

# **Study of Structure and Interfacial Roughness of Extreme Ultraviolet (EUV) Multilayered Interferential Mirrors (MIMs) by Computer Processing of Electron Microscope Cross-Sections of MIMs**

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## **ABSTRACT**

This work bears upon the characterization of extreme ultraviolet- (EUV-)multilayered interferential mirrors (MIMs). It deals with developing a new method for determining the structure and the interface profiles of MIMs. This method is based on both transmission electron microscopy (TEM) and image processing.

Starting from the assumption that there is no transition layer, filtering and segmentation have allowed us to define interface profiles for digitized cross-sectional TEM multilayers<sup>(1)</sup>. This study has been performed on molybdenum/carbon and nickel/carbon multilayers. Interfacial roughness has been characterized by means of two statistical parameters, namely, the root mean square (rms) roughness height  $\sigma_h$ <sup>(2)</sup> and the autocorrelation length  $\ell_c$ . The ratio  $\sigma_h/\ell_c$  has also been calculated. Additionally, knowledge of interface profiles enables one to study more accurately the structural behavior of the stack, from the top down to the substrate.

## **References :**

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