

Compositional pellicle characterization by EUV reflectance and transmittance measurements

Lukas Bahrenberg
RWTH Aachen University

Studies on the characterization of pellicle membranes with a lab-based spectroscopic reflectometer operated in the EUV spectral range from 9 to 17 nm are presented. The tool can perform spectroscopic measurements of reflectance under variable incidence angles of grazing illumination, ranging from 5° to 12°. Additionally, it can perform spectroscopic measurements of transmittance for thin membranes < 100 nm. By acquisition of a set of data for a specific membrane, dimensional parameters such as thickness and surface roughness can be determined by means of fit-algorithms. The parameters to be reconstructed can be extended to non-dimensional parameters such as density and chemical composition, which essentially corresponds to the reconstruction of the optical constants.