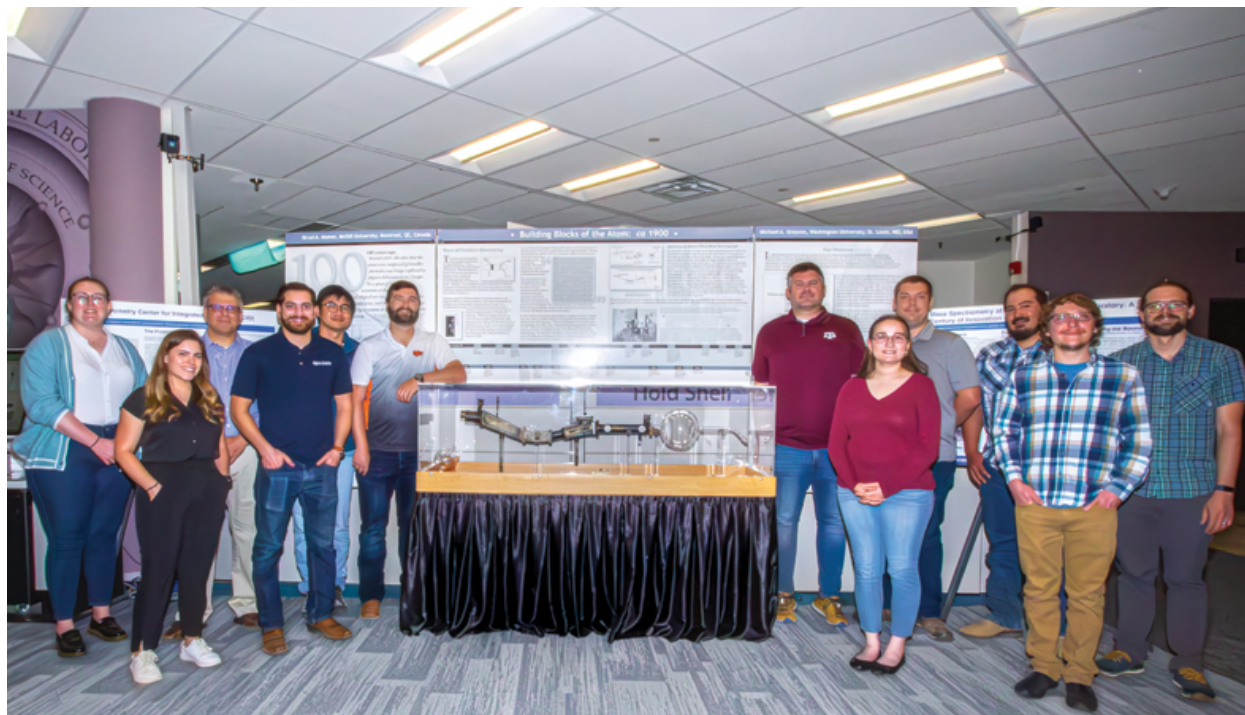


On display: Replica instruments used to discover electrons, neutrons and more

Look for the glass case by EasyIT in the J.R. Oppenheimer Center lobby



Bioscience division scientists and members of the B-TEK Mass Spectrometry Center for Integrated -Omics (MSCIO) stand next to the historical scientific instrument display at the J.R. Oppenheimer Center. The B-TEK group worked to secure the Lab as a host for the instrument display because mass spectrometry is an important tool for integrated -omics research.

Believe it or not, the electron was discovered in 1897 using only a hand-blown glass tube, a vacuum pump and some electrodes. Historical instrument replicas now on display in the lobby of the J.R. Oppenheimer Center give visitors a chance to remember the elegance — and relative simplicity — of the instruments scientists built and used to make pivotal discoveries.

This traveling display, which is on loan to the Lab for a year, features a replica of the cathode ray that **J.J. Thompson** used to discover the electron.

Two other important historical instrument replicas are also on display at the J.R. Oppenheimer Center. One instrument, **Francis Aston's** mass spectrograph, was invented in 1919 to separate isotopes and was such a successful design that a few were used in Los Alamos during the Manhattan Project to analyze uranium. The third instrument is a neutron chamber used by **James Chadwick** to discover neutrons.



Replicas of three important historical instruments: the cathode ray device used to discover the electron (left), the Aston's mass spectograph (long instrument, center) and Chadwick's neutron chamber (foreground, right) are currently on display at the J.R. Oppenheimer Center.

Mass spectrometry is part of Lab's history and current work

"We are excited to have been chosen as a host for this historical instrument display, which was created by the American Society for Mass Spectrometry," says B-TEK group leader **Trevor Glaros**, who arranged for the Lab to be one of the host institutions. The instrument display was most recently at the University of Florida and will travel next to Purdue University in July 2024.

The American Society for Mass Spectrometry developed this display in 2004 and it has already traveled to 16 host institutions across the country. By making replicas of each of these historical instruments, the society hopes to educate people throughout the United States about the early technology used to make these important scientific discoveries.

"Hosting this display at LANL is a rare honor and couldn't be at a better time as we are in the final stages of building an advanced mass spectrometry capability for the Lab," said Glaros.

"Mass spectrometry plays a crucial role in our integrated multi-omics work, which allows us to fully understand how all the proteins, metabolites and lipids change in a living system following an insult such as an infectious disease, exposure to a toxin or to radiation. This approach allows for the development of new countermeasures or treatments as well as new rapid diagnostics."