Erratum

For "Drag Force of Intermediate Reynolds Number Flow Past Mono- and Bidisperse Arrays of Spheres" by Beetstra et al. (pp. 489–501, February 2007, DOI: 10.1002/aic.11065), the authors request the following Erratum:

The total gas-particle interaction force $\mathbf{F}_{g\rightarrow s,i}$ can be split into a drag force $\mathbf{F}_{d,i}$ and a force from the pressure gradient:

$$\mathbf{F}_{g\rightarrow s,i} = \mathbf{F}_{d,i} - V_i \nabla p \tag{1}$$

with V_i the volume of particle i. In literature both forces $\mathbf{F}_{g\rightarrow s,i}$ and $\mathbf{F}_{d,i}$ are defined as *the* drag force, which has been the source of some confusion. The lattice Boltzmann method yields data for $\mathbf{F}_{g\rightarrow s,i}$. Nevertheless, in the paper we have chosen to present all results in terms of $\mathbf{F}_{d,i}$, using the relation:

$$\mathbf{F}_{d,i} = \big(1-\phi\big)\mathbf{F}_{g\rightarrow s,i} \tag{2}$$

with ϕ the packing fraction. However, relation (2) is only correct (that is, consistent with Eq. (1)) for monodisperse systems, and not for polydisperse systems. As a consequence, all results on $\mathbf{F}_{d,i}$ for binary systems are in fact valid for the *total* gas-particle interaction force $\mathbf{F}_{g\rightarrow s,i}$ (multiplied by $(1-\phi)$), and not for the drag force $\mathbf{F}_{d,i}$ as defined by Eq. (1). This means that the correction factor to the drag force that we present for polydisperse systems is valid for $\mathbf{F}_{g\rightarrow s,i}$. Specifically, the equation for the normalized *total* gas-particle force $F_{\mathrm{tot},i} = \mathbf{F}_{g\rightarrow s,i}/3\pi\mu d_i\mathbf{U}$ is:

$$F_{\mathrm{tot},i} = \Big[\big(1-\phi\big)y_i + \phi y_i^2\Big]F_{\mathrm{tot}} \tag{3}$$

with F_{tot} the normalized total gas-particle force of a monodisperse system. The equation for the normalized *drag* force $F_i = \mathbf{F}_{d,i}/3\pi\mu d_i\mathbf{U}$, consistent with (1), is then equal to:

$$F_i = y_i F \tag{4}$$

with F the normalized drag force of a monodisperse system (note that $F = (1-\phi)F_{\mathrm{tot}}$). For the precise definitions of the symbols we refer to the original paper. Note that when applying (4), the contribution from the pressure gradient has to be added seperately. Our claim that the deviation with the drag force that follows from the ad-hoc modification for polydispersity (replacing d by d_i) can be as much as a factor 3–5 is only true for the total gas-particle force. With regard to the drag force, the deviation is less.

[1]when neglecting the y_i^3 term.

AIChE Journal, Vol. 53, 3020 (2007)

DOI 10.1002/aic.11300
Published online September 26, 2007 in Wiley InterScience
(www.interscience.wiley.com)

In the article by Ghoroi and Suresh (DOI: 10.1002/aic.11220, pp. 2399–2410, September 2007), there was a typographical error in the title. The correct title is:

Intermediate Conversion Kinetics in Tricalcium Aluminate Formation

AIChE Journal, Vol. 53, 3020 (2007)

DOI 10.1002/aic.11330
Published online September 26, 2007 in Wiley InterScience
(www.interscience.wiley.com)