

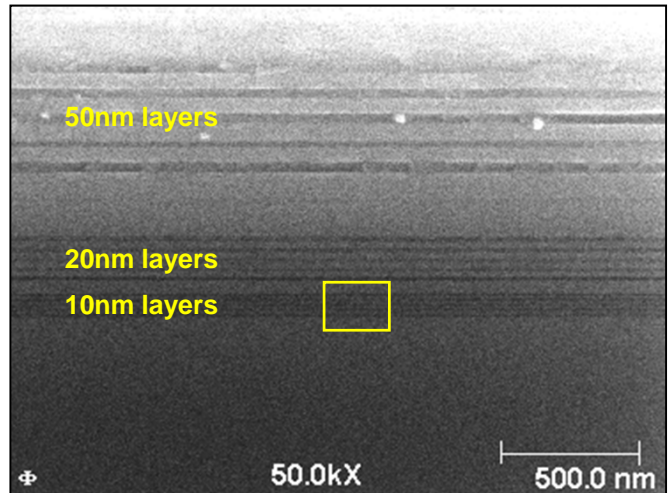
# High Spatial Resolution Auger Imaging with the PHI 700 Scanning Auger Nanoprobe

## Introduction

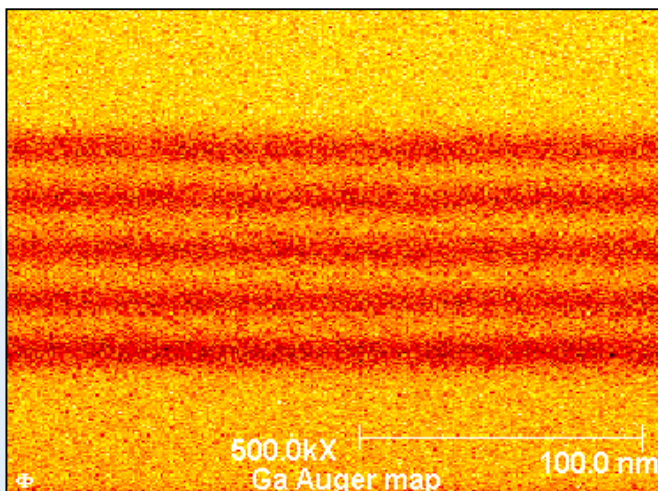
The new PHI 700 Scanning Auger Nanoprobe extends the use of Auger Electron Spectroscopy to many new application areas where features of interest are below 100 nm in size. A new electron gun column and other improvements provide a minimum beam size of less than 7 nm for Auger analysis and a 10 X increase in sensitivity for nano-scale Auger analysis compared to its highly successful predecessor the PHI 680.

## GaAs/AIAs Super Lattice

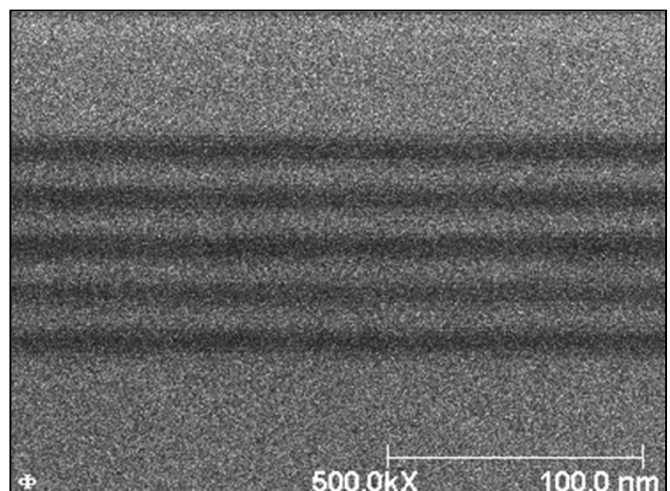
The GaAs/AIAs super lattice sample contains three sets of multi-layered structures with layers 50 nm, 20 nm, and 10 nm thick. The three sets of layers are visible in the 50 kX secondary electron image. The 500 kX secondary electron image and Ga map show excellent resolution of the 10 nm layers. The Ga map below, was collected for 200 minutes at 20 kV – 2 nA and shows the excellent Auger spatial resolution of the PHI 700 and the long term stability during extended acquisitions.



