Accelerating Innovation and Discovery at ARL and Beyond

Dr. Joseph Mait
Chief Scientist
U.S. Army Research Laboratory
Vision
The Nation’s Premier Laboratory for Land Forces.

Mission
DISCOVER, INNOVATE, and TRANSITION Science and Technology to ensure dominant strategic land power

Making today’s Army and the next Army obsolete
The Nation’s Premier Laboratory for Land Forces

**Transformation Principles**
Flow, Agility, Quality, Efficiency & Effectiveness

- Create flexibility and agility to make workforce changes to keep pace with rapidly evolving technologies and national security requirements.
- Onsite collaboration with academia and industry through layered security process; ARL as anchor within community.
- Enable greater sharing of specialized facilities between agencies, private sector partners, and experiment with new models for modernizing labs.
- Implement strategies and policies that support exploitation of science and transition to small business and entrepreneurs.

**Attract and Retain Best & Brightest**

**Open Campuses**

**Shared Modern Facilities**

**Innovation Practices**

*Piloting a New Laboratory Business Model*

*Responding to the National Security Challenges of the 21st Century*
Enabling a Strong Collaboration Ecosystem

- Partners include international and domestic:
  - Academia
  - Industry, Small Business
  - Government, Military
- Research efforts align with partner research interests and ARL S&T Campaigns
- International collaborations enabled by updated policies, layered security, dedicated facilities & network access
- Entrepreneurial activities enabled
- Efficient, effective, and agile research system created through collaboration
- Responds to national security challenges of the 21st Century
**Research Exchanges:**

**Prof. Patrick Mather, Syracuse University**
- One year sabbatical at ARL to investigate the rate dependent mechanics of polymer blends
- Exploring the processing-structure-mechanics relationships in novel phase separating polymer blends
- Modeling the polymer blends with well controlled chemistry, composition, and morphology.

**Dr. Steven Keller, ARL**
- Three year detail at UMass Amherst
- Investigating feasibility of textile-integrated carbon nanotube antenna fabrication with U. Cincinnati
- Collaboration with NSRDEC and UMass (Amherst and Lowell) on conductive textile and flexible antenna research and fabrication

**Cyber Collaborative Research Alliance with Penn State**
- 20 graduate and undergraduate researchers have completed a research experience at ARL
- 5 undergraduate students hired through pathways program

**ARL West**
- Local hub for west coast university interactions & recruitment
- Leverage ongoing research at ICT & USC Information Sciences Institute
- ARL-distinct facilities are available at the USC Institute for Collaborative Technology (ICT) UARC
- Excellent potential for increased innovation through closer collaboration with USC & ICT research staff
Almost 520 participants established collaborative partnerships on-site in ARL laboratories.

- 190 undergraduate students, 86 graduate students, 30 post docs, and 20 faculty
- 54 international collaborators from 19 countries, including China, India, Germany, South Korea, Iran, and Turkey, with balance from 4 continents.
SIGNED

Chernihiv National University of Technology – Ukraine
POC: Dr. Alexander Kott
CRADA in Information Sciences

National Technical University of Ukraine - "Kyiv Polytechnic Institute"
POC: Dr. Alexander Kott
CRADA in Information Sciences

IN PROCESS

Australian National University
Australia
POC: Dr. James Carroll
CRADA in Information Sciences

University of Olso
Norway
POC: Dr. Lance Kaplan
CRADA in Information Sciences

University of Alberta
Canada
POC: Tomoko Sano
CRADA in Materials Research

University of Alberta of Technology
Poland
POC: Dr. Angelique Scharine
CRADA in Human Sciences

Australin National University
Australia
POC: Dr. James Carroll
CRADA in Information Sciences

Nanyang Technical University
Singapore
POC: Dr. Govind Mallick
CRADA in Materials Research

Warsaw University of Technology
Poland
POC: Dr. Weimin Zhou
CRADA in Materials Research

SIGNED IN PROCESS

University of Alberta
Canada
POC: Tomoko Sano
CRADA in Material Sciences
ARL’s New Research Centers

Aberdeen Proving Ground, MD

Intelligent Systems Research Center (ALC/APG)
Expeditionary Manufacturing Science Center
Soldier Adaptive Systems Center
Advanced Computing Research Center
Center for Novel Energetics Research

Adelphi, MD
Army Cyber Research Center
Intelligent Systems Research Center (APG/ALC)
Center for Research in Extreme Batteries
Network Science Research Center
Specialty Electronics Center

White Sands Missile Range, NM
Atmospheric Sciences Center

Orlando, FL
Simulation and Training Technology Center
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Talented Workforce

Total Workforce (as of 1 APR 2015)

- Scientists and Engineers - 73% (1,316)
  - 2980
  - Admin and Support - 18% (325)
  - Technicians - 8% (143)
  - Civ Intel & Security - 2% (31)
  - Military - 1.5% (34)
  - Contractors - 38% (1,815)

