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High School Educators

**TECHNOLOGY TRANSFER – OUTREACH – RESEARCH – OPPORTUNITIES
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Grant Ideas for High Schools Interested in Nuclear Science & Technology

Overview

The Mini-Grant Program seeks to broaden the participation of researchers, educators and students in the field of nuclear science and technology by providing access to seven Big-Ten facilities, including university research and training reactors (URTR/VRTR). The consortium includes: Penn State University, Ohio State University, Purdue University, University of Michigan, University of Illinois at Urbana-Champaign, University of Cincinnati, and the University of Wisconsin-Madison. Funding is made possible by the Department of Energy University Programs Office.

Award Information

- Application period – Deadline for 2007-2008 grant application entry is **March 9, 2007**
- Application submission via web: <http://www.mne.psu.edu/minigrant> see Application Form
- Total amount of funding available: approximately \$200,000
- Applications will be reviewed and scored by evaluation teams
- Grants from: \$1,000 to \$25,000
- Period of grant performance: up to 12 months from effective date of award

Eligible Organizations

Businesses, Secondary Schools, Institutions of Higher Education, Industry and DOE National Labs

Examples of Proposal Ideas for Secondary School to Explore Our Subatomic World

PROPOSAL INFORMATION FOR SECONDARY SCHOOLS:

I. Exploring our subatomic world

The Big-Ten Universities Consortium Mini-Grant Program encourages and seeks to team teachers and students with URTR/VRTR research facilities.

Some project ideas that secondary schools might pursue:

1. Tour a URTR at a participating university to show students the reactor and introduce them to the aspects of nuclear science and technology, which are inherent to the reactor's operation and use and plan some experiments or activities with reactor staff.
2. Conduct a Neutron Activation Analysis (NAA). The NAA can identify trace metals in very small samples. Students can collect, label and send the samples to one of these four universities. The URTR facility, if possible, can perform the Neutron Activation Analysis and return the results to you. Some experiments might be to identify:
 - o Trace metals in the foods you eat.
 - o Elemental composition of the sand in the ground around your school.
 - o Trace metals in the plants you grow in the classroom for other experiments.
 - o Trace metals in the dust from the side of the road in your community.
3. Gamma Spectrometry Analysis (GSA). We live in a radioactive world, irradiated by both cosmic and terrestrial sources. The GSA looks at the signature radiation emitted and identifies its source.
 - o Measure the radioactivity in water supplies, local streams and rivers, foods, dirt, and other items.
This supports your instruction about radioactive decay, what is inside matter, what is a gamma ray, counting errors, the electromagnetic spectrum.
4. Material Property Alternations Analysis. Investigate how and why:
 - o Some salts exposed to gamma radiation give off light when heated.
 - o Some plastics become stronger.
 - o Rubber bands become weaker.
 - o Some seeds grow better.
5. Perform experiments on campus. Working with URTR/VRTR staff, have a class design an experiment using the university's facilities. Make sure your experiment is acceptable to the

subject URTR/VRTR prior to proposal submission.

Go ahead. Think out of the box! Learn about our unique tools and develop an experiment. Contact URTR/VRTR representatives about the possibilities for students. Then submit a proposal!

Contact People at URTR/VRTR Facilities

INIE Mini-Grant Program
Maintained by Penn State University
Jack Brenizer, Jr., Chair, Governance Committee
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For questions, comments or concerns about the INIE Mini-Grant Web site, contact tln3@psu.edu



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