

Errata for “Colloidal Suspension Rheology” by J. Mewis and N. Wagner, Cambridge University Press, 1st edition, 2012 printing. ISBN 978-0-521-51599-3

(last updated April 26, 2013)

- p xvi “E elasticity modulus” → elastic modulus
“G modulus” → G shear modulus
- p xvii κ Debye-Huckel constant → Debye screening length
- p. 1 line 7-8: “their dispersion thermodynamic properties” → the thermodynamic properties of the dispersion
- p. 5 4th line under framed story: “elastic modulus” → elasticity
- p. 7 Figure 1.3. Figures 1.3, 1.7 and 4.9 were calculated with a different model for the electrostatic potential (constant charge model). For consistency with the text, the following figures and captions should be substituted.

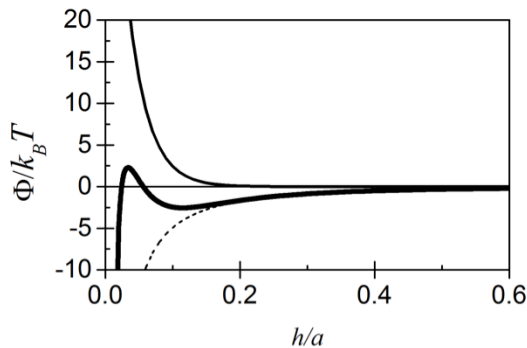


Figure 1.3. Interaction potential (DLVO) for 100 nm radius colloidal particles with a surface charge of 25.7 mV and a Hamaker constant of $10 k_B T$ at a salt concentration of 10 mM 1:1 electrolyte. The solid line is the total potential, composed of the dispersion potential (Eq. (1.9), dashed line) plus the electrostatic potential (Eq. 1.12), thin line).

-p. 9 2nd line after Eq. (1.10): “ $3\sqrt{C_{salt}/0.01M}$ ” → $3\sqrt{0.01M/C_{salt}}$

-p. 10 Eq. (1.12) should read: $\Phi^{el}(h) = 32\pi a \epsilon \epsilon_0 \left(\frac{k_B T}{ze}\right)^2 \tanh^2\left(\frac{\Psi_s ez}{4k_B T}\right) \exp(-\kappa h) \dots$

-p. 11 replace Figure 1.7 and caption with:

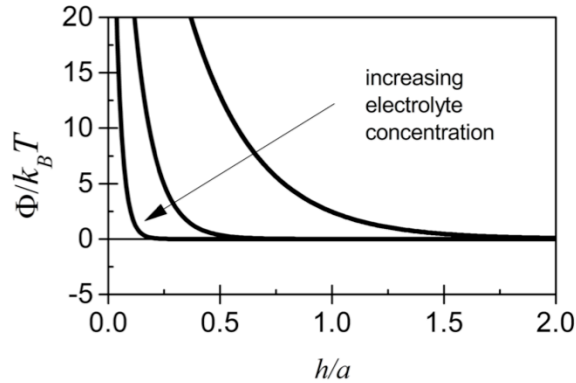
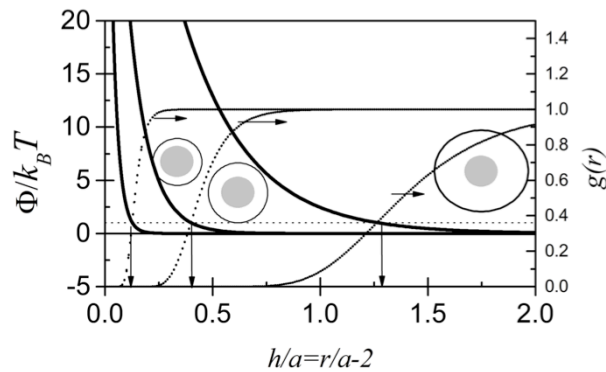


Figure 1.7. Electrostatic potential between colloidal particles of 100 nm radius in aqueous solutions of varying 1:1 electrolyte concentration (from left to right, $C_{salt} = 10$ mM, 1 mM, 0.1 mM).

