Supporting Material

On the Link Between the Langevin Equation and the Coagulation Kernels of Suspended Nanoparticles

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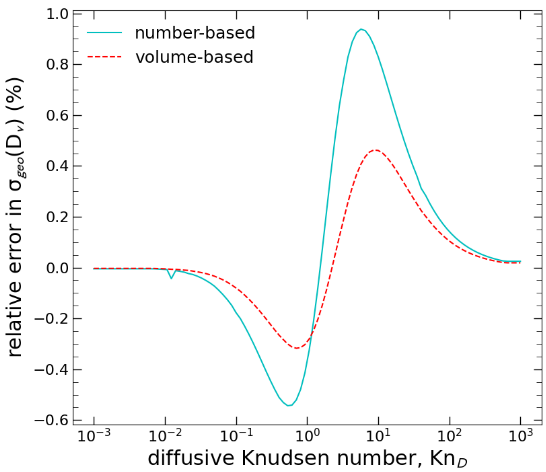
S1 Error in the asymptotic kinetic exponent

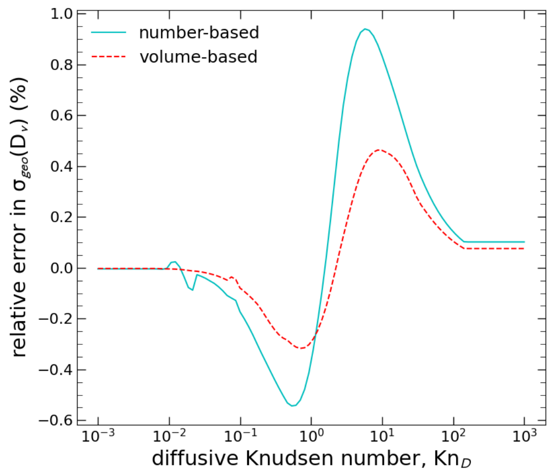
Figure S1 shows the relative error in the determination of the asymptotic $t \gg \tau_c$ geometric standard deviation for initially monodisperse (Figure S1a) and polydisperse (Figure S1b) spherical particles. The volume-based σ_{geo} is determined as described in the main manuscript and the number-based is determined as follows,

$$d_{\mathrm{geo,n}} = \exp\left(\sum_{i=1}^{\theta} \frac{n_i}{n_{\mathrm{tot}}} \ln(d_i)\right), \qquad n_{\mathrm{tot}} = \sum_{i=1}^{\theta} n_i \tag{S1a}$$

$$\sigma_{\mathrm{geo,n}} = \exp\left(\left[\sum_{i=1}^{\theta} \frac{n_i}{n_{\mathrm{tot}}} \ln^2\left(\frac{d_i}{d_{\mathrm{geo,n}}}\right)\right]^{1/2}\right) \tag{S1b}$$



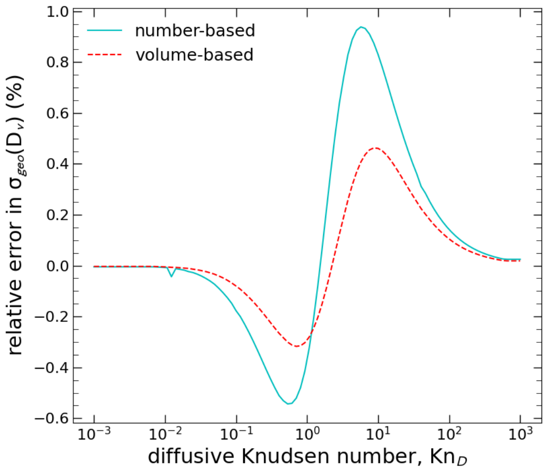
(a) Monodisperse



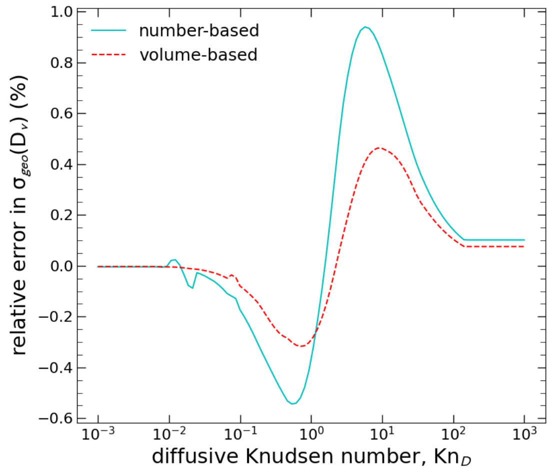
(b) Polydisperse

Figure S1: The relative error calculated as $(\sigma_{\mathrm{Our}} - \sigma_{\mathrm{Gop}})/\sigma_{\mathrm{Gop}}$ where σ_{Our} and σ_{Gop} are the geometric standard deviation determined by our, and the reference method [1], respectively. They are determined for initially monodisperse (**a**) and polydisperse (**b**) spherical particles.

S2 Error in the asymptotic geometric standard deviation



(a) Monodisperse



(b) Polydisperse

Figure S2: The relative error calculated as $(z_{\mathrm{Our}} - z_{\mathrm{Gop}})/z_{\mathrm{Gop}}$ where z_{Our} and z_{Gop} are the geometric standard deviation determined by our, and the reference method [1], respectively. They are determined for initially monodisperse (**a**) and polydisperse (**b**) spherical particles.

Reference

[1] Ranganathan Gopalakrishnan and Christopher J Hogan Jr. Determination of the transition regime collision kernel from mean first passage times. *Aerosol Sci. Tech.*, 45(12):1499–1509, 2011.