventional feedstocks.

Through collaboration with industry stakeholders, key government partners, and other strategic collaborators, HERMES works to rapidly unlock the critical mineral potential of mine waste, tailings, coal waste, and other underutilized materials—transforming these liabilities into strategic assets. By accelerating the path from resource identification to recovery—through advanced characterization, AI driven analytics, and field validated assessment tools—and by reducing the time and cost typically associated with evaluating mine waste using defensible, cross laboratory data and decision ready assessments, HERMES shortens the timeline for industry to confidently invest in extracting valuable minerals from waste streams. This work is supported by cutting edge science, multi institutional consensus, and robust field validation. For more information on HERMES, please contact HERMES@netl.doe.gov.

Albany, OR • Morgantown, WV • Pittsburgh, PA • Houston, TX



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HERMES leverages the deep expertise of contributing national laboratories and key strategic partners in multiphysics field investigation, advanced materials characterization and assessment of mineral recoverability, artificial intelligence/machine learning, and integrated systems-level performance assessment.



HERMES



NETL is a U.S. Department of Energy (DOE) national laboratory dedicated to innovating and accelerating the nation's energy solutions in hydrocarbon, geothermal energy and critical minerals production. With research sites in Albany, Oregon; Morgantown, West Virginia; and Pittsburgh, Pennsylvania, NETL operates as one laboratory to create advanced energy technologies that support DOE's mission and enable affordable, reliable and secure energy to fuel human prosperity.

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