



**ARGONNE LEADERSHIP
COMPUTING FACILITY**

**COMPETE ON THE
EDGE**

Argonne 
NATIONAL LABORATORY



YOUR NEXT R&D
BREAKTHROUGH
STARTS HERE

LEAD THE COMPETITION

and shrink your
R&D expenditures
in the process

The Argonne Leadership Computing Facility develops leading-edge computational capabilities and makes them available to researchers in all fields.

Our industry partners span the private sector, from small companies to the Fortune 50. Today, active projects from within the aerospace and aviation industry alone include modeling aircraft components and designing quieter and more efficient engines and wind turbines.

We are also helping some of the nation's leading combustion research engineers to virtually test and evaluate thousands of engine designs simultaneously to help industry shrink the time and cost of developing new engines.

The right computing resources for your needs.

The ALCF's 10-petaflops IBM Blue Gene/Q supercomputer, Mira, is one of the ten fastest supercomputers in the world. ALCF also hosts Theta, a powerful Intel/Cray machine that is a stepping stone to Aurora, Argonne's next-generation supercomputer.

Argonne also has mid-range computing resources, allocation programs, and training opportunities to get your project ready for the larger systems when the time is right.

A photograph of two men in an office environment. The man on the right, wearing glasses and a blue shirt, is looking at a laptop screen. The man on the left, wearing a striped shirt, is pointing at the screen with his right hand. The background is blurred, showing other office workers. A semi-transparent dark grey box is overlaid on the left side of the image, containing the text 'EXPERT ONE-ON-ONE TIME' in white. A vertical green bar is positioned to the left of the text.

EXPERT
ONE-ON-ONE
TIME

GET ANSWERS, FASTER

we help you
find solutions for
unique problems

Our staff includes some of the world's foremost experts in computational science, data science, and engineering. We can help your team use modeling and simulation to accelerate critical breakthroughs, verify uncertainties, and drastically reduce or eliminate the need to build multiple prototypes.

If you have software that demands petascale resources, talk to us about applying for time on our systems. We will help guide you through the process.

Let us guide you.

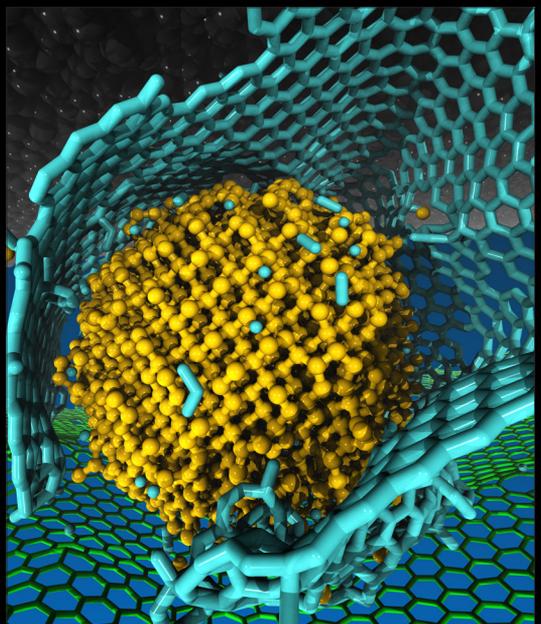
Our expertise includes: novel computational methods and algorithms, application porting, performance tuning and scaling, petascale system management, and data analysis and visualization.

We also provide training opportunities to help cultivate future research campaigns and computational science expertise.

WE WORK IN AREAS THAT ARE **CRITICAL** **TO INDUSTRY**

Industry researchers use leadership computing resources to conduct both proof of concept and validation simulations to advance fundamental understanding in their R&D efforts.

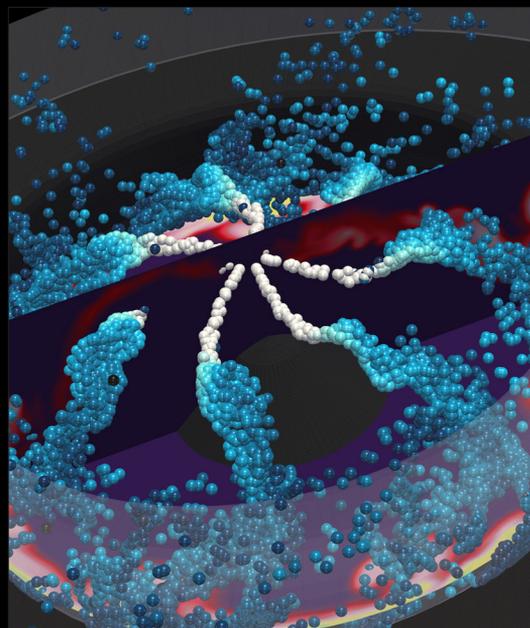
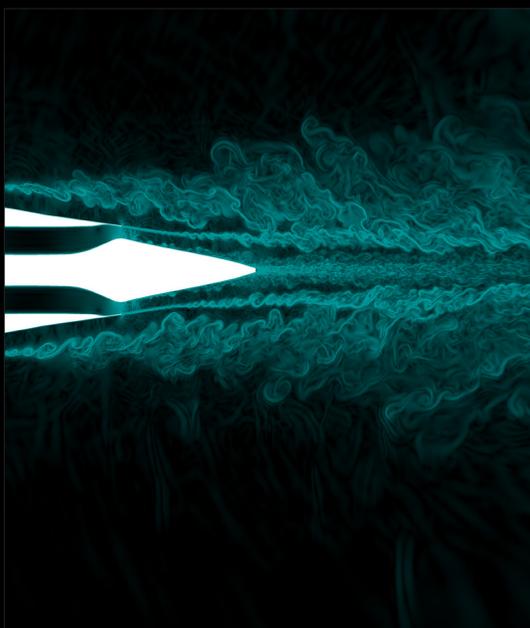
ALCF can guide your team in the state of the art in application development. We have expertise in a broad range of scientific simulation codes and can solve challenging technical problems on the forefront of application performance.



