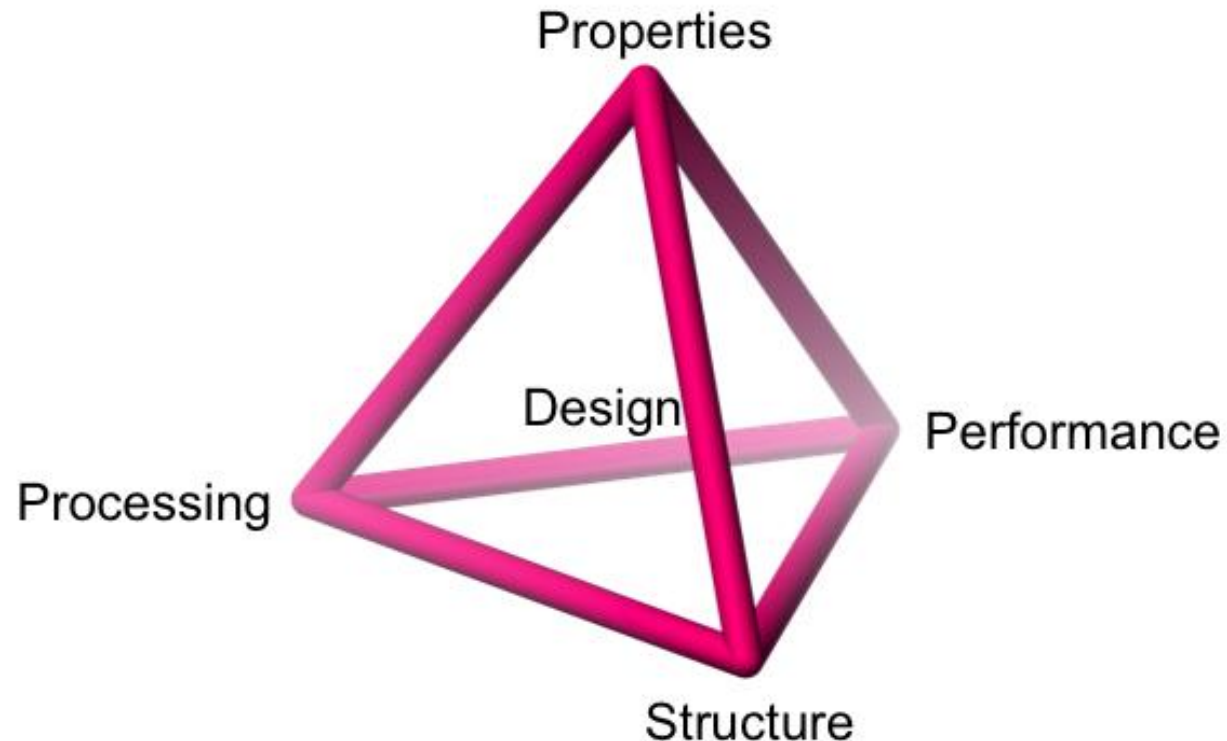
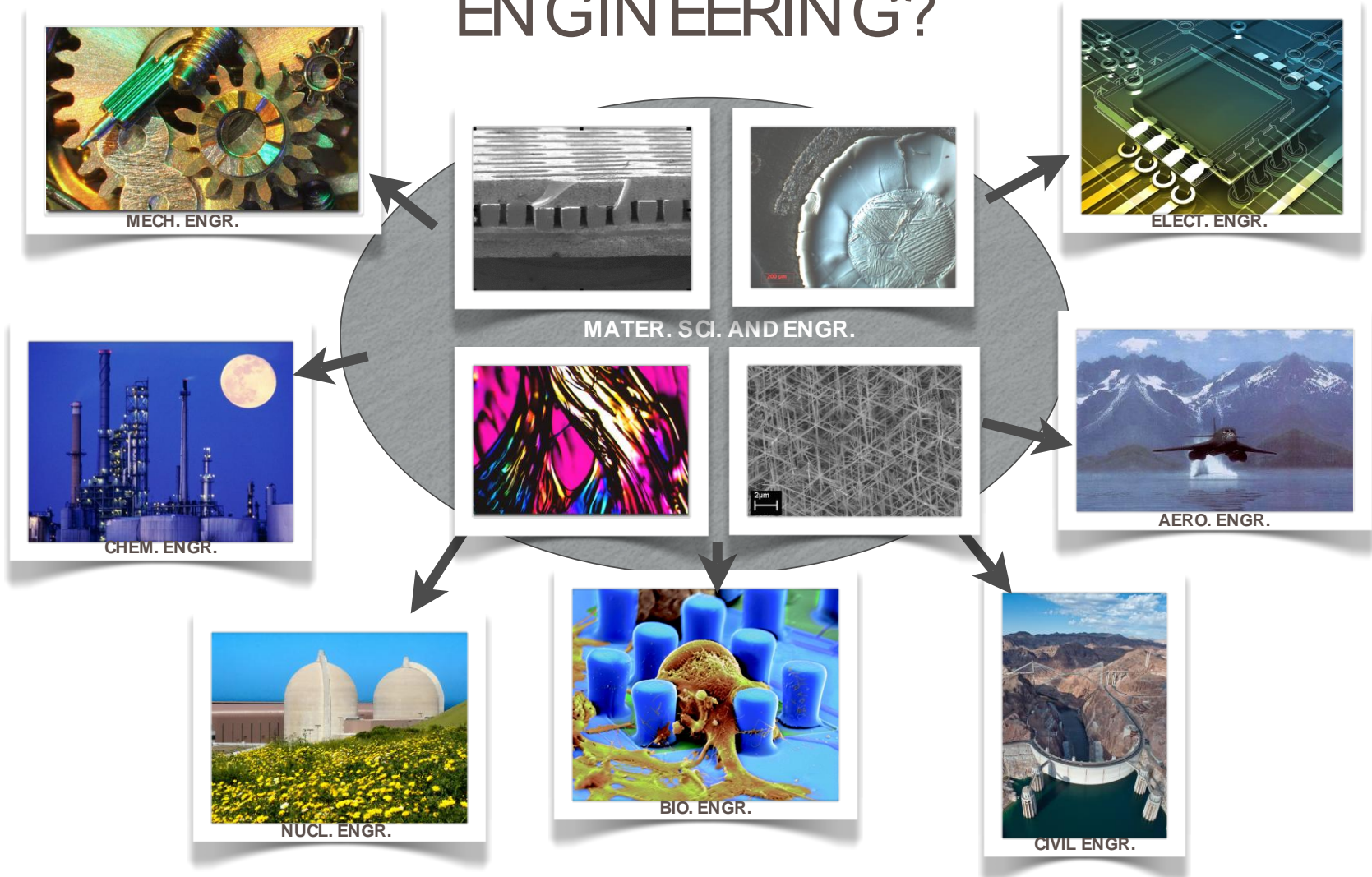


