Measurement of Secondary Electron Yield by Charge Amplification Method

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As the initial step to realize a reliable measurement of the secondary electron yield of insulating materials using charge amplification method proposed by K. Goto [1-3], a pair of the charge amplifiers to measure a small amount of the electron charge of less than ~ 1pC have been developed. These amplifiers showed linear input/output characteristics within the range of the input charge of ~0.3 to ~5 pC. The total secondary electron yield $\sigma(E)$ of soot was measured by employing these charge amplifiers, and compared with that measured by the conventional current-mode method. The result showed that the charge amplification method enables the secondary electron yield to be measured using the primary electron charge of only ~1 pC. The primary electron charge can be further reduced to at least ~ 0.1 pC by improving the charge amplifier.

References

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