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# ***NETL NEWS***

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## **NETL Researcher Honored with 2013 Federal Laboratory Consortium Award**

**Albany, Ore.** — Jeffrey Hawk of the National Energy Technology Laboratory (NETL) has been awarded a Far West region Federal Laboratory Consortium (FLC) award for Outstanding Technology Development for his work on [\*Superior Heat Resistant Alloys through Controlled Homogenization\*](#).

Heat-resistant alloys used in the energy industry contain a variety of elements that are hard to control during metal working. As a result, metal workers typically use trial and error to disperse these elements uniformly throughout the ingot during heat treatment. As more of these elements have been incorporated into the alloys, traditional methods of homogenization are no longer appropriate, but without uniform dispersion in the ingot, the microstructure becomes unstable for long-term, high-temperature performance.

As a solution to this problem, NETL has developed a computational algorithm to design a customized homogenization schedule for a given alloy. The computational algorithm estimates the microstructure to develop simulations of what occurs in the alloy during heat treatment. These simulations allow staff to calculate the incipient melt temperature and adjust the treatment temperature accordingly. This approach significantly reduces the time required for alloy development by removing the trial and error aspect of the melting process, optimizing homogenization temperature and heat treatment schedules. When applied to current manufacturing processes, this new approach will allow for efficient and cost-effective development of heat-resistant alloys for use in conventional coal-fired and advanced power generation systems, leading to more efficient and environmentally responsible electricity production.

The FLC—a nationwide network of federal laboratories—selected three NETL technologies to receive regional awards for excellence in technology development or transfer. These yearly awards, presented by several regional divisions of the FLC, support

the efforts of its members and potential partners to transfer their technologies to the marketplace as assets to the national economy and benefits to society.

Dr. Hawk is the technical coordinator for the Advanced Combustion project and lead of the Advanced Alloys Team, working to improve existing and develop new heat resistant alloys for combustion technologies. He grew up on the East Coast and attended the University of Virginia (Charlottesville, Va.) where he obtained a B.S. in civil engineering followed by an M.S. and Ph.D. in materials science. Dr. Hawk is a resident of Corvallis, Ore.

NETL is a U.S. Department of Energy national laboratory that produces technological solutions to America's energy challenges. For more than 100 years, the laboratory has focused on developing tools and processes to provide clean, reliable, and affordable energy to the American people. Three NETL research sites—Albany, Ore., Morgantown, W. Va., and Pittsburgh, Pa.—conduct a broad range of energy and environmental research and development activities that support DOE's mission to advance the national, economic, and energy security of the United States.

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