

Mound Science and Energy Museum Association

presents

All-Metal Automated Toepler Pump for Quantitative Gas Transfers

Raymond W. Baker and Robert E. Ellefson

November 17, 2021

7:00 pm

**at the Mound Cold War Discovery Center
1075 Mound Road, Miamisburg, OH**

Mound Laboratory has had numerous projects that required the quantitative measurement of gases. Traditionally the gas released was pumped by a glass Toepler pump into a known volume to measure the quantity of gas (number of moles) and analyze the gas by mass spectrometry. Many of the gas samples included tritium (radioactive hydrogen) so the glass Toepler pump was replaced by a stainless steel Toepler pump built by Mound craftsmen from the design of Ray Baker and engineers. The many uses enabled by this automated Toepler pump are presented including quantitative transfers of gas.

Raymond W. Baker

He began his career at Mound in 1966 as a chemical technician and he retired as a Senior Analytical Chemist in 1993. While at Mound he completed his BS in chemistry and learned FORTRAN by self-study, machine language instrument control with Richard Bowman and high-level instrument control and data acquisition learning BASIC software language from self-study

Dr. Robert Ellefson

He holds B.S., M.S. and Ph.D. degrees in Physics and was employed as a research staff member and mass spectroscopist at the Mound Laboratory from 1972 until he retired as a Science Fellow in 1994. Following his Mound Lab employment, he continued to design and build mass spectrometers at INFICON, Inc. in Syracuse, NY; since 2005 he has worked as a private consultant in Dayton addressing analytical methods for a variety of applications worldwide. In 2011 Bob was named by his peers an American Vacuum Society Fellow. He is also a board member of the Mound Science and Energy Museum Association.