William R. Wiley EMSL
Environmental Molecular Sciences Laboratory

The William R. Wiley Environmental Molecular Sciences Laboratory (EMSL) is a U.S. Department of Energy (DOE) national scientific user facility. EMSL is the centerpiece of DOE's commitment to provide world-class research capabilities for enabling fundamental research on the physical, chemical, and biological processes that underpin critical scientific issues.

EMSL capabilities are used to address the fundamental science that will be the basis for finding solutions to national environmental issues such as cleaning up contaminated areas at DOE sites across the country and developing "green" technologies to reduce or eliminate future pollution production. The capabilities also are used to further our understanding of global climate change, environmental issues relevant to energy production and use, and health effects resulting from exposure to contaminated environments.

If you are interested in collaborating with our scientists or using the facility's resources, more information and specific procedures for becoming an EMSL user can be found at http://www.emsl.pnl.gov.

WWW.EMSL.PNL.GOV

The W.R. Wiley Environmental Molecular Sciences Laboratory (EMSL) is a U.S. Department of Energy (DOE) national scientific user facility located at Pacific Northwest National Laboratory (PNNL) in Richland, Washington. EMSL is operated by PNNL for the DOE Office of Biological and Environmental Research.

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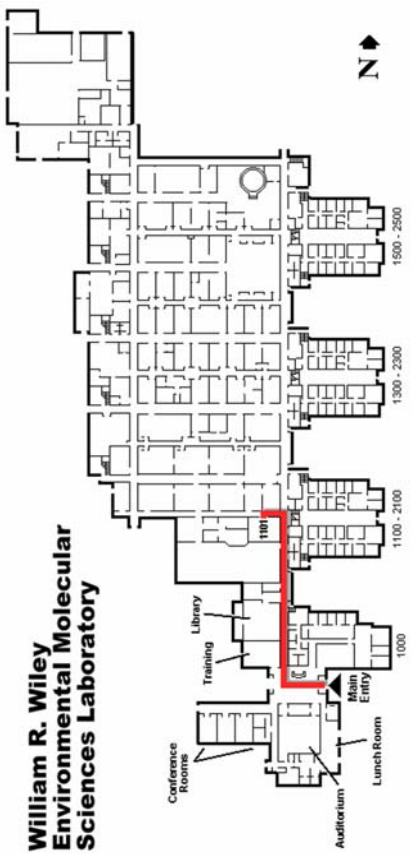
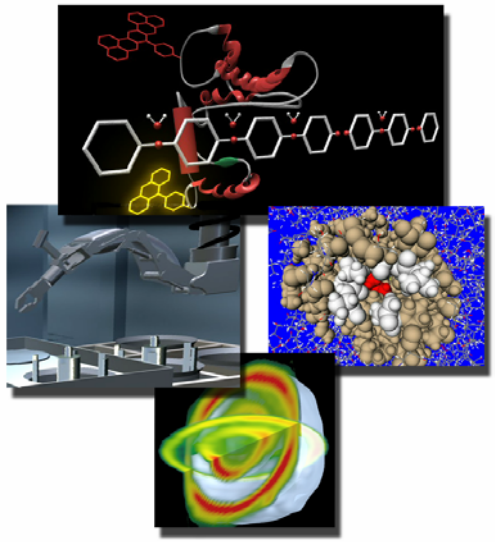


Pacific Northwest National Laboratory
Operated by Battelle for the U.S. Department of Energy

Office of Science
U.S. DEPARTMENT OF ENERGY

Graphics & Visualization Laboratory



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Graphics & Visualization Laboratory

The GVL serves the visualization requisites of scientists by providing expert staff, powerful computers, software tools for graphics and multimedia creation, accommodating small groups for lectures or training sessions, and broadcasting videoconferences through the Access Grid.

