

## Introduction: 40 Years of EDS

2008 marked the 40th anniversary of the seminal paper “Solid-State Energy-Dispersion Spectrometer for Electron-Microprobe X-ray Analysis” by Ray Fitzgerald, Klaus Kiel, and Kurt Heinrich [*Science* (1968), **159**, 528] that introduced the Si(Li) energy dispersive spectrometer (EDS) detector as a practical analytical tool to the electron microscope community. In recognition of that anniversary, the Microscopy Society of America and the Microbeam Analysis Society organized a symposium at the 2008 Microscopy and Microanalysis Conference in Albuquerque, New Mexico to review the remarkable progress in Si(Li) EDS that has made elemental analysis available on virtually any electron beam platform.

The three presentations gathered in this volume look over the history of this technology. Klaus Keil, Ray Fitzgerald, and Kurt Heinrich describe the excitement of the first work, while Jon McCarthy, John Friel, and Patrick Camus consider the development of the hardware and Fred Schamber follows the progress of the computer software that has led to our modern EDS instrumentation. Reading these papers will reveal not only important details of what has been accomplished through the years, but the reader will gain some insight into the real process by which things actually happened. These details are often lost from the public record, but they are critical to developing an appreciation for all of the hard work from which we benefit as users of this marvelous technique. As Si(Li) EDS is rapidly replaced by the silicon drift detector (SDD), we anticipate that the remarkable advances in the X-ray throughput performance of SDD-EDS, for which factors of 10 to 75 compared to Si(Li) EDS have been reported, will give us even greater insight into the elemental chemistry of the micro world.

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