Anniversaries

This year there are several anniversaries of significant events related to microscopy and microanalysis. Chief among these is the 175th anniversary of the first issue the world's oldest microscopy journal, *Journal of Microscopy*, a publication of the Royal Microscopy Society. The earliest papers described investigations using the single-lens "botanical microscope," largely because advances in aberration correction of the compound microscope had not yet come into general use. This journal has chronicled advances in all types of microscopy right through to the present day. About this same time, Carl Zeiss founded his microscope manufacturing company 170 years ago. His first microscope was a single-lens microscope of the botanical type. Later in collaboration with Ernst Abbe and Otto Schott, Zeiss produced optimized lenses that set the standard for light microscopes for decades. Since that time, the Zeiss company has produced a variety of light microscopes, electron microscopes, ion microscopes, and x-ray microscopes.

Instrumental microanalysis also has anniversaries this year. The Debye-Scherrer powder diffraction method, capable of identifying a crystalline substance from a small amount of specimen powder, was discovered 100 years ago. This method allowed unknown substances to be identified from their crystal structure by comparison with a collection of diffraction patterns of known substances. An early such collection of diffraction patterns, now maintained by the International Centre for Diffraction Data, is 75 years old this year. Electron diffraction, discovered about 90 years ago, is one of the essential analytical methods in transmission electron microscopy. Elemental analysis at 1 μm spatial resolution in a flat polished specimen was made possible with the invention of the electron probe microanalyzer by Raimond Castaing 65 years ago.

Nanoscale property measurements were suggested 30 years ago in a paper by Binnig, Quate, and Gerber describing the atomic force microscope. Thus, atomic force microscopy helps to complete the list of things we typically want to know about a small region of a substance: atomic-level imaging, crystal structure, elemental composition, and mechanical and electromagnetic properties. The AFM anniversary is discussed by Winkel et al. in this issue.

Publication Objective: to provide information of interest to microscopists.

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