Surface Science: Foundations of Catalysis and Nanoscience
List of corrections to 2nd Edition

Many of these corrections have been made in the second printing of the 2nd Edition.

Chapter 1
p. 20 Should read
"The International Union of Pure and Applied Chemistry (IUPAC) recommendations {*} define samples with free diameters <2 nm as microporous, between 2 and 50 nm as mesoporous, and >50 nm as macroporous."
{*} L. B. McCusker, F. Liebau, G. Engelhardt,, Pure Appl. Chem. **73** (2001) 381-394.

p. 52. In Exercise 1.4 it should say "Use the value of the Fermi energy given in Exercise 1.2".

Chapter 2
p. 68 There is a missing ½ in the equation $E_{\text{K, flow}} = \frac{1}{2}mV^2$.

p. 87. Fig. 2.14 should be rotated clockwise by 90°.

Chapter 3
p. 139. Fig. 3.7 should be rotated clockwise by 90°. Also the letter σ appears as a 0, as in 3σ $E = -1.5210$, 4σ $E = -0.8038$, 5σ $E = -0.5544$, and 6σ $E = 0.2755$
p. 200. In Exercise 3.22
        (or do not stick on the first bounce)

Chapter 4
p. 213 immediately below Eq. (4.2.1) it should read:
        where Q_{ads} is

p. 221 There is a missing minus sign in Eq. (4.4.14)

$$q_{\text{vib}} = \prod_i \frac{1}{1 - \exp(-h\nu_i / k_{\text{B}}T)} \qquad (4.4.14)$$

On p. 230, Eq. (4.62) is referenced twice rather than Eq. (4.5.6)
        Comparing this result to our CTST result in Eq. (4.5.6)…
        At $\theta = 0$, Eq. (4.5.6) reduces to

p. 231. In Eq. (4.5.17), should read

$$s = s_0 (1 - 2\theta) \text{ for } \theta < 0.5$$
$$s = 0 \qquad \text{for } \theta \geq 0.5$$

(4.5.17)

On p. 235, Eq. (4.6.1) should read

$$p k_{ads} (1 - \theta) = \theta k_{des} .$$

(4.6.1)

On p. 236, Equation (4.6.8) should read

$$\frac{1}{\sigma} - \frac{1}{\sigma_0} \approx \frac{1}{\sigma} = \frac{1}{bp} \qquad \therefore \sigma = bp$$

(4.6.8)

p. 238

Temperature programmed desorption[17, 57-60]

Chapter 5
p. 270. The figure caption and discussion do not make it completely clear that r is the radius of the meniscus (the effective radius of the bubble) and that r_c is the pore radius at the top of the meniscus. In the case of a hydrophillic surface with $\psi = 0°$, these two are equal. The figure caption should read.
Fig. 5.7 (a) A conical pore with a hydrophilic surface induces the condensation of water and the condensation radius r_c (i.e. the width of the pore at the point where the meniscus forms) is equal to the effective radius r of the "bubble" of condensed liquid that forms the meniscus. (b) Capillary condensation in a pore with a partially wetting surface, in which case the bubble has a greater radius than the pore radius where condensation occurs, $r > r_c$. (c) A cylindrical pore with a width r_1 significantly smaller than the length, r_2. (d) An illustration of meniscus formation in the presence of two spherical particles of radius R_p

p. 292. In problem 5.8 it should read
Si(111)–(1×1) layer

p. 293. Problem 5.15 should read
5.15   Calculate the effective pressure due to capillary forces and the critical film thickness for a porous silicon film with a porosity $\varepsilon = 0.90$ when dried in air after rinsing in water or ethanol. The mean pore radius is $r_p = 5$ nm. $\gamma_{EtOH} = 22.75$ mN m^{-1}, $\gamma_{water} = 71.99$ mN m^{-1}, $\gamma_{Si} = 1000$ mN m^{-1}, $E_{Si} = 1.62 \times 10^{11}$ N m^{-2}.

Chapter 6
p. 310. Eq. (6.4.26) should read

$$K_7 = \frac{\left(\theta_{H*}\right)^2}{\left(p_{H_2} / p_0\right)\left(\theta_*\right)^2} \tag{6.4.26}$$

p. 313 The entropy term for Rxn. (6.5.1) is favourable for the reaction as written.

p. 316. Fig. 6.7 should be rotated clockwise by 90°.

p. 331. Eq. (6.14.2) should read

$$\theta_{N*} = \frac{p_{NH_3} p_0^{0.5}}{K_3 K_4 K_5 K_6 K_7^{0.5} p_{H_2}^{1.5}} \theta_* \tag{6.14.2}$$

p. 329 "intermediately strong interactions"

Chapter 7

Equation 7.1.4 should read

$$\varepsilon_0(x) = 0.0726\,x$$

Chapter 8
p. 404, not really a mistake but the typography looks a bit confusing so better would be to put the factors in as fractions:
"with a mean energy $E_F + \frac{1}{3}\delta E$. They go on to collide with two more electrons near E_F to form four electrons at $E_F + \frac{1}{9}\delta E$, etc."

p. 448. In Exercise 8.3, Eq. (8.9.4) it should be I_{den} as in

$$I_{den}(t)\ dt = a_d \frac{L^4}{t^4} \exp\!\left(-b(L/t)^2\right) dt \tag{8.9.4}$$

p. 449. In Exercise 8.10, the final state contains a $5\sigma^{-1}$ term and should read:
8.10 Consider a CO molecule adsorbed on a metal surface such that its 5σ state lies far below E_F, its $2\pi^*$ state is very close to but slightly above E_F and the $6\sigma^*$ state lies far above E_F. Describe the electron dynamics that lead to two different $5\sigma^{-1}$ state after absorption by the absorbed CO of a photon with an energy that is resonant with the $5\sigma \to 6\sigma^*$ transition.

p. 450 In Exercise 8.17, it should read: Eq. (8.4.11).

p. 451. The overpotential is defined with a switched sign, and should read:

(b)　If the Gibbs energy of activation depends on the **overpotential** $\eta = U_0 - U$

In some of the hardbound editions, Exercise 8.18 and 8.19 as well as the references to Ch 8 and Appendix I do not appear.