Space and Polarization Dependences of Light Transmission by Multilayer Interference Systems

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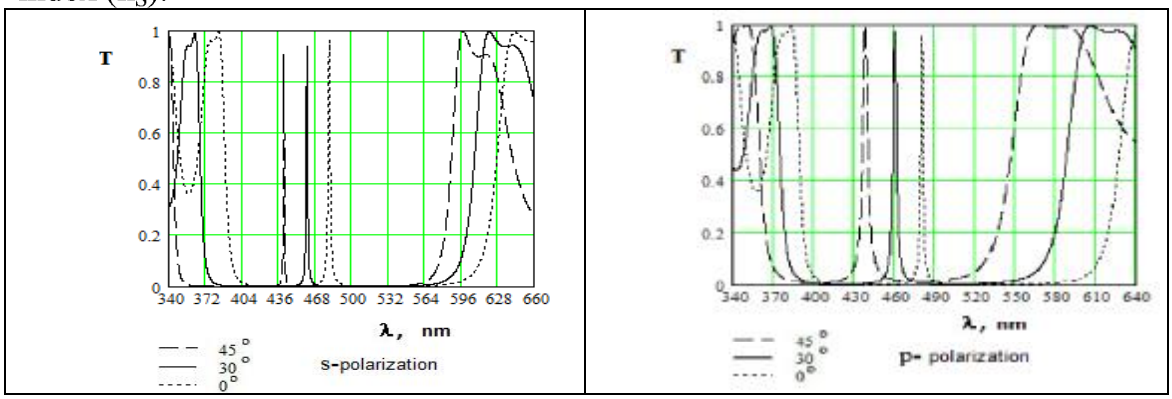
The dependences of transmission by multilayer interference systems on incidence angle values for s- and p-polarization of parallel light beams were investigated by developed program on Delphi 7 language. The considered structures of multilayer interference systems were: S-HL...HLHHLH..LH→ S-$(HL)^4 2H(LH)^4$ and S-$(B/2\times H\times B/2)^8$ or S-$(H/2\times B\times H/2)^8$. They contained 17 layers with altering of H and L layers with high (n_H) and low (n_L) refractive indices and optical thickness equal to quarter of functional wavelength λ_0 for the normal beam incidence deposited on transparent substrate S with refractive index (n_S).



The obtained transmission spectra are shown on figures. It was established that with the increasing of incidence angle of light beams on multilayer interference system the:

- maximum T_{max} values of transmittance for s-polarized light beam decrease, while for the p-polarized one increase, remaining always higher;
- position of the maxima transmission λ_{max} always shifted in the short-wave region, being higher for s- polarized light;
- half-width $\delta\lambda_{0,5}$ and $\delta\lambda_{0,1}$ of bands transmission for s- polarized light decreases, while for the p- polarized one are growing, remaining always higher;

The limit values of spatial divergence angles for filtered beam's always determined only by the total internal light reflection due to high refractive index of incoming layer and substrate.