

Advancing Surface Metrology Capabilities with Specialized White Light Interferometry

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Summary

Optical profilers have been widely used in many areas of surface measurements and characterizations, measuring parameters such as surface roughness, transparent films and coating thickness, nano- and micro-size structures, form and shape of mechanical parts, flatness of wafer and so on. In this presentation, we will discuss a spectrum of 3D measurement techniques using optical profiler and its applications in R&D lab and industrial production lines. The developments of the techniques are mostly application oriented. They target some measurement challenges encountered in optical 3D metrology applications. These techniques include both software algorithm developments and hardware improvements. The issues addressed in these developments include vertical resolution enhancement with large measurement range, high slope micro-size features, film thickness with rough surfaces, lateral resolution enhancement, dissimilar material offset, and large field of view capabilities. The industrial applications will include large precision mechanical parts measurements in medical implant, aerospace, and automotive sectors; sub nanometer metrology and flatness control in data storage; film thickness and nanometer dimensional control in HB-LED production; high aspect ratio via metrology in semiconductor; lead angle measurement; blade edge measurement and others.

