

CHEMISTRY

A team of scientists at ORNL used neutrons in a study related to fungus cell membranes that could aid in developing new antifungal treatments. They focused on ergosterol, a lipid found in fungi, which they observed embeds itself less deeply in membranes than other sterols and causes less membrane thickening.

MEDICINE

ENERGY MATERIALS

Scientists at ORNL used neutrons to study a cobalt-based Weyl semimetal in a Kagome lattice structure. They found when the semimetal transitions into a magnet, its magnetic symmetry exhibits simultaneous changes in atomic positions in localized areas. This could lead to more energy-efficient electronic devices.

MAGNETISM

An international team used quasi-elastic neutron scattering at ORNL to observe it takes just one-nanosecond for lithium ions to escape their atomic cages in polymer electrolytes. Such electrolytes won't ignite the way liquid electrolytes do, which could enable safer, more energy-dense electrodes in lithium batteries.

PHYSICS

QUANTUM

The new Versatile Neutron Imaging Instrument, or VENUS, at SNS is advancing science via high-resolution 3D imaging with enhanced contrast. VENUS users can use AI to create 3D models of samples from time-of-flight raw data in significantly fewer measurements, usually by the time they conclude their experiments.

January

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February

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April

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May

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March

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June

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Proposal Call 2025-B is scheduled to close February 26, 2025.

Proposal Call deadlines are subject to change based on facility schedule changes. The User Office will communicate any date changes on the website and in the user newsletter.

2025

Proposal Call 2026-A is scheduled to close August 20, 2025.

Proposal Call deadlines are subject to change based on facility schedule changes. The User Office will communicate any date changes on the website and in the user newsletter.

July

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October

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CLIMATE

September

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August

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December

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November

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PLANTS & WATER

The BIO-SANS neutron instrument at ORNL's HFIR facility was fitted with advanced robotics and custom software. The UR5E Universal Robot's mechanical arm changes samples automatically, quadrupling the number of samples the instrument can measure. Researchers can collect data and monitor their experiments remotely.

Neutron Sciences at Oak Ridge National Laboratory

MANUFACTURING

Corning used neutrons and RingFSDP, an open-source program from Corning and ORNL, to reveal the correlation between medium-range atomic ring structures in silicate glass and its liquid fragility. More fragile liquids have larger viscosity changes at given temperatures, affecting the time it takes to solidify.

ENGINEERING

Researchers used neutrons at ORNL to study novel glasses made in microgravity at the International Space Station. Working at NOMAD, the world's fastest neutron diffractometer, their experiments revealed the atomic structures of the tiny glass beads, which could lead to next-generation optical devices.

BIOLOGY

ORNL scientists identified the role of the serine hydroxymethyltransferase enzyme in cell division. Neutrons enabled the researchers to observe that just one amino acid residue, a glutamate, regulates chemical reactions for this enzyme. This knowledge could aid in designing a drug to fight aggressive cancers.