doi:10.1017/S1431927611003795
Microsc. Microanal. 17 (Suppl 2), 2011

Historical Development of the Cameca EPMA

D. R. Snoeyenbos,* M. Outrequin,**

* Cameca Instruments, Inc. , 5500 Nobel Drive Suite 100, Madison, WI 53711-4951
** Cameca SA, 29 Quai des Grésillons, 92622 Gennevilliers, France

Sixty years since Castaing's thesis establishing the technique, and more than fifty since Cameca's introduction of the first commercial instrument, EPMA still provides essential analytical capabilities at the leading edges of microanalytical application space. Further, in recent years the technique has not only maintained its relevance but has expanded into new areas where detection limits and spatial resolution have been brought to new extremes, and where EPMA is no longer exclusively a laboratory technique but where instruments may be found running in fully automated mode in the manufacturing environment.

A review of developments over the decades finds the limits of the technique being pushed systematically in various directions. Applications such as thin films and particles require hardware capabilities rather different from those for high voltage, high current trace element applications. The problem for a manufacturer of equipment has been to devise hardware capable of supporting a diversity of applications without excessive specialization.

In recent years the cutting edge applications for EPMA have moved toward typically high current, low voltage applications for trace element quantification at high spatial resolution. Concurrently, Cameca has introduced a low-voltage EPMA to the semiconductor industry for implants, dopants and thin films and this has required a specialized understanding of low voltage XRay phenomena. Effective use of a FE source at the low voltages necessary to achieve minimal activation volumes may require a convergence of these recent development trends.