S&E Degree Distribution

- Bachelors - 24%
- Masters - 34%
- Doctorate - 42%

- Computer Scientists & Engineers
- General & Industrial Engineers
- Materials Engineers
- Engineering Psychologists
- Aerospace Engineers
- Operations Research Analysts
- Mathematicians/Statistician
- Biologists/Biomedical Engineers
- Neuroscientists
- Meteorologist
- Other

Electrical & Electronics Engineers
Mechanical Engineers
Physicists & Physical Scientists
Mathematicians/Statistician
Electrical & Electronics Engineers
Mechanical Engineers
Physicists & Physical Scientists
Computer Scientists & Engineers
General & Industrial Engineers
Materials Engineers
Engineering Psychologists
Aerospace Engineers
Operations Research Analysts
Mathematicians/Statistician
Biologists/Biomedical Engineers
Neuroscientists
Meteorologist
Other
How can you engage in ARL’s Open Campus?

• Explore [www.arl.army.mil/opencampus](http://www.arl.army.mil/opencampus)
  • Review collaboration opportunities and ARL Facilities
  • Start a dialog with ARL researcher
  • If appropriate, develop joint statement of work within CRADA

• More Information at [www.arl.army.mil](http://www.arl.army.mil)
  • Army Science Planning & Strategy
  • ARL Technical Strategy 2015-2035
  • Research@ARL

• Open Campus Open House
The Nation's Premier Laboratory for Land Forces

www.arl.army.mil/opencampus/

ARL Open Campus

Introduction

ARL's Open Campus initiative is a collaborative endeavor, with the goal of building a science and technology ecosystem that will encourage groundbreaking advances in basic and applied research areas of relevance to the Army. Through the Open Campus framework, ARL scientists and engineers (S&Es) will work collaboratively and side-by-side with visiting scientists in ARL's facilities, and as visiting researchers at collaborators' institutions.

Collaboration Opportunities

Explore fundamental research collaboration opportunities with ARL scientists and engineers to help solve some of the nation's most pressing research issues in defense and security in these strategic research areas.

- Assessment & Analysis
- Computational Sciences
- Human Sciences
- Information Sciences
- Materials Research
- Sciences for Lethality & Protection
- Sciences for Maneuver
- Partnering Mechanisms

ARL Open Campus 2015

ARL had an Open Campus Open House at Aberdeen Proving Ground, MD on November 3 & 4, 2015! You still have time to fill out the event feedback survey, link below.

Follow the link to download the presentations and watch the videos of the 2015 ARL Open Campus Open House.

Start a Dialogue

Collaboration Opportunities

Event Feedback Survey

Read more

www.arl.army.mil/opencampus/
Start a Dialogue

*First name:

*Last name:

*Email address:

*Phone number:

*Interest:

*Your ARL contact's email address:

*Organization:

*Organization Type:

*Position title:

How did you hear about us?

*Please describe your Research Problem, Research Plan, Approach. (Max 4000 characters):

Submit
Collaboration Opportunities

ARL’s Open Campus business model fosters entrepreneurial engagement and supports collaboration between ARL, academia, government, industry, and small business, both nationally and globally, to help find solutions to some of the nation’s most pressing defense and security issues.

Browse our collaboration opportunities below and select one or more areas of interest. Then tell us about yourself and your own ideas on the My Selections page.

Browse by campaign area:
- Sciences for Maneuver

Search:

Sciences for Maneuver

Sciences for Maneuver - Overview and Facilities
Principal Investigator: Ms. Wendy Winner

Power Electronics for Tactical Energy Networks and Mobile Platforms
Principal Investigator: Dr. Christopher Waites

Soldier and Small System Energy
Principal Investigator: Dr. Ivan Lee

Fuel Processing Power Sources

High-Efficiency Gas Turbine Engine Components
Principal Investigator: Mr. Waldo Acosta

High Temperature Propulsion Components Laboratory
Principal Investigator: Dr. Anindya Ghoshal
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Sciences for Maneuver

- Sciences for Maneuver - Overview and Facilities
- Power Electronics for Tactical Energy Networks and Mobile Platforms
- Soldier and Small System Energy
- Fuel Processing Power Sources
- High-Efficiency Gas Turbine Engine Components
- High Temperature Propulsion Components Laboratory

Principal Investigator:
- Ms. Wendy Winner
- Mr. Morris Berman
- Dr. Christopher Waits
- Dr. Ivan Lee
- Mr. Waldo Acosta
- Dr. Anindya Ghoshal
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Be Part of our Vision!

- Goal of the event is to introduce the S&T community to ARL’s research scientists and engineers with whom you might collaborate and to ARL’s specialized laboratory facilities that are available to support joint research.
- Two day event will feature a variety of scheduled presentations, tours, and opportunities to meet one-on-one with the Army’s leading researchers.

Who Should Attend?

- Innovators of all types: Academic Vice-Provosts for Research, Deans, and Professors; Industry Technical Staff and Management; Small and Large Businesses; Business Developers; Government Research Laboratory Technical Staff and Management.

If Interested:

- Send contact information (name, title, organization, and email) to opencampus@arl.army.mil and we will provide notification as the event matures.
Questions