



**Mountain States Society of Electron
Microscopists
and the
Colorado Microbeam Analysis Society**

FALL DINNER MEETING

***Practical Guidelines for Microanalysis
Using EDS and WDS***

Paul Carpenter, Washington University, St. Louis



Wednesday October 30

6:30-7:00 Check in and cash bar

7:00 - 7:45 Dinner

8:00 - 8:45 Speaker

\$35 Professional

\$20 Student

A buffet of prime rib with au jus and Alaskan salmon, tomato butter sauce, roast baby new potatoes, green beans with brown butter and toasted almonds, mixed baby lettuce salad, and house-made beer bread.

Coffee, tea, and desserts are also served.

RSVP by 10/21/2013 to hlowers@usgs.gov

Please send checks payable to MSSEM/CMAS to
John Chandler, 2309 Cheyenne St, Golden CO 80401



Practical Guidelines for Microanalysis Using EDS and WDS

Paul K Carpenter
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St. Louis, MO

Abstract

Modern analytical procedures combine imaging, x-ray mapping, and microanalysis tools that enable the analyst to better provide a framework for characterization of samples. It is important to consider all aspects of microanalysis from sample preparation through to the interpretation of results.

The silicon-drift (SDD) energy-dispersive spectrometer (EDS) is a powerful analytical tool which is routinely used for qualitative and quantitative analysis as well as compositional mapping. Spectrum imaging presents a new avenue for data acquisition and processing. The user should be alert to pulse pileup and peak overlap artifacts, the need to work at the correct x-ray takeoff angle, and issues regarding exclusive use of standardless analysis. Light-element and trace element analysis present specific challenges for EDS. The use of standards and attention to a standardized procedure can dramatically improve the accuracy of microanalysis in the laboratory. Analysis using wavelength-dispersive spectrometers (WDS) on the electron microprobe is demonstrably superior for light and trace analysis, but attention to peak interferences, background selection, and pulse-height analysis is necessary for accurate analysis.

Software tools are an excellent source of graphical and numerical information to aid the analyst in describing and understanding the physics of electron scattering and x-ray production, and are key to impressing clients in the laboratory. I will also discuss the benefits of involvement in the Microanalysis Society which include professional interaction with other scientists and opportunities for students.

Biography

Paul Carpenter is an Electron Microprobe Specialist in the Department of Earth and Planetary Sciences at Washington University in St. Louis, Missouri.

His research interests include the application of microanalytical techniques to the analysis of terrestrial, lunar, and meteoritic materials, and improvements in microprobe analysis ranging from measurement procedures to correction algorithms.

Paul is currently past-president of Central States Microscopy and Microanalysis Society and chair of the Microanalysis Society (MAS) Strategic Planning committee, which addresses the goals of MAS including relations with Australian Microbeam Analysis Society and European Microbeam Analysis Society. Paul has served as MAS President (2004), and is a recipient of the MAS Cosslett award (1995) and the MAS Service Award (2007).