

# Crystallography for Chemists: A Hands-On Workshop at the University of Montana



June 26-28<sup>th</sup> 2014 in Missoula  
Following the 2014 NORM

Registration/inquiries:  
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**Hosted by:** Department of Chemistry and Biochemistry  
University of Montana  
Missoula, Montana

**Instructor:** Dr. Charles Campana, Senior Scientist, Bruker AXS Inc.  
Madison, Wisconsin

**Instrumentation:** Bruker D8 Venture Single-Crystal Diffractometer  
Mo and Cu X-ray sources  
Photon 100 CMOS detector  
APEX2 software  
Oxford CryoStream Low Temperature

Registration to cover materials and refreshments: \$30

Please join us for a three-day Chemical Crystallography workshop at the University of Montana, June 26 – 28, 2014. The workshop is intended for chemistry graduate students and novice crystallographers (including postdocs and faculty) who wish to increase their knowledge of X-ray crystallography and their proficiency in handling data and solving crystal structures.

We have scheduled this workshop in conjunction with the commissioning of a new NSF-funded Chemical Crystallography facility to support research activities in the Department of Chemistry and Biochemistry and the School of Pharmacy at the University of Montana. This facility features a state-of-the-art Bruker D8 Venture instrument with both Cu and Mo X-ray sources, a large PHOTON 100 CMOS detector and an Oxford CryoStream low-temperature attachment. This powerful new system is suitable for determining the molecular structure of a wide-variety of crystalline materials, including natural products, synthetically prepared organic, inorganic and organometallic compounds, solid-state materials and minerals. The Cu microfocus source enables the instrument to also be used to screen protein crystals and to collect powder diffraction data and single crystal data on very small specimens. The low temperature attachment is used to improve data quality and to handle samples which are unstable or air-sensitive.

The principal instructor for the workshop will be Dr. Charles Campana, the Senior Applications Scientist for Chemical Crystallography from Bruker AXS Inc. in Madison, Wisconsin. Dr. Campana is a native of Anaconda, Montana, and received a B.S. in Chemistry from Montana State University in Bozeman in 1970. He earned a Ph.D. in inorganic chemistry from the University of Wisconsin – Madison (with Prof. Larry Dahl) in 1975 and taught at the University of New Mexico before going to industry. Dr. Campana has over 40 years of experience in X-ray crystallography and he has conducted many workshops throughout the U.S. and Canada, as well as In China, India, Germany, England and Latin America.

The course will include the following:

- Introduction to theory of X-ray diffraction by single-crystals
- An overview of single crystal X-ray data collection
- A step-by-step description of the solution and refinement of crystal structures
- A live demonstration of the complete structure determination on a routine sample
- Hands-on use of the Bruker APEX2 and SHELXTL-2014 software to solve simple crystal structures
- Publication of results, CIF files, etc.

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