EXTREME ULTRAVIOLET LITHOGRAPHY

1. Title:	Comparison of EUV resists out-gassing under continuous vs pulsed illumination
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3. Abstract body:
Moving to EUV lithography and its even higher photon energy introduces a number of challenges regarding resists out-gassing due to high vacuum environment, new optics type, and stringent requirements in term of optical performance.
A stand-alone experimental set-up has been designed to study EUV resist out-gassing. The main features fitted on the vacuum chamber are a GDP source, a load lock to introduce resist coated wafers or multilayered mirrors, a mass spectrometer and chemical species inlets. The system offers different functionalities to address fundamental or practical out-gassing issues.

Series of experiments were performed on Model Polymers (PHS, PMMA), Photo-Acid Generators (PAG) to study the influence of PAG and Polymer Matrix nature on the out-gassed species and amount. Thus, species resulting from interaction of PAG's residues and polymer fragments were detected. Commercial and model resists were exposed both on Leti's out-gassing tool and on the Beamline 6.2L of the Elettra Synchrotron Light Source. The experiments will be compared in order to establish if the EUV illumination type, pulsed versus continuous, has an impact. Moreover, discussion on how far out-gassing results are comparable from one experiment to the other will be presented.