# NUCLEAR ENERGY AND MATERIALS IN IDAHO

1. WHAT IS MATERIALS SCIENCE & ENGINEERING?
2. OBSERVED BENEFITS OF NUCLEAR ENERGY/MATERIALS R&D IN IDAHO
3. EXAMPLE 1
4. MATERIALS GENOME INITIATIVE (MGI)
5. SUMMARY COMMENTS



# WHAT IS MATERIALS SCIENCE AND ENGINEERING?



# NON-NUCLEAR BENEFITS TO IDAHO

NUCLEAR MATERIALS  
R&D

MATERIALS FOR EXTREME ENVIRONMENTS  
 MATERIALS FOR FOSSIL ENERGY  
 SENSOR MATERIALS AND DESIGN  
 AEROSPACE MATERIALS  
 MATERIALS CORROSION AND SUSTAINABILITY  
 BATTERY MATERIALS  
 FUEL CELL MATERIALS  
 GAS SEPARATION MEMBRANES  
 SOLAR MATERIALS  
 CATALYSTS  
 BIO MATERIALS FOR MEDICAL APPLICATIONS  
 HIGH PERFORMANCE THERMAL INSULATION  
 ARMOR AND ENERGY ARRESTING MATERIALS  
 REPLACEMENTS FOR RARE MATERIALS

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# OBSERVED BENEFITS of NUCLEAR ENERGY R&D in IDAHO

(AIDED BY THE BEA CONTRACT)

