1. Title:	In-situ EUV reflectivity of Ru, Pd and Rh single-layer mirrors exposed to energetic and thermal Sn
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3. Abstract body:
One of the key obstacles to the operation of EUV plasma-based sources supporting high-volume manufacturing (HVM) is lifetime of the collector optics facing the EUV light-generating plasma. EUV light radiators such as Sn or Li used for lithography limit the lifetime of collector optics in source devices by both deposition and implantation of thermally-expanded and fast particles born in the plasma pinch.

This paper studies the effect of thermal and energetic Sn and Xe particles on EUV reflectivity of candidate grazing incidence collector mirrors under source-relevant conditions. An understanding of Sn contamination and its effect on collector mirror performance and associated fluence-dependent thresholds is important in understanding lifetime limits as they correlate to surface evolution of the mirror under Sn exposure.

The study uses a state-of-the art in-situ EUV reflectometry system that measures the relative reflectivity changes of the mirror surface during irradiation and deposition with Sn. Particle energies of 1 keV at normal and oblique incidence are used with fluences ranging from 10^14 to 10^17 Sn/cm^2/sec. Additional in-situ surface diagnostics during Sn exposure include: sputter yield measurement, Auger electron spectroscopy, X-ray photoelectron spectroscopy, direct recoil spectroscopy and low-energy ion scattering spectroscopy. Additional metrology include: AFM, SEM, XRD and XRR.