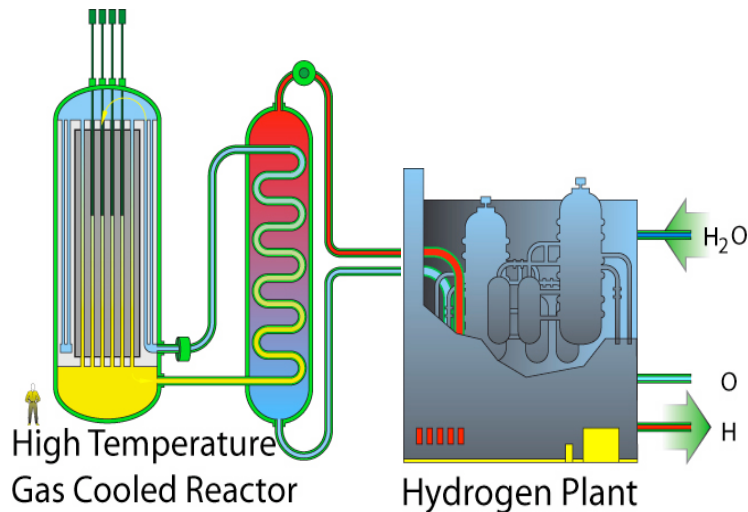


Developing materials for a new generation of advanced nuclear reactors



The very high temperature gas reactor for production of electricity and hydrogen

Objective:

Develop materials that can withstand the aggressive conditions in an advanced nuclear reactor

Approach:

UM researchers are understanding the modes by which materials degrade in the harsh environments in advanced reactors. They are using this knowledge to develop new materials that are designed to withstand these conditions. Strategies being pursued include:

- new alloys
- microstructure modification of materials
- grain boundary engineering
- barrier layers

Impact:

- Advanced nuclear reactors will be more economical, safer, more reliable and produce less radioactive waste than current generation reactors.
- The very high temperature reactor will operate on a helium cycle with temperatures approaching 900°C, providing low-cost electricity and utilizing the high temperatures to drive the production of hydrogen.
- The advanced burner reactor will provide for recycling and consumption of long-lived radioactive waste through a closed fuel cycle, and will promote non-proliferation.

Contact:

Gary S. Was

Nuclear Engineering and Radiological Sciences
Materials Science and Engineering

gsw@umich.edu

(734) 763-4675

www-ners.engin.umich.edu/lab/rms/

Facilities and infrastructure:

- Michigan Ion Beam Laboratory
- Irradiated Materials Laboratory
- High Temperature Corrosion Laboratory

