Viscosity Arrhenius temperature

Noureddine Ouerfelli[1]

1 University of Tunis El Manar

Potential competing interests: No potential competing interests to declare.

The slope of the straight line, which is similar to the activation temperature ($T^* = E_a/R$) in Eq. 1 of previous definition (https://doi.org/10.32388/WM2K0L), and the intercept to the ordinate, which is equal to the pre-exponential factor ($\ln A_s$), we can introduce a third parameter (T_A), called the Arrhenius temperature, which is derived from the intercept with the abscissa axis (Eq. 2).

$$T_A = - E_a/(R.\ln As) \qquad (2)$$

This can simplify the viscosity-temperature dependence of (Eq. 3), following the Eyring theory which is expressed as (https://doi.org/10.1016/j.chemphys.2020.111076):

$$\ln\eta = E_a/R(1/T - 1/T_A) \qquad (3)$$