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Keyword: [TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

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[\[PDF \(1843K\)\]](#) [\[References\]](#)**Effects of Electron Back-scattering in Observations of Cross-sectioned GaAs/AlAs Superlattice with Auger Electron Spectroscopy**[Mineharu SUZUKI^{1\)}](#), [Nobuaki URUSHIHARA^{1\)}](#), [Noriaki SANADA^{1\)}](#), [Dennis F. PAUL^{2\)}](#), [Scott BRYAN^{2\)}](#) and [John S. HAMMOND^{2\)}](#)1) *ULVAC-PHI, Inc.*2) *Physical Electronics, Inc.*

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Cross-sections of GaAs/AlAs thin films prepared by cleavage of MBE-grown superlattices have been analyzed with Auger electron spectroscopy with a spatial resolution of 6 nm. Elemental distributions of Ga, Al, and As were clearly distinguished in line analysis as well as in two dimensional mapping for 50, 20, and 10 nm thin film structures. We have found an oscillation of Al KLL peak position between the two values while the peak positions of Ga LMM and As LMM remain constant. The origin of the Al KLL peak shift is a primary electron beam induced reduction of oxidized Al atoms formed during specimen preparation. The Auger spectra of Al oxide are generated by scattered electrons at regions with small amounts of electron dose, corresponding to AlAs areas further than 10 to 25 nm from the primary beam. The intensity of the Al KLL peaks excited by scattered electrons from the 25 kV primary electron beam is about 10% of the Ga LMM peak intensity originating from the GaAs stripe.

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