- p.13, Eq. 1.15 the limit, second row “ $2a < r < a + 2R_g$ ” \rightarrow $2a < r < 2a + 2R_g$
- p. 24 last line: “..and therefore is known as..” – remove “therefore”
- p. 39 caption Figure 2.3 caption, line 3 “elasticity modulus” \rightarrow modulus of elasticity
- p.56line 3 before eq. 2.17: delete $\epsilon = 1 - (\phi/\phi_{max})^{1/3}$ and”
- p. 68 line 5, 2nd full paragraph. add the comment after the inline equation: , which is distinct from the particle Reynolds number based on the fluid density defined in equation 2.11.
- p. 80 6th and 8th line above Eq. 3.1: “reduced” \rightarrow relative
- p. 96, Table 3.1 column 4 (Diameter), row 2, “110” \rightarrow 220
- p. 96 Table 3.1 column 7, row 4, missing comma between “0.57 0.63” \rightarrow 0.57, 0.63
- p. 101 line 13: change “dynamical” to dynamic
- p. 102 3 lines above Eq. 3.20: “elastic modulus” \rightarrow shear modulus
- p. 105 line 6-7 of §3.5.3: “microstructure deformation” \rightarrow distortion of the microstructure
- p. 106 1st line: “...shows this curve, along with the volume fraction dependence..” \rightarrow shows eqn. 3.25 and the experimental data, as well as the volume fraction dependence....
- p. 109 4th line: “equilibrium elasticity modulus” \rightarrow equilibrium storage modulus
- p. 124 2nd line from below: “elastic” \rightarrow storage
- p. 129 replace figure 4.9 with (no change in caption):



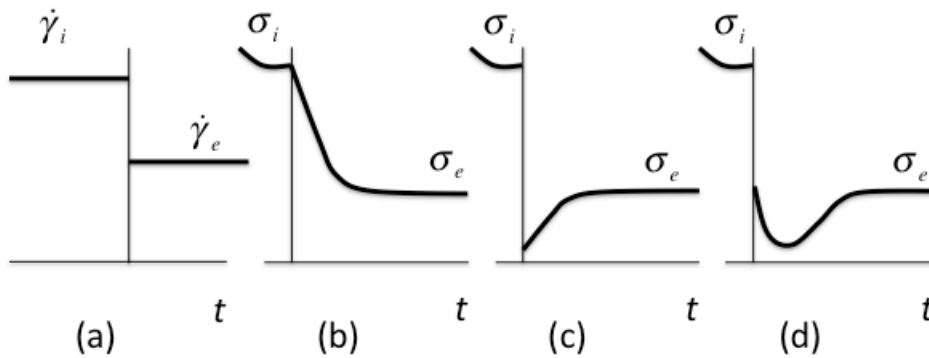
- p. 136 after Eq. 4.13: “elastic” → storage
- p. 141 last line before §4.4.3.2.: change “dynamical” → dynamic
- p. 142 3rd line from bottom: change “dynamical” → dynamic
- p. 144 caption fig. 4.25: “elastic” → storage
- p. 150: add Greek symbol: ω_i ion mobility of ion type i [$\text{m}^2/\text{s-V}$]
- p. 150 add a new category:

Subscripts

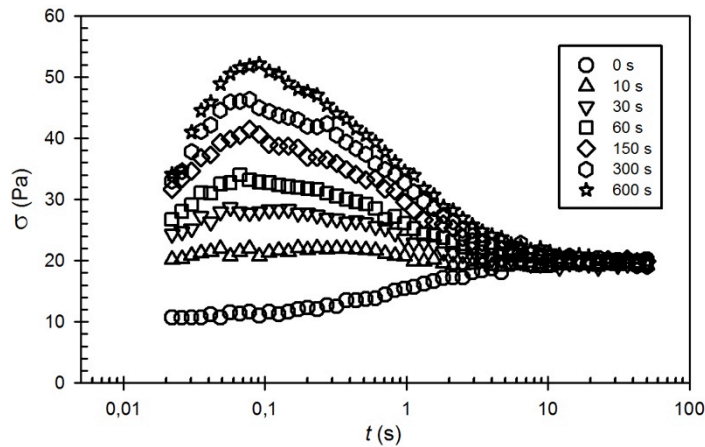
nn nearest neighbor, Eq. (4.14)

- p. 152 ref. 33: “concenttrated” → concentrated
- p. 166 5th line after Eq. 5.16: “...fluid flowing through a dispersion of rods...” → ..fluid flowing around the rods..
- p. 167 4th and 5th lines after Eq. 5.18: “...is an overestimate, sometimes much LARGER limiting v.f. are used” → delete “, sometimes muchare used”
- p. 171 Figure 5.13 caption line 3: “Zokoski” → Zukoski
- p. 172 5th line above Eq. 5.29: after “Wierenga and Philipse” add reference [16]. Delete “[16]” at end of sentence.
- p. 172 3rd line above Eq. 5.29: “..Doi-Edwards theory is L^{-3} .” → ..Doi-Edwards theory is L^{-3} [29].

