Study of connection between optical multi-layer mirrors' reflection factor and roughness of substrate used

Diploma thesis abstract

Present work is dedicated to investigation of the connection between optical multi-layer mirrors' reflection factor and roughness of the substrates used.

X-ray methods of investigation of mirrors with multi-layer interference coverings with ultra low losses (10^{-2}-10^{-4}%) on the operating wavelength were used in the course of present studies.

Data comparison principles of roughness were implemented through different methods. This principle is based on the spectral density of roughness rating function analysis obtained from both atomic strength and X-ray measuring.

Both X-ray and optical ranges dedicated us to accept that the multi-layer interference coverings reflection factor is determined by the roughness of substrate used. Reflection factor reduces with the increase of roughness rate of the substrates.

V.E. Asadchikov N.Y.Fatyanov