

# Correction to “Direct Numerical Simulation of Fluid Flow and Mass Transfer in Dense Fluid–Particle Systems”

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*Ind. Eng. Chem. Res.*, **2013**, 52 (33), 11266–11274; DOI: 10.1021/ie303411k

Page 11269: Figures 2 and 3 were reused, with permission, from ref 19 (Deen et al., *Chem. Eng. Sci.* **2012**, 81, 329–344). A permissions statement should have appeared with each figure caption. Their captions should read as follows:

**Figure 2.** Incorporation of the boundary condition for a general fluid quantity  $\phi$ . The five indicated cells are used for the discrete representation (in 2D) of the PDE governing fluid quantity  $\phi$  (fluid velocity component or fluid temperature). The “solid” node corresponding with  $\phi_0$  resides inside the particle, whereas the “fluid” nodes corresponding to  $\phi_1$  and  $\phi_2$  reside in the fluid. The value of  $\phi_0$  is expressed in terms of a second-order polynomial, according to  $\phi = a\xi^2 + b\xi + c$ , where the values of coefficients  $a$ ,  $b$ , and  $c$  are obtained from the known values of  $\phi$  at the three nodes ( $\xi = 0$ :  $\phi = \phi_0$ ;  $\xi = 1$ :  $\phi = \phi_1$ ; and  $\xi = 2$ :  $\phi = \phi_2$ ) leading to eq 21. Note that  $\xi = 0$  corresponds to the location of the “solids” node. Reproduced with permission from Deen et al.<sup>19</sup> Copyright 2012, Elsevier, Amsterdam.

**Figure 3.** Incorporation of the boundary condition for a general fluid quantity  $\phi$ . The five indicated nodes are used for the discrete representation (in 2D) of the PDE governing fluid quantity  $\phi$ . For the nodes residing inside the (moving) particles a and b, the connectivity of these nodes to particle a or particle b needs to be established during each time step. Due to the utilization of a staggered grid, this connectivity needs to be determined for each velocity component and species concentration separately. For the situation shown the boundary condition (see Figure 2) needs to be applied for three neighbor nodes which reside inside the particles a (1 node) or b (2 nodes). Reproduced with permission from Deen et al.<sup>19</sup> Copyright 2012, Elsevier, Amsterdam.

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