Updates to PARAV computer program

In the version 2.0 of PARAV software the possibility to calculate interference-free transmission T_α is incorporated into "Thin film" module and can be done by checking the appropriate checkbox. It is estimated as

$$T_\alpha = \sqrt{T_M T_m}\,, \tag{1}$$

where T_m and T_M are the maximum and minimum transmission values at a particular λ estimated from the envelope curves, as described in [1,2].
Then, the absorption coefficient of the film is calculated as:

$$\alpha = -\frac{1}{d}\ln x \tag{2}$$

where absorption

$$x = \frac{\left\{G - \left[G^2 - (n^2-1)^6 (n^2 - n_s^4)^2\right]^{1/2}\right\}^{1/2}}{(n-1)^3 (n - n_s^2)} \tag{3}$$

$$G = \frac{128 n^4 n_s^2}{T_\alpha^2} + n^2(n^2-1)^2(n_s^2-1)^2 + (n^2-1)^2(n^2-n_s^2)^2 \tag{4}$$

According to [2] this method of absorption estimation gives the best agreement with true values of absorption through the most of the spectrum including transparent region and region of strong absorption.

If the thickness d of the film is known from other independent measurement it can be input for calculations of absorption coefficient by checking the appropriate checkbox.

The fit procedure in "bulk" section of the program, used to adjust ranges and wavelength steps of transmission and reflection spectra (if they are obtained from different sources using different spectral ranges), is improved.

1. A. Ganjoo, R. Golovchak, J. Optoel. Adv. Materials **10**, *6* (2008) 1328.
2. R. Swanepoel, J. Phys. E: Sci. Instrum. **16** (1983) 1214.