



Berkeley's Margaret Torn: A steppe at a time.

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# Research Highlights . . .



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## Coal ash becomes a dwelling

A new construction material using recycled flyash from coal-fired power plants is being tested at DOE's [Oak Ridge National Laboratory](#). The material will be used in the walls of a Habitat for Humanity home; its performance will then be compared with data from other, previously built Habitat homes. The project represents a double benefit: converting a waste-stream from coal burning into an energy-efficient construction material. The Tennessee Valley Authority and Babb International of Ringgold, Ga., are participating in the project with [ORNL's Buildings Technology Center](#).

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## DREAM-y technology advances proteomics

While people may rely on counting sheep to fall asleep and then dream, scientists at DOE's [Pacific Northwest National Laboratory](#) are putting DREAMS before measurements with a powerful new mass spectrometry technique. This method, called DREAMS for Dynamic Range Enhancement Applied to Mass Spectrometry, analyzes more proteins in less time and with greater accuracy than current methods, thereby providing a more thorough understanding of an organism. PNNL scientists designed DREAMS to automatically filter out signals from proteins that exist in large numbers from those proteins that appear in fewer numbers. Such low-level proteins often hold clues to important cellular processes, such as disease development. Globally studying proteins has become a major challenge and now is possible because of the near completion of the mapping of the human genome.

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## NETL works both ends of technology development

DOE's [National Energy Technology Laboratory](#) is developing a mathematical model that can ultimately be used to improve the iron-removal rates of semi-passive technologies applied to watersheds polluted with acid mine drainage. The model would also predict the outcome of adding a treatment method to an existing technology.

The overall goal is to demonstrate the effectiveness of water-powered technologies as a cost-cutting alternative to fossil-fuel-operated devices used today. Because iron kills insects that are part of a watershed's food chain, it threatens an entire ecosystem. In addition to providing the science behind improved technology design, the lab will design, construct and field test large-scale, in-stream systems.

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## Research projects advance renewable energy

DOE's [National Renewable Energy Laboratory](#) will perform three research projects as part of an Xcel Energy program to advance renewable energy. One project is to develop a filter that can remove potential pollutants from systems that produce energy from biomass. In addition, NREL researchers will work on a new solid state Titania solar cell based on mesoporous Titanium Dioxide Film. One main objective of this project is to make the cell practical for the marketplace by developing a solid-state version of the cell. A third project involves the development of new electrocatalysts for proton exchange membrane fuel cells. This research could lead to the development of a direct methanol or ethanol fuel cell or to a more robust hydrogen powered system.

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