

Development of low-cost simple dead time correction system for accurate quantitative electron probe microanalysis (EPMA) of trace element

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High-current and long-time X-ray sampling is required in quantitative electron probe microanalysis of trace elements. The X-ray count rate becomes extremely high in case of standard materials measurement at high-current. In this case, accuracy of dead time correction is an important factor to accurate quantitative EPMA of trace elements.

To achieve long-time maintenance-free stable dead time correction in quantitative EPMA, a simple pseudo-fixed dead time system has been developed. The mono-stable multivibrator is inserted after single-channel analyzer (SCA) / pulse-height analyzer (PHA). The dead time of this design can be considered to be a fixed value when the count rate is below 200kcps. The relative error in this system is smaller than 0.5%.

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