

EFFECTS OF LAYER NANODEFECTS  
ON THE LIGHT TRANSMISSION  
BY OPTICAL ELEMENTS  
WITH MULTILAYER  
INTERFERENCE  
COATINGS

*I.V. Fekeshgazi<sup>1</sup>, T.S. Sidenko<sup>1</sup>, O.V. Mitsa<sup>2</sup>,  
P. Barna<sup>3</sup>, O.E. Kikineshi<sup>4</sup>*

<sup>1</sup>Institute of Semiconductor Physics,  
Nat. Acad. Sci. of Ukraine  
(41, Nauky Ave., Kyiv 03028, Ukraine;  
e-mail: fek\_i@yahoo.com),

<sup>2</sup>Uzhhorod State University  
(54, Voloshyn Str., Uzhhorod 88000, Ukraine;  
e-mail: alex\_mitsa@mail.ru),

<sup>3</sup>Research Institute of Technical Physics and Materials  
Science, Hungarian Academy of Sciences  
(29-33, Konkoly-Thege út., Budapest 1121, Hungary;  
e-mail: barnap@mfa.kfki.hu),

<sup>4</sup>Institute for Nuclear Research,  
Hungarian Academy of Sciences  
(Middelheimlaan, 1, Deberzen 2020, Hungary)

S u m m a r y

The light transmission properties of optical elements with multilayer interference coatings have been studied. The reduction of transmittance maxima for optical elements with coating containing defects is found to be stronger for larger refractive indices of the substances that the defects are made of. The shape of transmittance curves is found to substantially depend on the defect dimensions along the direction of light propagation and the defect arrangement in the layer bulk. The results obtained are necessary for the developing of a technology aimed at manufacturing the optical elements with multilayer interference coatings for laser facilities and optical lenses.