

# University of Nevada, Las Vegas Transmutation Research Program



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**R**esearch  
**P**rogram



# Outline

- Overview of UNLV Program
- FY01 and FY02 in Review
- Plans for FY03
- Future Outlook – Directions

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# UNLV Transmutation Research Program

## Program Mission:

To establish a world-class program at UNLV for transmutation research and education through faculty-supervised graduate student projects.

## Program Goals:

- Build core competencies and facilities to promote UNLV's strategic growth
- Increase UNLV's research activities
- Attract students and faculty of the highest caliber

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# Organizational Chart



**UNLV Administration**  
President, Provost  
Vice Provost for Research



**TRP Program Office**  
Director and Finance Officer (HRC)  
Deputy Directors and Program Coordinators



## **Committees**

Finance, Infrastructure  
Conferences, Information

## **Faculty-Supervised Projects**

Principal Investigators  
Graduate Students

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# Program Components

- Student Research

- 16 Projects, 26 Graduate Assistantships, 28 Faculty
- \$3.3 million in FY01 and FY02 grants to departments

- Program Management

- Proposal solicitation, review, and grant set-up
- Seminars, workshops, and conferences
- Recruiting
- Advisory committees
- Collaboration coordination
- Stakeholder involvement
- Record-keeping and reporting



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# Program Components: Infrastructure

- New Faculty and Staff

- Dr. Roy (ME)
- Dr. Fairhurst (Geo)
- Dr. Ma (HRC)



- Facilities Enhancement

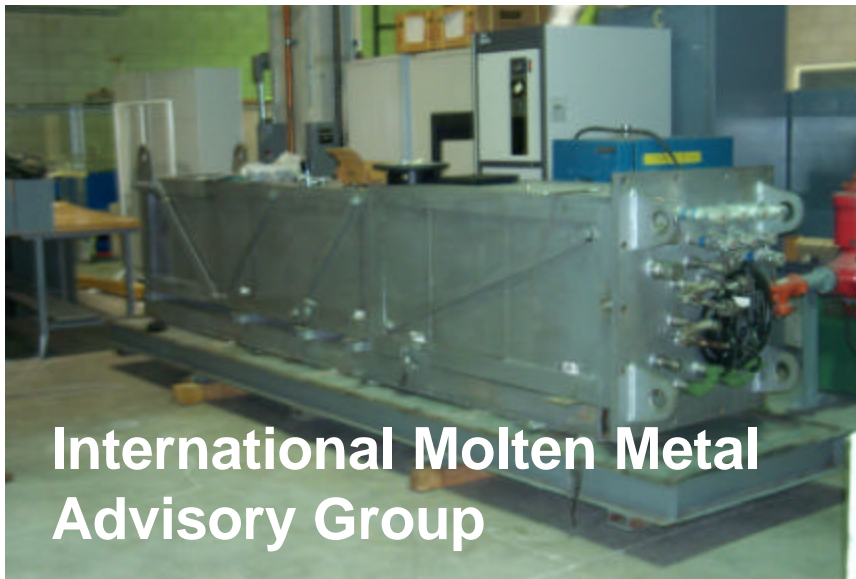
- Materials Performance Laboratory
- Electron Microscopy and Imaging Laboratory
- Transmission Electron Microscopy Laboratory
- Lead Bismuth Eutectic Facilities



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# Program Components: International Collaboration



**International Molten Metal  
Advisory Group**



**Karlsruhe, Germany**



**Obninsk, Russia**



**St. Petersburg, Russia**

# UNLV Student Research Activities

- Task 1: **Metallic Fuel Pins** – ANL Fuels  
Mechanical Engineering Dept. \$141k (1 Grad)
- Task 2: **Niobium Cavities** – LANL Accelerator  
Electrical and Computer Eng. Dept. \$161k (3 Grads)
- Task 3: **LBE Steel Corrosion** – LANL Transmuter  
Physics Department \$195k (2 Grads)
- Task 4: **Hydrogen Embrittlement** – LANL Transmuter  
Mechanical Engineering Dept. \$146k (3 Grads)

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# UNLV Student Research Activities

- Task 5: **LBE Corrosion Modeling** – LANL Transmuter  
Mechanical Engineering Dept. \$109k (2 Grads)
- Task 6: **Neutron Multiplicity Meas.** – LANL Transmuter  
Harry Reid Center RDL/KRI \$173k (1 Grad)
- Task 7: **Dose Conversion Coefficients** – ORNL/U's Transmuter  
Health Physics Department \$160k (2 Grads)
- Task 8: **Systems Engineering Model** – ANL Separations  
Mechanical Engineering Dept. \$150k (2 Grads)

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# UNLV Student Research Activities

- Task 9: [Processes for Fuel Fabrication](#) – ANL Fuels  
Mechanical Engineering Dept. \$87k (1 Grad)
- Task 10: [Deformation of Alloy EP-823](#) – LANL Transmuter  
Mechanical Engineering Dept. \$99k (1 Grad)
- Task 11: [Nuclear Criticality Analyses](#) – ANL Separations  
Physics and Mechanical Engineering Depts. \$110k (1 Grad)
- Task 12: [Radiation Transport Modeling](#) – ANL Transmuter  
Mechanical Engineering Dept. \$110k (1 Grad)

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# UNLV Student Research Activities

- Task 13: **Sensing System for Oxygen in LBE** – LANL Transmuter  
Electrical and Computer Engineering Dept. \$141k (2 Grads)
- Task 14: **\$+ Annihilation Spectroscopy** – LANL/ISU Transmuter  
Mechanical Engineering Dept. \$120k (2 Grads)
- Task 15: **Immobilization of Fission Iodine** – ANL/KRI Separations  
Chemistry Department \$178k (1 Grad)  
**International Collaboration – KRI**
- Task 16: **Evaluation of Fluorapatite** – ANL/KRI Separations  
Chemistry Department \$179k (1 Grad)  
**International Collaboration – KRI**

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# Plans for Year 3

- **Student Research Program**
  - 4 Additional Research Tasks
- **International Collaborations**
  - Collaborative Research – KRI (3 tasks)
  - LBE Support – IPPE (under negotiation)
  - Other (FZK, FZK-KALLA, RIT, SCK-CEN)
- **Infrastructure Growth**
  - Lead Bismuth Eutectic Facility
    - Installation of ISTC Target and shakedown campaign
    - Start of architectural design for new facility
  - New Faculty Planned
    - Chemistry Joint Appointment
    - LBE Researcher and Technician
    - Reactor Physics Instructors
    - New Physics Professorships

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# Directions for Growth

- Program growth to \$6.5 million annual support for Advanced Fuel Cycle Initiative
- New program funding of \$4 million annual support for accelerator-driven systems missions
- Major new facilities: MPL (2002), TEML (2003), and LBEF (2004)
- 21 graduate assistantships in Year 1, 28 in Year 2, and 35 in Year 3 (about 80 total student/staff)
- New academic programs: Radiochemistry, Material Science and Engineering, and Nuclear Engineering
- New faculty: Nuclear Physics, LBE Coolant Technology, Nuclear Chemistry, Reactor Physics, more?

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