

Analytical Techniques for Semiconductor Characterization and Failure Analysis

Dr. Ioan Costina

Leibniz Institute for High Performance Microelectronics (IHP), Frankfurt (Oder)

The development of SiGe-based integrated circuits requires physical and chemical characterization of materials in all stages, beginning from raw materials, and ending in the final product. The analytical characterization involves determination of the thickness and composition of thin films deposited on Si-Wafer, determination of concentration and spatial distribution of dopants and impurities, crystallinity and strain analysis as well as failure analysis.

Analytical methods for off-line characterization of (pre)processed wafer, available at Leibniz Institute for Innovations for High Performance Microelectronics (IHP GmbH), will be presented. The advantages and limitation of each method will be discussed with specific examples for SiGe-based technology.