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Corrigendum: “A Correlation for Interfacial Area Concentration in High Void Fraction Flows in Large Diameter Channels” ([Chem. Eng. Sci.131 (2015) 172–186] (2015) 131 (172–186), (S0009250915002547), (10.1016/j.ces.2015.04.004))

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Corrigendum

Corrigendum to "A correlation for interfacial area concentration in high void fraction flows in large diameter channels" [Chem. Eng. Sci. 131 (2015) 172–186]

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There is a typographical mistake in Eq. (21), used in the derivation of the final model, which should read

$$v_{r1} = \sqrt{2}\left(\frac{\sigma g \Delta\rho}{\rho_f^2}\right)^{1/4}(1-\alpha_1)^{3/4} \tag{21}$$

This typographical mistake is also present in Eq. (22b), which is necessary for implementation of the final model, which should read

$$f(\alpha) \equiv \left(\left(\frac{8}{3}\right)^{1/3}(1-\alpha_2)^{2/3} + \frac{\sqrt{2}(1-\alpha_1)^{3/4}}{3(1-\alpha_2)^{1/2}} - 1\right) \tag{22b}$$

These are typographic errors and do not affect the results presented in the original article.

The final correlation of the interfacial area concentration is shown in Table 1.

The authors would like to apologize for this oversight.

Table 1
Final correlation of interfacial area concentration.

Parameter	Recommended formulation
Total interfacial area concentration	$\langle a_i\rangle = \langle a_{i1}\rangle + \langle a_{i2}\rangle$
Group-1 (small bubbles) interfacial area concentration	$\langle a_{i1}\rangle = \frac{6\langle\alpha_1\rangle}{D_{Sm1}}$
Group-2 (slug/churn bubbles) interfacial area concentration	$\langle a_{i2}\rangle = \frac{6\langle\alpha_2\rangle}{D_{Sm2}}$
Sauter mean diameter for Group-1 bubbles	$N_{DSm1} = \frac{D_{Sm,1}}{D_{Sm,2}} = \frac{C_2\alpha_1\left[1.13C_1\alpha_1^{2/3}\alpha_2 N_{vr} + 0.238\left(1.39(1-\alpha_2)^{2/3} + \frac{\sqrt{2}(1-\alpha_1)^{3/4}}{3.0(1-\alpha_2)^{1/2}} - 1\right)\right]}{\left[2.44C_1(1-\alpha)N_{vr} + 0.00362N_{We}^{-2/5}\left(\frac{\rho_f}{\rho_g}\right)\right]}$
	$N_{vr} = \frac{\langle\varepsilon\rangle^{1/3}Lo^{1/3}}{v_{r2}},\ N_{We} = \frac{\rho_f v_{r2}^2 D_H}{\sigma},\ C_1 = 0.120,\ C_2 = 2.30$
Sauter mean diameter for Group-2 bubbles	$\frac{D_{Sm2}}{D_h} = \frac{C_3 N_{We}^{-1}}{0.238N_{vr}(1+\alpha_1\alpha_2-\alpha) + 0.996\alpha_1\left(1.39(1-\alpha_2)^{2/3} + \frac{\sqrt{2}(1-\alpha_1)^{3/4}}{3.0(1-\alpha_2)^{1/2}} - 1\right)}$
	$C_3 = 8.55$
Turbulence dissipation	$\langle\varepsilon\rangle = \langle\varepsilon_{sh}\rangle + \langle\varepsilon_{BI}\rangle \approx \frac{0.316}{Re_m^{0.25}}\frac{v_m^3}{2D_H} + \langle j_g\rangle g$
	$N_{Re_m} = \frac{\rho_m v_m D_H}{\mu_f}\frac{1}{1-\langle\alpha\rangle},\ \rho_m = \rho_g\langle\alpha\rangle + \rho_f(1-\langle\alpha\rangle),\ v_m = \frac{\rho_g\langle j_g\rangle + \rho_f\langle j_f\rangle}{\rho_m}$
Group-1 void fraction	$\langle\alpha_1\rangle = \langle\alpha_{gs}\rangle\frac{1-\langle\alpha\rangle}{1-\langle\alpha_{gs}\rangle}$
	$\langle\alpha_{gs}\rangle = \min\{\langle\alpha\rangle\ ,\ 0.63\tanh(0.00145N_{Re_\varepsilon}\langle\alpha\rangle)\}$
	$N_{Re_\varepsilon} = \frac{\langle\varepsilon\rangle^{1/3}La^{4/3}}{v_f},\ La = \sqrt{\frac{\sigma}{\Delta\rho g}}$
Group-2 void fraction	$\langle\alpha_2\rangle = 1 - \langle\alpha_1\rangle$

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