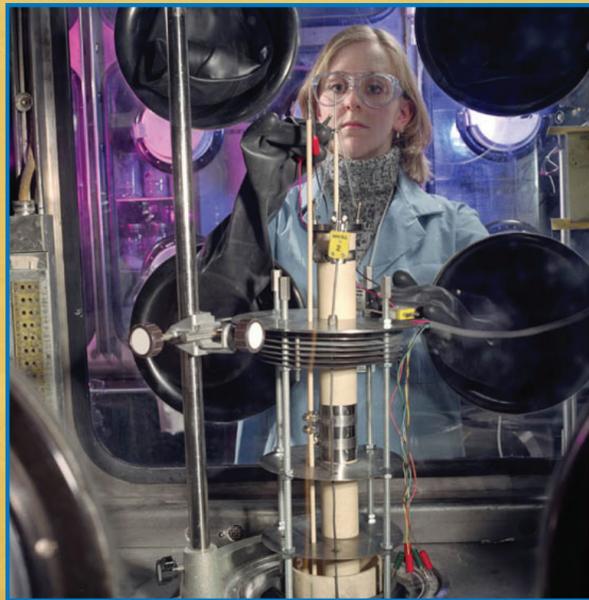


Center for Advanced Nuclear Fuel Cycles

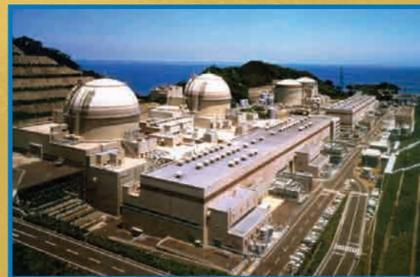
Sustainable Nuclear Energy through Science-based Education and Research



Sustainable Nuclear Energy

Energy supply is critical to our nation's prosperity and to global stability and security. Nuclear energy is a key energy supply option because of its availability and affordability today and its potentially great contribution to meeting future energy needs while preserving air quality and mitigating the buildup of greenhouse gases in the atmosphere.

Advanced nuclear fuel cycles are needed for the sustainable use of nuclear energy. They target efficient use of fissionable resources, minimization of nuclear waste, and assured safety and security of nuclear energy generation and waste management.



A Great Mission Seeking the Best Minds

The University of Chicago and the Wisconsin Institute of Nuclear Systems jointly established the Center for Advanced Nuclear Fuel Cycles (CANF) in early 2006. Centered at Argonne National Laboratory, CANF advances cooperative research with Big Ten universities into key nuclear fuel cycle issues and technologies. One of its central aims is to recruit top-notch students into the nuclear profession, so as to establish and sustain the intellectual and creative resources needed for the future of nuclear energy.



Educating the Next Generation of Nuclear Scientists and Engineers

Argonne researchers participate with CANF students and faculty in cooperative research, for example Nuclear Energy Research Initiative (NERI) projects sponsored by the DOE Office of Nuclear Energy. CANF research may also be sponsored by other DOE offices and other agencies that support basic and applied energy studies.

To stimulate innovative research, CANF periodically invites proposals for "seed grant" funding from participating universities. A "seed grant" supports a graduate student for one or two years to work with a faculty advisor and an Argonne researcher. Selection of awards considers prospects for the research to attract external funding in the future.

Argonne researchers host and mentor student interns and involve them in educationally valuable research projects. Argonne researchers also advise students with research conducted as part of their course requirements.



Transforming Nuclear Energy R&D

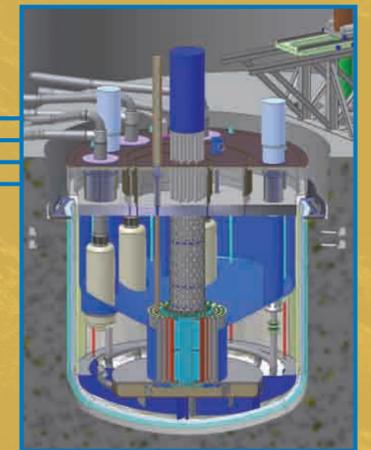
CANF seeks to advance the development of future nuclear energy systems through a science-based approach using validated modeling and simulation tools.

Historically, nuclear power development and utilization have relied extensively on empirical information from testing campaigns and data from large-scale, dedicated experiments.

By adopting a more fundamental, science-based approach and exploiting the power of leadership class computing resources, we hope to improve the process of developing and designing future reactors and fuel cycle facilities. An improved process would reduce development time and cost by limiting and optimizing the experimental campaigns, and would increase assurance that economic, performance and safety goals are achieved.

CANF Research Areas

- Concepts for advanced nuclear energy systems
- Separations science and technology
- High-performance fuels and materials
- Multi-physics modeling and simulation
- Validation experiments for fundamental models
- System monitoring, diagnostics, and control
- Technical and socio-economic studies



For Further Information

Hussein Khalil
Argonne National Laboratory
630-252-7266
hkhalil@anl.gov



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