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Chapter 1
p. 19 Should read:
In Fig. 1.13(a) the metal has donated charge to the semiconductor space-charge region. The enhanced charge density in the space-charge region corresponds to an accumulation layer. In Fig. 1.13(b) charge transfer has occurred in the opposite direction. Because the electron density in this region is lower than in the bulk, this type of space-charge region is known as a depletion layer.

Fig. 1.1. The second layer in the fcc(110) lattice is misplaced. It should look like the following:

(c) fcc(110)

Fig. 1.3 (a) hcp(0001) = (001).

Chapter 2
p. 48 Eqs. (2.21) and (2.22) should have a –1 in the numerator.

\[ m_{r2} = \frac{-1}{\det \mathbf{M}^*} m_{r2}^* \]  
\[ \text{(2.21)} \]
\[ m_{21} = \frac{-1}{\det M^*} m_{12} \]  
(2.22)

p. 51. The caption to Fig. 2.16 still contains an error:
(a) \((\sqrt{3} \times \sqrt{3})R30^\circ\)  
(c) (i) fcc(100)–(2×2)

Fig. 2.7 Reproduced with permission from R. Becker and R. Wolkow, Semiconductor Surfaces: Silicon, in Scanning Tunnelling Microscopy (Eds.: J. A. Stroscio, W. J. Kaiser), Academic Press, Boston, 1993, p. 193. (c) 1993 Academic Press

Chapter 3

In Exercise 3.14, typo in book reads \(S_d\) instead of \(s_0\).


Chapter 4

pp. 179–180. The discussion should simply be improved. This correction messes with the subsequent equation numbers.

To define more precisely what we mean by the activation energy and how it relates to the PES, we turn to Fig. 4.5. First we note, as shown by Fowler and Guggenheim [35], that the activation energy, in this case \(E_{\text{des}}\), is given by the difference between the mean energy of the reactants \(\langle E \rangle_R\) and the mean energy of the molecules in the transition state \(\langle E \rangle_\dagger\)

\[ E_{\text{des}} = \langle E \rangle_R - \langle E \rangle_\dagger \]  
(4.4.28)

Since both \(\langle E \rangle_R\) and \(\langle E \rangle_\dagger\) are temperature dependent, \(E_{\text{des}}\) is, in principle, also temperature dependent. The classical barrier height on the PES is \(E_{0,\text{des}}^c\), \(E_{\text{des}}\) is not identical to \(E_{0,\text{des}}^c\).

As can be seen in Fig. 4.5, the two energies are identical at 0 K. At any other temperature, \(E_{\text{des}}\) and \(E_{0,\text{des}}^c\) are different, though they likely have similar values.
To account for this expected temperature dependence, it is useful to introduce a more general mathematical definition of the activation energy of desorption

\[ E_{\text{des}} = -R \frac{d \ln k}{d(1/T)} = RT \frac{d \ln k}{dT}. \]  

(4.4.29)

Frequently it is found that Eq. (4.53) obeys the form

\[ E_{\text{des}} = E_{0,\text{des}}^{\text{qm}} + mRT. \]  

(4.4.30)

p. 185 "The coverage at time \( t \) is given by integrating Eq. (4.61) (see also Exercise 4.2)

\[ \delta \sigma = s(\sigma) \delta e = s(\sigma) Z_w \delta t \]  

(4.63)

where \( \varepsilon \) is the exposure. The coverage is linearly proportional to the exposure only if the sticking coefficient is constant as a function of coverage, which is often true at very low coverage, for metal on metal adsorption or condensation onto multilayer films."

p. 197–198 "First-order desorption leads to asymmetric peaks. Second-order desorption leads to symmetric peaks."

p. 203

4.6 Consider precursor mediated adsorption through an equilibrated precursor state. The activation barrier to desorption out of the precursor is \( E_{\text{des}} \) and the activation barrier separating the precursor from the chemisorbed state is \( E_a \). Prove mathematically that in precursor mediated adsorption, if \( E_{\text{des}} > E_a \), increasing the surface temperature decreases the sticking coefficient and if \( E_{\text{des}} < E_a \), increasing \( T_s \) favours sticking.

Chapter 6

p. 250, line 8

A tensile force pulls away from the interface.

p. 280 Fig. 6.15. Panel (a) is incorrect but then you can't see it anyway.