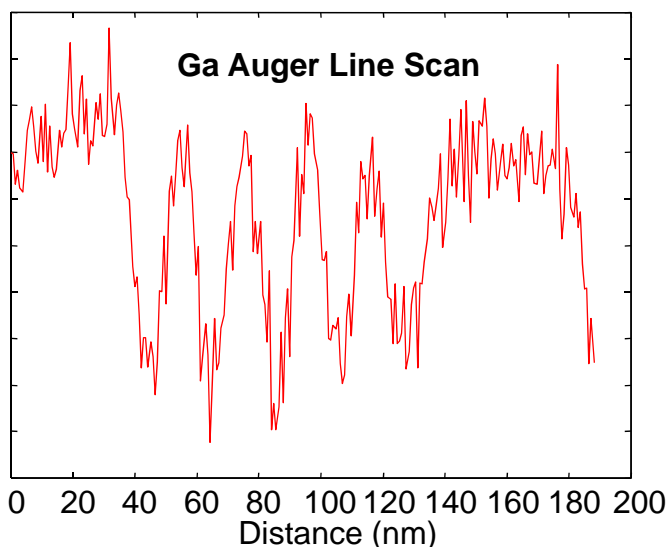
Secondary electron image of GaAs/AIAs super lattice structures (50 kX original magnification)



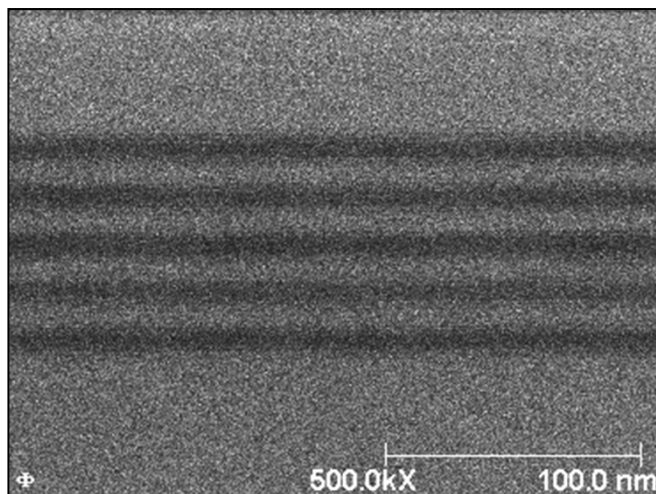
Ga Auger map of 10 nm GaAs/AIAs super lattice structure (500 kX original magnification)



Secondary electron image of 10 nm GaAs/AIAs super lattice structure (500 kX original magnification)



*Ga Auger Line Scan across the 10 nm GaAs/AlAs super lattice structure (2 minute acquisition)*



*Secondary electron image of 10 nm GaAs/AlAs super lattice structure (500 kX original magnification)*

### Summary

The PHI 700 Scanning Auger Nanoprobe provides unique capabilities for high sensitivity, high spatial resolution Auger analysis over a wide range of applications including: metallurgy, composites, ceramics, catalysts, and semiconductors.



PHYSICAL ELECTRONICS  
A DIVISION OF ULVAC-PHI

Physical Electronics USA, 18725 Lake Drive East, Chanhassen, MN 55317  
Telephone: 952-828-6200, Website: [www.phi.com](http://www.phi.com)

ULVAC-PHI, 370 Enzo, Chigasaki City, Kanagawa 253-8522, Japan  
Telephone 81-467-85-4220, Website: [www.ulvac-phi.co.jp](http://www.ulvac-phi.co.jp)