

# Nuclear Energy Research

- Next Generation Nuclear Plant (NGNP)
  - Validation of reactor physics and core design codes
  - Development and validation of thermal hydraulic analysis codes
  - Safety and risk analysis of the Very High Temperature Reactor (VHTR)
- Supercritical Water Cooled Reactor
  - Technical feasibility
  - Dynamic power/flow instability analysis
  - Basic thermal and heat transfer phenomena analysis

# Nuclear Energy Research

- Gas-Cooled Fast Reactor (GFR)
  - Safety analysis
  - Hydrogen production
  - Power cycle analysis
- Lead Alloy Cooled Fast Reactor (LFR)
  - Reference system design
  - Safety evaluation

# Nuclear Energy Research

- Generation IV Design and Evaluation Methods
  - Analytical methods
  - Modeling techniques
  - Computer code development and analysis
  - Develop methodologies to evaluate system performance against Gen-IV goals

# Nuclear Energy Research

## Nuclear Hydrogen Initiative

Goal: Demonstrate the economic commercial-scale production of hydrogen using nuclear energy

- Thermochemical Cycles
  - Identify and develop promising thermochemical cycles for nuclear applications
  - Thermodynamic modelling
  - Alternative cycle process development and modelling

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- Reactor-hydrogen production process interface
  - Process side high temperature heat exchanger design
  - Balance of plant design