EUV lithography now

V. Banine
ASML

EUV lithography has come a long way over the last two decades starting from small field demonstration systems to full field alpha demo tool scanners installed in 2006 in CNSE, Albany, USA and IMEC, Leuven, Belgium, followed by (pre-)production tools installed at customer locations since 2010

Starting with historical perspective, mid-term challenges and major achievements in of EUV lithography will be presented, such as

• full Wafer Critical Dimension Uniformity (CDU) of 1.0 nm for 16nm dense lines and 1.1 nm for 20nm isolated space
• stable matched overlay performance with ArF immersion scanner of less than 4nm
• steady progresses in source power, with ~100Watts (W) EUV power capability demonstrated on multiple machines.
• demonstrated the capability to expose up to 1000 wafers per day

EUV can be extended for several nodes by a combination of advanced illumination schemes, higher numerical aperture and potentially new wavelength.
Worldwide research activities supporting this EUV