

# The **FUTURE** of America is the **RESEARCH** of **TODAY**



NATIONAL  
USER  
FACILITY  
ORGANIZATION

## **The Fortune 500 and National User Facilities**

47 of the Fortune 500 companies, with research and development facilities in 27 states, use 17 National User Facilities operated by the United States Department of Energy Office of Science and 1 by the National Science Foundation. The research undertaken by these corporations is wide-ranging, encompassing biology, chemistry, physics, material science and computing. The experiments performed at the facilities support the creation of diverse products, including new pharmaceuticals, advanced materials for semiconductors and vehicular batteries, telecommunications satellites, and consumer goods.

The User Facilities provide an effective way for industrial organizations to leverage the cutting-edge capabilities offered by modern science. The results enable advances in technological development and permit the United States to remain competitive in a global economy.

## **Facilities Used**

ACRF – ARM Climate Research Facility

ALS - Advanced Light Source, Lawrence Berkeley National Laboratory

APS - Advanced Photon Source, Argonne National Laboratory

ALCF - Argonne Leadership Computing Facility, Argonne National Laboratory

CFN - Center for Functional Nanomaterials, Brookhaven National Laboratory

CNM - Center for Nanoscale Materials, Argonne National Laboratory

EMSL - Environmental Molecular Sciences Laboratory, Pacific Northwest National Laboratory

HFIR - High Flux Isotope Reactor, Oak Ridge National Laboratory

HTML - High Temperature Materials Laboratory, Oak Ridge National Laboratory

LANSCE - Los Alamos Neutron Science Center, Los Alamos National Laboratory

Molecular Foundry, Lawrence Berkeley National Laboratory

NERSC - National Energy Research Scientific Computing Center, Lawrence Berkeley National Laboratory

NHMFL – National High Magnetic Field Laboratory, Florida State University

NSLS - National Synchrotron Light Source, Brookhaven National Laboratory

OLCF - Oak Ridge Leadership Computing Facility, Oak Ridge National Laboratory

SNS - Spallation Neutron Source, Oak Ridge National Laboratory

SSRL - Stanford Synchrotron Radiation Laboratory, SLAC National Accelerator Laboratory

TANDEM - Tandem Van de Graaff Accelerator Facility, Brookhaven National Laboratory

### Summary of Research

Company	Fortune 500 Rank	Locations	User Facilities	Research
Exxon Mobil	2	Baton Rouge, LA  Annandale, NJ Baytown, TX	APS  NSLS	Characterization of feedstocks for the petroleum refining industry (NSLS) Polymer composites (NSLS) Microporous materials (NSLS) Transformation of sulfur in fuel materials (APS, NSLS) Operates four X-ray analysis beamlines (NSLS)

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Chevron	3	Mountain Pass, CA Richmond, CA Houston, TX	ALS APS	Structural transformations of minerals (APS) Proprietary research (ALS, APS)
General Electric	4	Niskayuna, NY W. Milwaukee, WI	ALCF ALS APS LANSCE NERSC NSLS OLCF	Nanoscale gas sensors (ALS) Computational modeling of engines (NERSC) Computational modeling of wind turbines and jet engines (ALCF, OLCF) Computational modeling of gasification (OLCF) Catalyst characterization (APS) Isotope production (LANSCE) Characterization of advanced materials – transportation batteries, ceramic coatings in gas turbines, industrial gas sensors, solar panels (NSLS)

<b>Company</b>	<b>Fortune 500 Rank</b>	<b>Locations</b>	<b>User Facilities</b>	<b>Research</b>
Ford Motor	8	Dearborn, MI	ALS APS EMSL	Fuel combustion (ALS) Characterization of fuel sprays in engines (APS) Catalysts for control of automotive exhaust (EMSL)
Hewlett-Packard	10	Palo Alto, CA Corvallis, OR	CNM EMSL LANSCE SSRL	New materials for electronic paper (SSRL) Properties of memory resistive devices (CNM) Test of weather modeling software (EMSL) Failure mechanisms of semiconductors (LANSCE)
General Motors	15	Flint, MI Warren, MI	APS EMSL HFIR HTML NERSC SNS	Analysis of fuel cells (APS) Hydrogen storage for fuel cells (HFIR, SNS) Conversion of heat to electricity in vehicles (HFIR, HTML) Efficiency and emissions of gasoline engines (NERSC) Mitigation of particulates from engine exhaust (EMSL)

