

PECULIARITIES OF OPTICAL ABSORPTION
OF THIN TiAlSiN-BASED FILMS

O.I. Nakonechna, L.V. Poperenko, I.V. Yurgelevych

Taras Shevchenko National Kyiv University
(2, Academician Glushkov Prosp., Kyiv 03127;
e-mail: yurgel@univ.kiev.ua)

S u m m a r y

Optical properties of thin TiAlSiN-based films are investigated by the Beattie spectroellipsometric method before and after annealing. The dispersion dependences of the optical conductivity σ , the real part of the dielectric function ε_1 , and the energy reflection coefficient R at the normal angle of light incidence are obtained for the films at room temperature in the spectral range 1–4.8 eV. An intense absorption in the near ultraviolet and low-intensity peculiarities in the near infrared regions observed in the curves σ against the background of intraband absorption are related to interband electron transitions. The 30-min annealing of the films at a temperature of 600 °C didn't essentially change their optical properties. The peculiarities in the behavior of the curves σ for various coatings should be explained by their different chemical compositions, as well as different structures of the near-surface layer due to the distinctions in the manners of its deposition.