ORNL and its collaborators were recognized recently for the discovery of elements 115 and 117. The berkelium target material was produced during a 6-month irradiation in the world’s most intense thermal neutron flux at ORNL’s High Flux Isotope Reactor.

Neutron scattering and computational modeling have revealed unique and unexpected behavior of water molecules under extreme confinement that is unmatched by any known gas, liquid, or solid states.

A new technology to squeeze materials with a million times the pressure of Earth’s atmosphere while studying them with neutrons has been developed with potential to provide an unprecedented picture of the changing nature of matter under extreme pressure.

The Spallation Neutron Source (SNS) and the High Flux Isotope Reactor (HFIR) at the US Department of Energy’s Oak Ridge National Laboratory (ORNL) are Office of Science User Facilities. The SNS accelerator provides the most intense pulsed neutron beams in the world, and the HFIR reactor provides the highest flux reactor-based source of neutrons for research in the United States. Together, these facilities produce neutron beams for instruments specially designed to study characteristics of materials.

Proposal call closes at noon on April 12

http://neutrons.ornl.gov/2017scienceposter
Neutrons were used to uncover novel behavior in materials that holds promise for quantum computing, providing evidence for long-sought phenomena in a two-dimensional magnet.

Researchers used SNS and the Titan supercomputer, another Office of Science User Facility at ORNL, to understand membrane organization and how it affects biology. They seek to determine the presence or absence of lipid rafts.

A novel technique known as in-situ plasma processing is helping scientists get more neutrons and better data for their experiments at ORNL’s Spallation Neutron Source.

Neutron scattering was used to discover novel magnetic behavior on the surface of a specialized material that holds promise for smaller, more efficient devices and other advanced technology.

A new statistical analysis technique has been developed to use diffuse scattering data to understand potentially exploitable properties of crystalline materials.

Neutrons were used to help uncover a “greener” way to control the assembly of photovoltaic polymers in water using a surfactant—a detergent-like molecule—as a template.