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International Business Machines	20	San Jose, CA  Yorktown Heights, NY  Austin, TX	ALCF  ALS  APS  CFN  CNM EMSL  LANSCE Molecular  Foundry  NSLS SSRL	Strain in electronic materials (APS, CNM, SSRL)  Microelectronic connections and photovoltaics (SSRL)  Properties of nanoparticles and nanoparticle/polymer composites (Molecular Foundry)  Lithographic materials for semiconductors (ALS)  Semiconductors (APS)  Characterization of materials for the manufacture of computer chips (NSLS)  Magnetic materials (EMSL)  Control of environmental contamination (EMSL)  Computer disk drives (LANSCE)  Supercomputer design (ALCF)  Operates X-ray analytical facility (NSLS)

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Proctor & Gamble	22	Needham, MA  Cincinnati, OH  Fairfield, OH  Mason, OH	ALCF  APS  EMSL  HFIR  NSLS  SNS	Computation modeling for consumer goods, foods, fire control materials (ALCF)  Fuel cell and battery materials (NSLS)  Pharmaceutical development (APS)  Biocompatible nanoparticles (EMSL)  Medical materials, including drug delivery and human tissue replacement (HFIR, SNS)
Boeing	28	Albuquerque, NM  Kirkland, WA  Renton, WA  Seattle, WA	ALCF  APS  EMSL  LANSCE  OLCF	Computational modeling of turbulence in aircraft, wind turbines, heat exchangers, buildings (ALCF)  Aerodynamic modeling of airplanes (OLCF)  Analysis of semiconductor failures (LANSCE)  Evaluation of contaminant removal devices (EMSL)  Materials research (APS)

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Johnson & Johnson	33	Exton, PA Spring House, PA	APS	Pharmaceutical development (APS)
United Technologies	37	East Hartford, CT  South Windsor, CT	NERSC  NSLS  OLCF	Design of new catalysts (OLCF) Modeling of fire-fighting foams (OLCF) Catalysts for fuel cells (NSLS) Simulation of fuel flow in jet engines (NERSC)
Pfizer	40	Groton, CT  San Diego, CA South San Francisco, CA	ALS  APS NHMFL  NSLS SSRL	Pharmaceutical development (ALS, APS, NSLS, SSRL) Protein separation (NHMFL)
Lockheed Martin	44	Sunnyvale, CA Newtown, PA	TANDEM	Effect of cosmic rays on spacecraft performance (TANDEM)
Dow Chemical	46	Albany, NY	ALS  APS  NSLS	Materials for semiconductor lithography (ALS) Polymers for building materials (APS) Characterization of polymers (NSLS)

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Northrup Grumman	61	Redondo Beach, CA Rolling Meadows, IL Chantilly, VA	APS TANDEM OLCF SSRL	Efficiency of DNA delivery in cells (APS) Climate models and projections (OLCF) Characterization of nanoparticles (SSRL)
Intel	62	Chandler, AZ Lacey, CA Santa Clara, CA Windsor, CO Hudson, MA Northborough, MA Albuquerque, NM Aloha, OR Hillsboro, OR Portland OR	APS LANSCE Molecular Foundry SSRL	Creation and characterization of new polymers (Molecular Foundry, SSRL) Heat removal in integrated circuit packages (Molecular Foundry, SSRL) Development of new semiconductor structures (APS) Failure rates in semiconductors (LANSCE)

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Caterpillar	66	East Peoria, IL  Mossville, IL	APS  EMSL  HTML	Characterization of stress in materials (APS)  Mechanism of corrosion in bearings (HTML)  Catalysts for treatment of diesel exhausts (EMSL)
Honeywell International	74	Glendale, AZ  Peoria, AZ  Phoenix, AZ  Tucson, AZ  Sunnyvale, CA Clearwater, FL Des Plaines, IL Coon Rapids, MN Eden, MN Fridley, MN Minneapolis, MN Kansas City, MO	APS  CFN  HTML  LANSCE  NSLS SSRL TANDEM	Materials for semiconductor manufacturing (APS)  Effect of cosmic rays on microelectronic components (TANDEM)  Failure rates in semiconductors and electronics (LANSCE)  Characterization of catalysts and adsorbents (APS, CFN, HTML, NSLS, SSRL)  Proprietary research (ALS)

