



1. Title:	At wavelength measurements and study of EUV low topology Phase Shift Masks
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3. Abstract body:

Extreme ultraviolet (EUV) lithography is a leading contender to access the 32 nm node, and reach the 22 nm node and below. Phase shift masks (PSM) are evaluated as a possible option to push the resolution limit of EUV lithography.

Low topology PSM masks have been investigated through optical simulation. Efforts were directed towards low topology structures, so as to reduce shadowing effect, and to determine the effective phase shift. In this paper we will show that phase shift is not only induced by step height but also sensitive to underlying structures.

Based on the simulation results obtained, we fabricated dedicated samples with controlled etch depth to demonstrate the concept of low topology PSM. Furthermore, step height, roughness and side wall profile have been characterised.

Tests on these samples have been performed at wavelength on an interferometric set-up installed on a SLS (Swiss Light Source) beam line at the Paul Scherrer Institute. Results in terms of phase shift measurements and wavelength dependency will be shown, and the comparison with the simulation will be discussed.

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