

Silicon Carbide Defects

Performance of silicon carbide devices can be compromised by both surface contamination and defects within the material itself, most notably micropipes. Currently, production scalability depends largely on the quality of available SiC substrates and the resultant epitaxial layer.

KLA-Tencor's Candela Optical Surface Analyzer (OSA) provides rapid process feedback and quantitative analyses to accelerate product development and assess valuable starting material. Using the multiple detection channels enables differentiation between surface contamination and crystal defects. This example shows the scattered light (left) and reflected light (right) images of three large micropipes. Because they extend for a long distance and the wafer is semi-transparent, the micropipes have a characteristically elongated appearance. Using this optical signature, they can be readily differentiated from particles and other defect types.

