

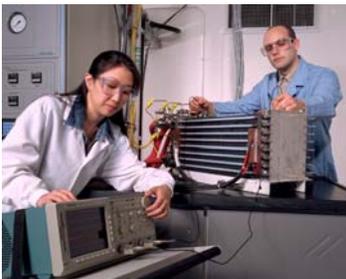
Fuel Cell Research and Development

Fuel cells offer a clean, efficient power source for transportation, as well as for residential and distributed stationary power generation. Argonne is working closely with the U.S. Department of Energy to help develop fuel cell materials, processes, and systems, as well as hydrogen production and storage materials for these uses.

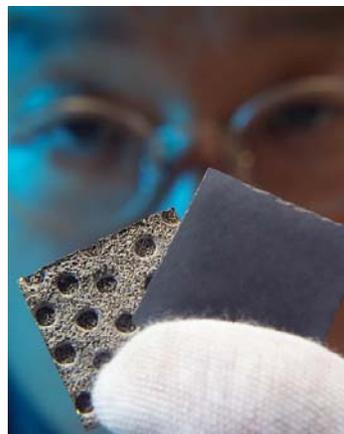
Hydrogen is considered the ideal energy carrier for fuel cells in the long term but until hydrogen is readily available, fuel cells will need to use conventional fuels, such as natural gas, propane, gasoline, and diesel, or alternative fuels, such as methanol, ethanol, and bio-diesel. Such fuels can be converted to hydrogen or a hydrogen-containing gas mixture through a series of chemical reactions in "fuel reformers" (also known as fuel processors).

Fuel cell research at Argonne focuses on developing

- Catalysts, processes, and reactor designs for fuel processing in integrated fuel cell power systems,
- Improved, lower-cost materials for fuel cells, and
- Materials for hydrogen production and storage for polymer electrolyte and solid oxide fuel cell systems.



Argonne's Fuel Cell Test Facility was established by the U.S. Department of Energy's Office of Hydrogen, Fuel Cells, and Infrastructure Technologies to provide a test facility for independent, standardized testing for all types of fuel cells for DOE and fuel cell developers.



TuffCell's innovative metal-supported design allows easy fabrication and provides high mechanical strength.

One use for solid oxide fuel cells is auxiliary power units (APUs) for heavy-duty vehicles. A fuel cell APU would generate power for air conditioners and other hotel loads when the main engine is shut off, enabling truck owners to meet impending anti-idling legislation while improving their overall fuel economy. Argonne is developing a rugged solid oxide fuel cell, the TuffCell, that could be used for this purpose.

Argonne is also developing technology to reform diesel fuel for use in fuel cell applications. Thus, tractor-trailer trucks could soon be using diesel fuel not only for power to roll down the highway, but to create the hydrogen needed for clean, quiet, fuel-cell-powered APUs as well as for emissions control.

We are collaborating with three university teams to address materials and fuel processing issues.

For More Information

Romesh Kumar, Head
Fuel Cell Department
Chemical Engineering Division
Argonne National Laboratory
9700 S. Cass Ave., Argonne, IL 60439
630-252-4342, FAX 630-252-4176
kumar@cmt.anl.gov
<http://www.cmt.anl.gov/science-technology/fuelcells/>