MATERIALS SCIENCE DISCOVERIES

Our modeling and simulation expertise coupled with leadership-class computing resources create the perfect environment for predictive model development. Developing predictive models saves valuable time in translating fundamental research into marketplace adoptions and is critical to both understanding and fabricating novel materials.

Credit: Sanket Deshmukh, Joseph A. Insley, and Subramanian Sankaranarayanan, Argonne National Laboratory



AEROSPACE BREAKTHROUGHS

Giants in the aerospace industry use ALCF resources to validate and improve aerodynamics codes for airplane design, saving these companies substantial R&D time and money. With computational modeling, R&D teams can explore more variables and make a better product, bringing safer, more efficient aircraft to market sooner and cheaper.

Credit: Joseph A. Insley, Argonne National Laboratory; Umesh Paliath, GE Global Research

COMBUSTION ENGINE VIRTUAL PROTOTYPING

The Virtual Engine Research Institute and Fuels Initiative (VERIFI) brings together Argonne expertise, an engine laboratory, and the capabilities of two of Argonne's premier user facilities—the ALCF and the Advanced Photon Source—to optimize engines and engine components using HPC rather than prototyping.

Credit: Kevin Harms, Joseph A. Insley, Janardhan Kodavasal, Marta Garcia Martinez, and Sibendu Som, Argonne National Laboratory; Xiaochuan Chai, Convergent Science, Inc.

COLLABORATE ACROSS ARGONNE

The ALCF has linkages to experts and unique resources across the Laboratory and the University of Chicago that can help your team tackle challenging research goals and develop breakthrough technologies.



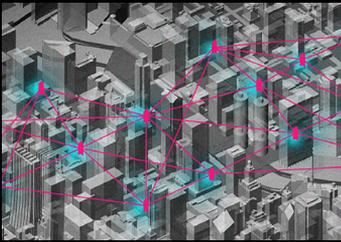
ADVANCED PHOTON SOURCE

The Advanced Photon Source is a national synchrotron-radiation light source research facility. The x-ray beam is customized at each beamline to meet particular needs. With more than 60 operational beamlines, the APS offers an exceptionally broad range of experimental conditions at a single facility.



CENTER FOR NANOSCALE MATERIALS

This Argonne-based user facility provides expertise, instrumentation, and infrastructure for interdisciplinary nanoscience and nanotechnology research. The Center supports both nonproprietary and proprietary research. Access is provided at no cost to users for research that is in the public domain and intended for publication.



MATHEMATICS AND COMPUTER SCIENCE DIVISION

Argonne's world-class Mathematics and Computer Science Division has wide-ranging expertise, including in efficient algorithms and custom software development. Other active areas of work include extreme computing, data-intensive science, and applied mathematics.



GLOBAL SECURITY SCIENCES DIVISION

Argonne's Global Security Sciences Division is an interdisciplinary research community focused on helping decision makers mitigate, respond to, and recover from security threats. Its partners include state and local governments, federal agencies, international organizations, private industry, and research institutions.



INSTITUTES AND CENTERS

- Virtual Engine Research Institute and Fuels Initiative
- The Institute for Molecular Engineering
- Midwest Integrated Center for Computational Materials
- Materials Engineering Research Facility
- Joint Center for Energy Storage Research
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HOW YOUR COMPANY CAN WORK WITH ARGONNE

Argonne works with industry partners to solve their enduring R&D challenges, identify commercialization opportunities, license new technologies, and introduce transformational discoveries to the marketplace.

Argonne offers multiple avenues for collaborating with outside groups to accommodate both small and large firms. Licensing and contractual agreements vary based on particular situations. We will work with you to meet specific needs, including addressing intellectual property concerns.

Connect with us.

Argonne Leadership Computing Facility is supported by the DOE Office of Science's Advanced Scientific Computing Research program.

To learn how to apply for time on our systems, e-mail us at industry@anl.gov



OUR RESOURCES,
YOUR COMPETITIVE
EDGE



PARTNER WITH ARGONNE

- Midwest's largest federally funded R&D facility
- Located in Lemont, IL, 25 miles (40 km) southwest of Chicago, IL (USA)
- Conducts basic and applied research in dozens of fields

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