**** ERRATA ****

Corrections to Reviews in Mineralogy Volume 26 - Contact Metamorphism
Chapter 3 "Chemical and Physical Properties of Fluids", pages 41-104

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Two errors were discovered in Labotka (1991) in the discussion of the fugacity of CO2 that give a false impression on the accuracy of the expression by Powell and Holland (1985) for RT ln ƒCO2. Table 5 contains several errors that were not caught during proofreading. The values of the coefficients and their associated formulas are correctly listed in the revised Table 5. A different error in the calculation of the fugacities, plotted in Figure 5, gives the false impression that the fugacities calculated by this expression are too high. A corrected version of Figure 5 shows that the expression of Powell and Holland (1985) predicts values of ƒCO2 that are essentially identical to those of Shmonov and Shmulovich (1974). The statement at the top of p. 57 is incorrect. I'm sorry that I didn't catch this error, and I thank Tim Holland for bringing this to my attention.

References

Labotka, T. C. (1991) Chemical and Physical Properties of Fluids. in Kerrick, D. M., Ed., Contact Metamorphism. Reviews in Mineralogy26, 41-104.

Powell, R. and Holland, T. J. B. (1985) An internally consistent thermodynamic dataset with uncertainties and correlations: 1. Methods and a worked example. J. Met. Geol. 3, 327-342.

Shmonov, V. M. and Shmulovich, K. I. (1974) Molal volumes and equation of state of CO2 at temperatures from 100 to 1000 °C and pressures from 2000 to 10,000 bars. Doklady Akademiya Nauk SSSR 217, 206-209.

Table 5. Fugacity of CO_2 (MPa)

MRK equation of state of Holloway (1977)

$$p = \frac{RT}{V-b} - \frac{a(T)}{\sqrt{T}\,V(V+b)}$$

$$a(T\,°C) = \{73.03 \times 10^6 - 71400\,T + 21.57\,T^2\}\ cm^6\ \sqrt{K}\ bar\ mol^{-1}$$

$$b = 29.7\ cm^3\ mol^{-1}$$

MRK equation of state of Kerrick and Jacobs (1981)

$$p = \frac{RT(1+y+y^2-y^3)}{V(1-y)^3} - \frac{a(T,V)}{\sqrt{T}\,V(V+b)} \qquad a(T,V) = c + \frac{d}{V} + \frac{e}{V^2} \qquad y = \frac{b}{4V}$$

$$b = 58.0\ cm^3\ mol^{-1}$$

$$c = \{28.31 - 0.10721\,T + 8.81 \times 10^{-6}\,T^2\} \times 10^6\ bar\ cm^3\ \sqrt{K}\ mol^{-2}$$

$$d = \{9380 - 8.53\,T - 0.001189\,T^2\} \times 10^6\ bar\ cm^3\ \sqrt{K}\ mol^{-3}$$

$$e = \{-368654 + 715.9\,T + 0.1534\,T^2\} \times 10^6\ bar\ cm^6\ \sqrt{K}\ mol^{-4}$$

CO_2 Fugacity expression of Powell and Holland (1985)

$$RT\ln f_{H_2O} = a + b\,T + c\,T^2$$

$$a = a_1 + a_2 p + a_3 p^2$$

$$b = b_1 + \frac{b_2}{p} + \frac{b_3}{p^2} + \frac{b_4}{\sqrt{p}}$$

$$c = c_1 + c_2 p + \frac{c_3}{p^2} + \frac{c_4}{\sqrt{p}}$$

p in kbar

a1	-9.4290E+0
a2	2.6209E+0
a3	-1.1704E-2
b1	1.2772E-1
b2	1.1587E-1
b3	-2.7256E-2
b4	-1.4323E-1
c1	-6.8066E-7
c2	-2.3744E-7
c3	0.0000E+0
c4	-5.6770E-6

Fugacity of CO_2 Comparison