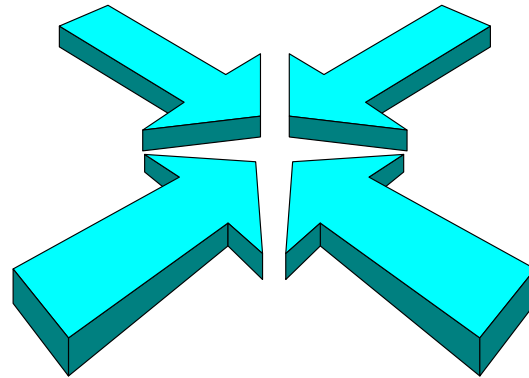


# Universities and NGNP



**RIC 2006**

**Session W4BC – Advanced Reactors – GEN IV**

Andrew C. Kadak

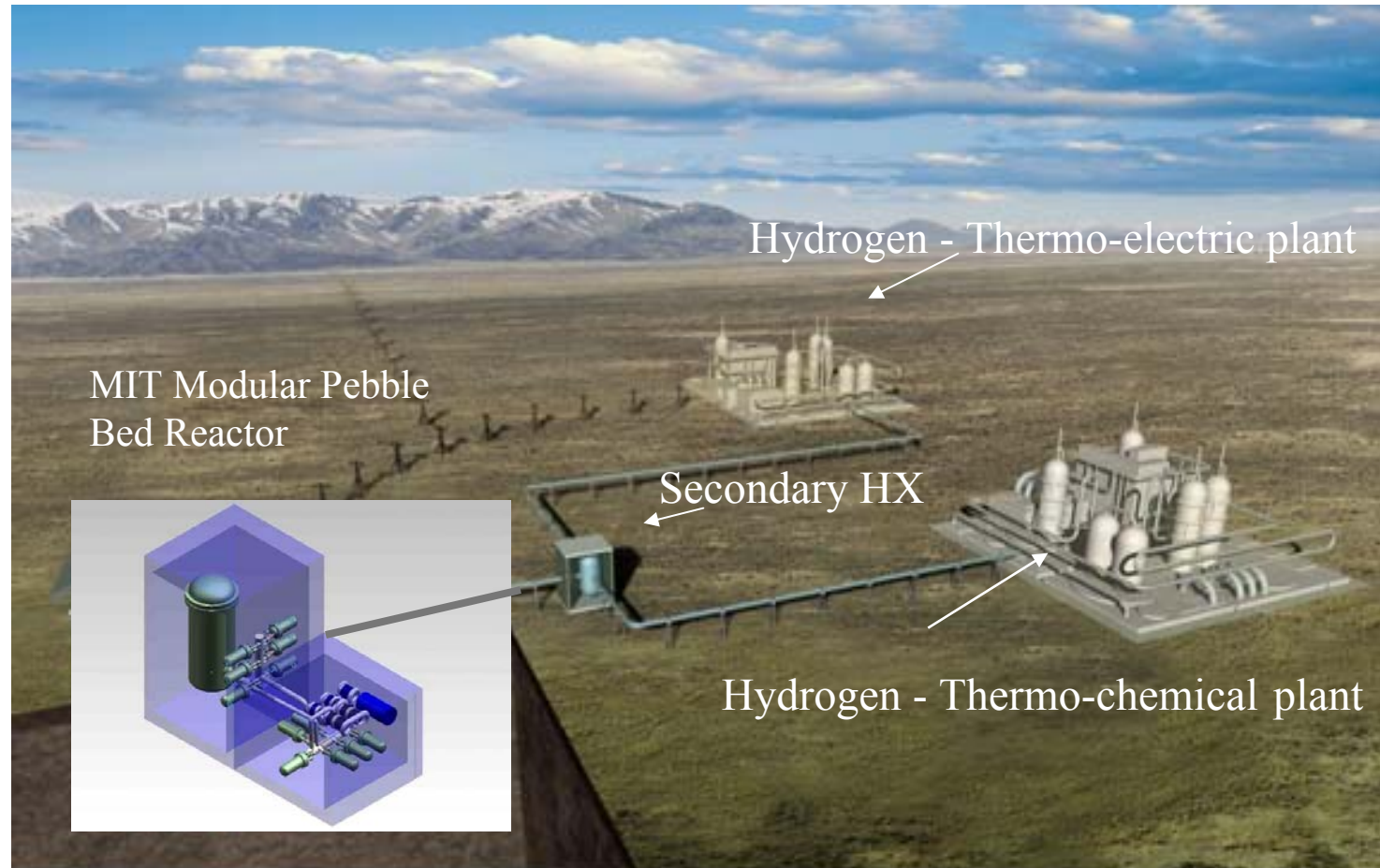
Professor of the Practice

Massachusetts Institute of Technology

March 8, 2006

# Next Generation Nuclear Plant

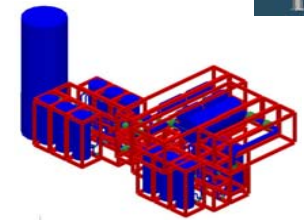
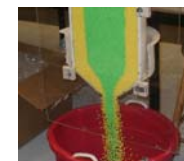
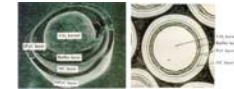
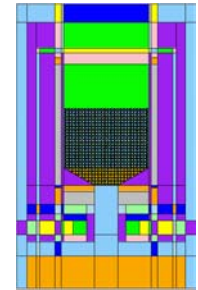
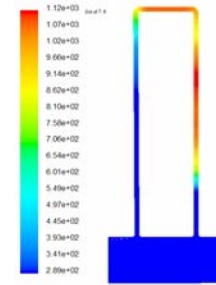
## Electricity and Hydrogen Production



# University Research Projects

Support from DOE, NRC, INL, MIT, W/BNFL

- Air ingress CFD modeling
- Reactor Physics analysis
- Fuel performance code development
- Fission Product Silicon Barrier Experiments
- Intermediate heat exchanger design
- Modularity and assembly techniques
- Pebble flow experiments



# University Research Projects (2)

- Design Optimization Studies
- Loss of Coolant Accident Analysis
- Balance of plant design
- Dynamic simulation of plant performance
- Safeguards assessment
- Waste disposal
- Non-proliferation assessment
- Hydrogen production studies
- Licensing strategies - license by test

# INL University Partnership

- National University Consortium
  - MIT, North Carolina State, Oregon State, University of New Mexico and Ohio State
  - Regional representation of area universities
- Established Academic Centers of Excellence at each university to perform focused research to support INL and DOE nuclear energy mission

# Conclusions

- Universities bring unique innovative approach to NGNP
- Faculty and students eager to contribute
- Hope to use NGNP as a research, teaching, learning and demonstration tool for *commercial application*
- Train young engineers on design, project management and operation
- Need DOE and NRC Support to continue this work