

EUV Lithography in High Volume Manufacturing

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In semiconductor production, photolithography uses light to transfer a designed pattern from a mask onto a wafer. The aim is to expose the pattern in the intended shape, size and location. As chip technologies progress towards faster processing and lower power consumption, photolithography has improved to produce smaller, more accurate patterns. As a consequence, the wavelengths of light utilized by lithography scanners have substantially shortened. Currently, the most advanced high volume production lithography scanners use EUV wavelengths of 13.5 nm. Furthermore, optics have been improved to facilitate larger numerical apertures, thereby making it possible to produce more fine patterns.

This presentation provides an overview of the evolution of lithography equipment in the semiconductor photolithography process, specifically in the use of shorter wavelengths of light and larger numerical aperture. The challenges that needed to be overcome at each stage of technology development will also be discussed. Additionally, the current state of the art of EUV processes for photolithography and the challenges faced by the next generation of lithography technology, high NA EUV scanner, will be presented.