- p. 197, 4 places: 4th and 13th line after eq. 6.7 and 4th and 6th lines from bottom: change “dynamical” → dynamic
- p. 202, Eqn. (6.11) change “ η_r ” → η_{r0}
- p. 204 Eq. 6.18: power “2” for the first bracket term → -2.
- p. 204 figure 6.19. y-axis label → η_{r0}
- p. 205 figure 6.19 legend $\tau_B = 0.08$ → $\tau_B = 0.8$
- p. 205 figure 6.20 x-axis label should read: $\frac{a^4 \sigma}{6\phi\Delta\epsilon}$
- p. 207 1st line of §6.6.1: “elastic” → shear
 7th line of §6.6.1: “elastic” → shear
 3rd line of second paragraph of §6.6.1: “elastic” → storage
 5th line: “elastic” → storage
 3rd line from bottom: “elastic” → storage
- p. 208 2nd line above Eq. 6.22: “elastic” → storage
- p. 210 2nd line from bottom “Structural heterogeneity” → Heterogeneity in local structure and particle density
- p. 214 12th line of §6.7: “elastic” → storage
- p. 217 in symbol for critical polymer density: change “dynamical” → dynamic
- p. 231 Figure 7.1(a): symbols should be shear rates, i.e. → $\dot{\gamma}_i$ and $\dot{\gamma}_e$. Figure 7.1(c & d): the value of σ_e should be consistent with that seen in (b) for figures (c) and (d). The new figure should look like:



-p. 234 Figure 7.4: replace with the attached figure to avoid confusion with same symbols for shear rates 0 and 600 s⁻¹.



-p. 235 line 7 from bottom: $\sigma_i > \sigma_y \rightarrow \sigma_i > \sigma_y$

-p. 236 in Figure 7.6 caption: replace “equilibrium flow curve” into \rightarrow steady state curve (open circles with point-dashed line symbol)

-p. 238 Figure 7.8 caption: symbols for G' and G'' are reversed, should read: ... G' (dashed symbols) and G'' (solid symbols)

-p. 238, 7th line: “elastic” \rightarrow storage

-p. 244 in Eq. (7.8): Should read:

$$\sigma(t) = \frac{\sigma_y^B(t',t)}{\sqrt{\Pi_\sigma(t)}} \sigma(t) + \eta_B(t',t) 2D \quad \text{for} \quad \sqrt{\Pi_\sigma} > \sigma_y^B$$

- p. 244 in Eq. (7.9) $\Pi_{\dot{\gamma}} \rightarrow \Pi_{\dot{\gamma}}(s)$ (change for both occurrences in the equation)
- p. 244 in Eq. (7.9) and also three lines lower: $\sigma_0^B \rightarrow \sigma_{y,0}^B$ and $\sigma_{\infty}^B \rightarrow \sigma_{y,\infty}^B$
- p. 248: under heading **Subscripts**, delete the entry “B Bingham parameter”
- p. 250 ref 31: “Mujumbar” \rightarrow Mujumdar.
- p. 257 Figure 8.6: y-axis label “(paise)” \rightarrow (poise)
- p. 273 1st line of the last paragraph: delete “dynamic” in dynamic oscillatory measurements
- p. 281 3 lines from bottom “Particle inertia” \rightarrow Inertia.
- p. 281, line 7 from bottom: “... of the...” \rightarrow ... on the ...
- p. 282, 9 lines from top: “Particle inertia” \rightarrow Inertia.
- p. 292, Eq. (9.3) should read $\rightarrow N_1 = \frac{2F_N}{\pi R^2}$
- p. 305 13th line of §9.4.2.: longtimes \rightarrow long times
- p. 311 8th line of §9.4.2.4.: change “(for elastic solids)” \rightarrow (such as for an elastic solid); and change “(viscous liquid)” \rightarrow (such as for a viscous liquid)
- p. 311 4th line last paragraph: change “ideal elastic solid” \rightarrow ideal viscoelastic solid.
- p. 328 5th line: “30%” \rightarrow 0.30
- p. 330, 10th-11th line from bottom: “*De* (see chapter 1)”, delete (see chapter 1).
- p. 331 5th line from bottom: . delete “, and even display minima and maxima”
- p. 334 3rd line of 3rd paragraph: delete “shearing”
- p. 334 10th line: 30% \rightarrow 0.30
- p. 342 10th line, 2nd paragraph. Change sentence into: \rightarrow Even maxima in the $\eta(\phi)$ curves have been...
- p. 343 3rd line of §10.5.6: ... “applied to” \rightarrow were obtained on dispersions of

- p. 343 13th line from bottom: “Steric stabilization and bridging are quite similar to their analogs in solution....” → Steric stabilization and bridging in polymer melts can be similar to their analogs in solution....
- p. 367 caption Figure 11.14: “Zukosli” → Zukoski.
- p. 379 10th line from below:”elastic” → storage