

For the next two months, Central Oregon Community College will have a museum-quality traveling exhibit showcasing a replica of one of the original Mass Spectrometers ever built. This replica will be on display for public viewing on the second floor of the Science Center on the COCC campus.

A mass spectrometer is a scale that can sort, weigh and count individual atoms and molecules. It can be used to help scientists identify the molecules present in solids, liquids and gases; determine the quantity of each type of molecule; and determine which atoms comprise a molecule and how they are arranged.

This is a replica of the same instrument that helped scientists learn more about the building blocks of the atom. Thanks to the original device, we know that every different atom is made up of just three things: neutrons, protons and electrons. Since then, information from Mass Spectrometers was essential in fleshing out the details in the Periodic Table of the Elements. Instruments like this one have also brought us:

- Ways to measure the ages of really old objects (dating techniques like carbon-14 dating, Potassium-Argon dating and many others).
- Ways to sequence proteins and DNA.
- Ways to figure out molecular structures of pure compounds.
- Ways to trace the migratory patterns of birds, insects and fish.
- Key evidence in a rapid-fire way to advance the plot of TV crime mystery programs like CSI.

Mass Spectrometers are extremely valuable instruments for basic research and routine analyses in labs all over the world.

This exhibit has been on display at: museums, conferences and universities including Washington University in St. Louis, Vanderbilt University, University of Delaware, Boston University, Purdue University, Indiana University, University of the Pacific and California Institute of Technology.

This is its first appearance in Oregon, and COCC is the first community college to host it.

“We are so pleased to have this incredible exhibit here on our campus,” said Zelda Ziegler, associate professor of chemistry at COCC. “The chemistry department at COCC is proud to claim many former students working in the local scientific community,” she said. “One of these former students, Ben Hogstad, works for VR Analytical, a local company that does analyses on contract. Catherine Petersen, one of his colleagues at VR Analytical, is a member of the ASMS. They knew about the possibility of getting the replica shipped to the area and asked Ben to get in touch with us. It made sense to host the replica at COCC in the new Science Center on the Bend campus.

“We want to share this exhibit with Central Oregonians and let them get a glimpse of history” Ziegler said. “After all, it was our community that voted for the bond to build the new Science Center.”

Ziegler said that although the idea for a mass spectrometer came from the world of physics, all branches of science have benefitted from its development including chemistry, biology, geology, medicine, forensics, materials science, and many more. Through this traveling exhibit, students and faculty will have an opportunity to link curricular material back to the device and link the idea of mass spectrometry to the many scientific advancements that have resulted from the technique in the 100 years since its origin.

This exhibit is the property of the American Society for Mass Spectrometry (ASMS) which had it built to commemorate the 100th anniversary of the original Mass Spectrometer. The first Mass Spectrometer was built in 1907 in the research labs of JJ Thompson. His graduate student, Francis Aston, was a skilled glassblower and showed an aptitude for building equipment. Aston's first two instruments were not available for replicating, but the third mass spectrometer was. This brass and glass replica was constructed in the same workshops at Cavendish Laboratory as the original.

The exhibit will be at COCC through mid-June, on the second floor of the Science Center on the COCC campus. The building is generally open from 8 a.m. to 8 p.m., Monday through Friday.

It will be on display during the General Chemistry Poster session on Friday May 30. The poster session starts at 11:30 a.m. and goes to 1:30 p.m.