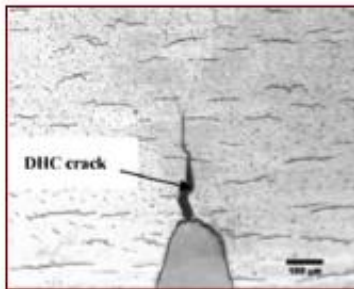
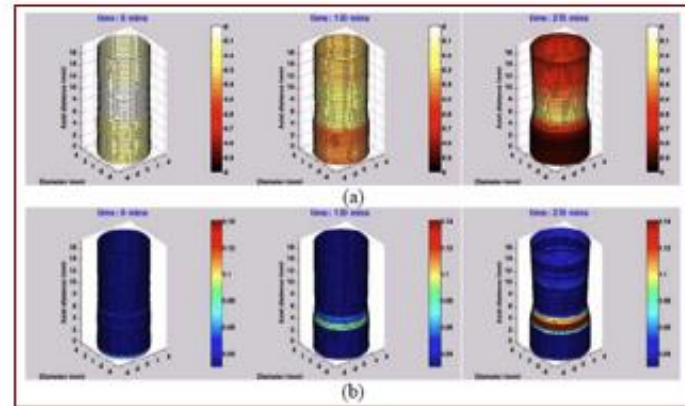
- ESTABLISHMENT OF CAES
- ESTABLISHMENT OF NATIONAL USER FACILITIES
- UNIVERSITY ACCESS TO MAJOR COMPUTATIONAL RESOURCES
- GROWTH IN NE AND MSE PROGRAMS AT IDAHO UNIVERSITIES
- GROWTH IN EXTRAMURAL R&D SUPPORT
- INCREASE IN IDAHO UNIVERSITY AND INL COLLABORATIONS
- LEVERAGING EXPERTISE OF IDAHO INSTITUTIONS
- INCREASED COLLABORATIONS WITH EXTERNAL INSTITUTIONS
- INCREASED INDUSTRIAL COLLABORATIONS
- IMPROVED REPUTATION OF IDAHO UNIVERSITIES AND INL
- IMPROVED EDUCATIONAL OPPORTUNITIES

EXAMPLE

# Fuel Aging in Storage and Transportation: Accelerated Characterization and Performance Assessment of Used Nuclear Fuel Storage Systems

Collaborators:

- Texas A&M
- University of Florida
- University of Illinois
- North Carolina State University
- University of Wisconsin
- SRNL
- PNNL
- EPRI
- Westinghouse



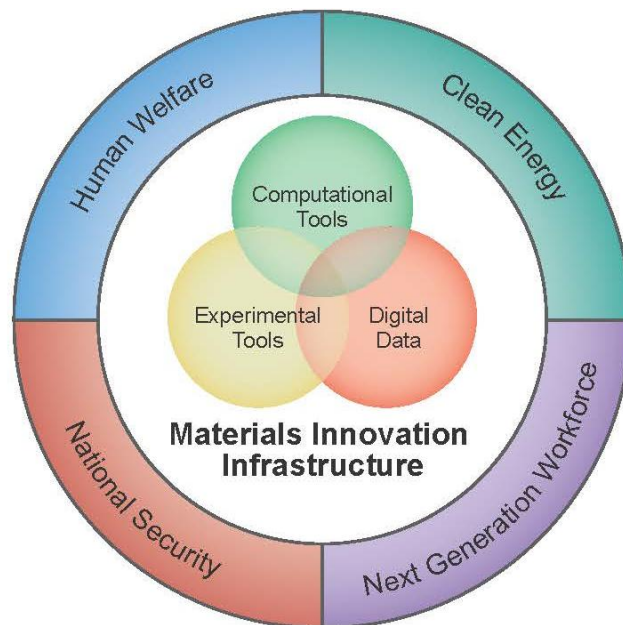
Example of Sensor Developed at BSU

## Research Details:

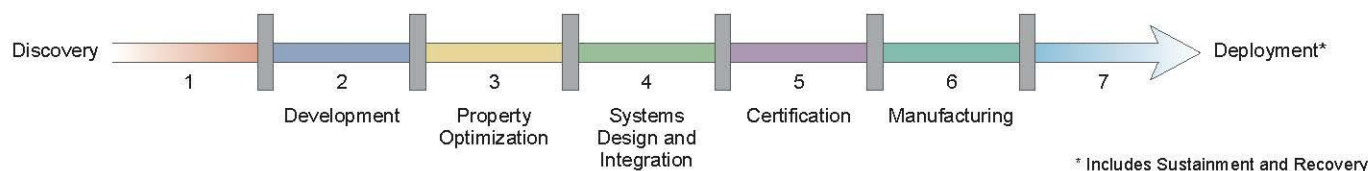
- Investigation of
- Low Temperature Creep
  - Hydrogen Behavior
  - Canister Corrosion
  - Novel System Monitoring

# “MATERIALS GENOME INITIATIVE”

Accelerating Commercialization in the U.S.—Focus on Industry-University Collaborations



**DOE**  
**DOD**  
**NIST**  
**NSF**



<http://www.whitehouse.gov/blog/2011/06/24/materials-genome-initiative-renaissance-american-manufacturing>

## SUMMARY COMMENT:

NUCLEAR ENERGY IS A CORE COMPETENCY OF IDAHO, ENABLING EDUCATIONAL OPPORTUNITIES, RESEARCH PROMINENCE, AND TECHNOLOGY DEVELOPMENT IN OUR STATE.

IDAHO IS UNIQUELY POSITIONED TO LEVERAGE OFF OF INL'S MISSION AND OUR STATE'S ESTABLISHED AND GROWING EXPERTISE IN NUCLEAR AND MATERIALS SCIENCE & ENGINEERING...