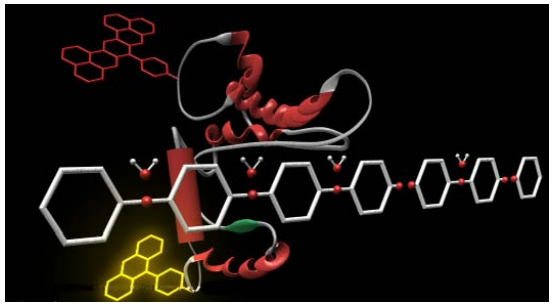
Scientific Visualization

The GVL is equipped with high-performance multiprocessor SGI Onyx computers accessible by multiple consoles. These machines contain accelerated graphics hardware for visualization and can output stereo graphics.

Cutting-edge-technology display systems for large visualizations in the GVL include a three-panel-wide SGI desktop and a display operating at over 9 million full-color pixels at 204 dots per inch. Another featured display system is the IBM Scalable Graphics Engine; a parallel frame buffer connected to the MSCF parallel computers.

Multimedia

Two multimedia systems are available: a G5 Macintosh computer for general-purpose scanning, image editing, and printing, and a Windows 2000 workstation for uncompressed video editing and realtime video compositing. Each computer features a complete suite of multimedia software, including image editing (Adobe Photoshop), video editing (Premiere and Final Cut Pro), compositing (Adobe AfterEffects), 3D modeling and rendering (Alias|Wavefont Maya), and video stream creation software, to name a few. Both machines have CD burners and CD creation software.



This visualization shows reaction kinetics of a single enzyme.

Visualizations generated on the SGI machines may be screen-captured to digital videotape or disk array where they can then be edited and placed on CD-ROM, the Internet, or copied to VHS videotape. Visualizations may also be archived.

These machines are connected to other GVL equipment through the digital and analog video and audio routing infrastructure. Available equipment includes Digital Betacam, S-VHS, international VHS (supporting PAL and SECAM formats), and MiniDV decks, as well as a CRVDisc recorder and high-end CD and cassette decks.

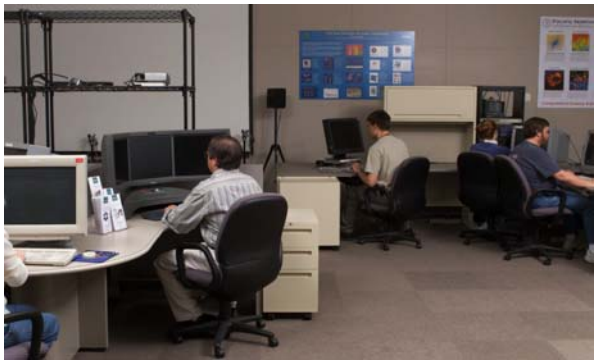
Meetings

The GVL is designed to be used by groups for meetings or training sessions. A ceiling-mounted digital video projector displays output from the room's consoles, workstations and laptop connection. The video projector can display stereo output from the SGI computers; LCD stereo glasses are supplied for group collaboration. Video and computer audio can be routed to the GVL sound system. Training sessions may employ multiple workstations.

A fiber-optic link exists from the GVL to the EMSL Auditorium, allowing presenters in the Auditorium to control the SGI computer remotely and display its output to the Auditorium. Digital video and audio feeds also exist for sending video to and from the Auditorium.

Access Grid

The Access Grid is a collection of more than 70 sites worldwide. Each site has high-end video, audio, networking, and computing equipment permitting two-way interaction through video, audio and shared applications. The goal is to allow collaboration among groups of people. The GVL Access Grid site is available free of use to PNNL staff. See http://accessgrid.pnl.gov.



The Graphics & Visualization Lab is available to EMSL Users.

How to Use the GVL

Located in EMSL 1101, the GVL is a walk-in resource; however, help is available to users. The MSCF Visualization and User Services Group can train users or provide operators for the GVL software and hardware.

Contact Donald R. Jones, dr.jones@pnl.gov, or mscf-consulting@emsl.pnl.gov.

Details about the Molecular Science Computing Facility (MSCF) and the GVL can be found at http://mscf.emsl.pnl.gov.