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		Hopewell Junction, NY Pleasant Valley, NY Essex Junction, VT Redmond, WA Sammamish, WA Brampton, Ontario Mississauga, Ontario		
Abbott Laboratories	75	North Chicago, IL  Worcester, MA	ALS  APS  NHMFL NSLS	Pharmaceutical development (ALS, APS, NSLS)  Antibody recognition in human immune system (NHMFL)
Merck	85	Rahway, NJ West Point, PA	ALS APS	Pharmaceutical development (ALS, APS)
DuPont	86	Wilmington, DE	APS  EMSL  HFIR Molecular Foundry	Properties of polymer nanocomposites (APS, HFIR, SNS, Molecular Foundry) Computational modeling of intermolecular forces (EMSL)

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			SNS	
Oracle	105	Santa Clara, CA Redwood Shore, CA	LANSCE	Failure rates in semiconductors and electronics (LANSCE)
3M	106	Minneapolis, MN	APS	Fuel Cells (APS)
Deere	107	Moline, IL	APS	Studies of strain in materials (APS)
Motorola	110	Tempe, AZ  Austin, TX  Tel-Aviv, Israel	EMSL  LANSCE	Failure testing of semiconductors (LANSCE)  Materials for improved semiconductors (EMSL)
Eli Lilly	112	Indianapolis, IN San Diego, CA	ALS APS SSRL	Pharmaceutical development (ALS, APS, SSRL)
Bristol-Myers Squibb	114	Lawrenceville, NJ Princeton, NJ	APS EMSL NSLS	Pharmaceutical development (APS, EMSL, NSLS)
Halliburton	158	Duncan, OK	APS	Properties of cement (APS)
Amgen	159	South San Francisco, CA Thousand Oaks, CA	ALS  APS	Pharmaceutical development (ALS, APS)
Medtronic	160	Brooklyn Center, MN	APS	Batteries for medical applications (APS)

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Monsanto	197	Chesterfield, MO	APS	Proteins characterization for agricultural biotechnology (APS)
Sun Microsystems	204	Mountain View, CA Redwood City, CA San Jose, CA Sunnyvale, CA	LANSCE	Failure rates in semiconductors and electronics (LANSCE)
ITT	214	Fort Wayne, IN Herndon, VA	ACRF APS  NERSC	Studies on anesthetics (APS) Development of scientific visualization software (NERSC)
SAIC	215	Frederick, MD  Maclean, MD	APS  NERSC	Characterization of proteins from coral (APS) Analysis of wind energy technology (NERSC)
Cummins	218	Columbus, IN	EMSL  HTML	Control of diesel exhaust (EMSL) Composition and mechanical properties of steels and filters for engines (HTML)
Texas Instruments	223	Dallas, TX  Plano, TX	APS  EMSL	Films for microelectronic fabrication (EMSL) New microstructures for transistors (APS)

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		Sherman, TX Stafford, TX	LANSCE	Failure rates of semiconductors (LANSCE)
Thermo Fisher Scientific	234	Bremen, Germany	EMSL	Technology for improved characterization of large molecules and mixtures (EMSL)
Boston Scientific	279	Natick, MA St. Paul, MN	EMSL LANSCE	Failure rates in semiconductors (LANSCE) Computational modeling of human lungs (EMSL)
Eastman Kodak	297	Rochester, NY	EMSL NSLS	Mechanism of image generation in medical radiography (NSLS) Conducting polymers (EMSL)
Western Digital	304	San Jose, CA	SSRL	Thin films for computer disk drives (SSRL)
Ball	307	Boulder, CO	TANDEM	Resistance to radiation of semiconductors for spacecraft and military (TANDEM)
Advanced Micro Devices	390	Santa Clara, CA Sunnyvale, CA Fort Collins, CO Boxborough, MA	LANSCE	Failure rates of semiconductors (LANSCE)

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		Austin, TX		
Corning	391	Corning, NY	EMSL HTML	Ceramics of diesel exhaust filters (HTML) Rheological dynamics of particle suspensions (EMSL)
Applied Materials	421	Boise, ID	EMSL	Magnetic devices for medical, military and data storage (EMSL)
Micron Technology	432	Boise, ID Star, ID	LANSCE	Failure rates in semiconductors and electronics (LANSCE)
Agilent Technologies	461	Santa Clara, CA	NHMFL	Ultra-high resolution optical imaging (NHMFL)
Rockwell Collins	462	Tustin, CA Melbourne, FL Cedar Rapids, IA Ely, IA	LANSCE	Failure rates in semiconductors and electronics (LANSCE)