Corrigendum to ‘The role of molecule-surface interaction in thermophoresis of an aerosol particle’ [Journal of Aerosol Science, Volume 128, February 2019, Pages 62–71]

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Authors regret to inform that a mistake was made in the indicated article when writing the expression (28) for the thermophoretic force. Hence incorrect expressions are obtained for the velocity of thermophoresis (33, 38, 42, 45, 53). Besides this, in the pre-exponential factor of the expression (47) for the CL-model of scattering kernel c_r should be changed to $|c_r|$.

The expression (28) for the thermophoretic force should be written as follows:

$$\mathbf{F}_T = -\frac{16}{15} \sqrt{\pi} r_0^2 \frac{\lambda}{v} \nabla T_\infty \left[1 - \frac{2}{\pi} \left\{ \left(c_r^2, \hat{K} \left[c_r \left(c^2 - \frac{5}{2} \right) \right] \right) + 2 \left(c_r c_\theta, \hat{K} \left[c_\theta \left(c^2 - \frac{5}{2} \right) \right] \right) \right\} \right]$$

All numerical coefficients in expressions (32), (41), (44) for the thermophoretic force $\mathbf{F}_T$ and (33), (42), (45) for the thermophoretic velocity $\mathbf{U}_T$ should be two times less. The expressions for the thermophoretic force (37) and velocity (38) should be written as follows:

$$\mathbf{F}_T = -\frac{16}{15} \sqrt{\pi} r_0^2 \frac{\lambda}{v} \nabla T_\infty \left[1 + \frac{5\pi}{8} \frac{AK_T}{\chi} \right]; \mathbf{U}_T = -\frac{1}{5} \frac{\lambda \nabla T_\infty}{p_0} \frac{8\chi + 5\pi AK_T}{8\chi + A\pi(Kd + \chi)}.$$

The expressions (52) and (53) are:

$$\mathbf{F}_T = -\frac{16}{15} \sqrt{\pi} r_0^2 \frac{\lambda}{v} \nabla T_\infty \left[1 - \frac{1}{2} (1 - \alpha_\tau) + \frac{3\pi}{16} (1 - \sigma_n) \right];$$

$$\mathbf{U}_T = -\frac{1}{5} \frac{\lambda \nabla T_\infty}{p_0} \frac{8}{8 + \pi} \left[1 + \frac{\pi}{4} (1 - \sigma_n) \left(\frac{3}{4} - \frac{1}{8 + \pi} \right) - (1 - \alpha_\tau) \left(\frac{1}{2} - \frac{4}{8 + \pi} \right) \right].$$

Therefore, it is necessary to correct some of the graphs given in the article. The correct form is:

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Fig. 2.

For example, at $\theta_1/T_0 = 0.01 \div 0.1$ and $\varepsilon_\infty = 1$, the maximum excess is 28%.

Fig. 3.

At intermediate values of B , the thermophoretic force has a maximum that exceeds by 8% the value of the force with complete accommodation.

Fig. 4.

The Conclusion section contains an erroneous statement « In the case of the CL-model, when the accommodation parameters are zero, this force is zero».

The authors would like to apologise for any inconvenience caused.