CVT-LANL Collaborations

Upcoming Opportunities at LANL

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LANL’s Role in the Nuclear Nonproliferation Consortia: Provide Unique Technical Opportunities for a Talented Student Pipeline

• NA-22 established three large university-led consortia for multidisciplinary R&D, education, and training in nuclear nonproliferation:
  – Nuclear Science and Security Consortium (NSSC)
  – Consortium for Verification Technology (CVT)
  – Consortium for Nonproliferation Enabling Capabilities (CNEC)

• LANL provides students and faculty access to unique technical capabilities (facilities, expertise) helping them understand and tackle dynamic national security challenges through game-changing science and engineering.

• Educational Opportunities
  – Keepin Summer Program
  – Seminar Speakers

• Technical Collaborations
  – Student Internships
  – Collaborative Research
  – Utilizing Unique Facilities
    • NCERC, LANSCE, etc…
  – Hosting a LANL scientist
20+ students/faculty from the NC State-lead Consortium for Nonproliferation Enabling Capabilities (CNEC) and the U Michigan-lead Consortium for Verification Technology (CVT) conducted two weeks of measurements of unclassified, subcritical assemblies of Special Nuclear Material (SNM) – Pu, HEU, Np – active/passive and neutron/gamma
**Goals:**

- **Create working relationships** between NSSC students and LANL scientists
- **Increase number of students performing lab-directed research** with LANL
- **Turn research and training into careers at the national laboratories**

**Program Dates:**

- Jun 12–16, 2017 (NDA Fundamentals)
- Jun 19 – Aug 11, 2017

**Location:**

- Los Alamos National Laboratory
- Sandia National Laboratory

**Agenda:**

- 80% Research
- 20% Enrichment Activities

**Program Team**

- **Rian Bahran**
  LANL POC for NSSC

- **Chloe Verschuren**
  Post-MS Student/Project Lead

- **Miriam Rathbun**
  Summer Support

- **James Miller**
  LANL POC for CVT

- **Jeff Favorite**
  LANL POC for CNEC
NSSC-LANL KEEPIN Summer Program Student Demographics

20 students representing 14 universities

- 10 NSSC student applicants – all accepted
- ~29 external applicants – only 9 accepted (~30% acceptance rate)

GPA Range
Average GPA = 3.85
Students worked across 10 different groups and all of LANL’s principal directorates: Weapons, Global Security, and ST&E.

Mentor Divisions

- T-Div
- A-Div
- NEN
- SPO-CNP
- C-IIAC
- CCS
- ISR
- XCP
- C-NR
- MST

Majors

- International Studies: 1
- Mechanical Engineering: 1
- Undeclared: 1
- Statistics: 1
- Radiochemistry: 2
- Physics: 2
- Nuclear Engineering: 12
NSSC-LANL KEEPIN Summer Program Pictures
Nonproliferation-Oriented Science and Engineering

Overview of International Safeguards
Rebecca Stevens (NEN-1)

Destructive Analysis Technology Overview
Will Kinman (C-NR)

Mining, Milling, and Conversion Safeguards
Heather Erpenbeck (NEN-1)

Data Analytics for Nonproliferation
Karen Miller (NEN-1)

Non-Destructive Assay Technology Overview
Reactor and Spent Fuel Safeguards
Alexis Trahan (NEN-1)

Treaty Verification
(cooperative efforts)

International Safeguards
Nonproliferation-Oriented Science and Engineering

Nuclear Deterrence and Vigilance: Space-Based Explosion Monitoring
Marc Kippen, Alexei Klimenko (ISR-1)

Underground Nuclear Explosion Signatures
Aviva Sussman (EES-14)
Nonproliferation-Oriented Science and Engineering

Introduction to Nuclear Arms Control
Morag Smith (NEN-2)

Muon Tomography for SNM Detection
Matt Durham (P-25)

Nuclear Policy Issues
Joe Pilat (NSIS)

Critical & Subcritical Experiments with SNM
Jesson Hutchinson, Rian Bahran (NEN-2)

Treaty Verification
(cooperative efforts)
Alexis did a great job breaking down complex topics, especially the Rossi-Alpha curve and coincidence counting. 

(Pete and Dave) answered so many of my questions about how the US and a country deals with radiological hazards. I learned a lot and loved the examples!

Great format! Q&A was a good idea for this topic; glad nuclear policy was included in the Summer School.

(Jamie Downs was an) excellent speaker and great wrap up presentation to bring the concepts and concerns of the program together.

22 lectures given by LANL SMEs
- Speaker delivery average ★★★★★ ★★★★★
- Lecture content average ★★★★★ ★★★★★
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