Erratum: Magnetic Susceptibilities of Uranium (IV) and Plutonium (IV) Ions in Cubic Fields*

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THE asterisk referred to the following footnote:

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Errata: Bending Motions in the Dihalides of Group II Metals

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THE statement on page 286 at the end of Sec. II, "The constant of proportionality so defined is simply half of the usual bending constant k_b/\pi.**" is incorrect. The correct statement should read "The constant of proportionality so defined is equal to the usual bending constant k_b/\pi.** Accordingly, Eq. (1) should read

\[ 2k_b/\pi = k^{(0)} + k^{(1)} + k^{(2)} + k^{(3)} + \ldots \]  

(1')

The last column of Table II should be headed 2k_b/\pi, and the values in the column k_b/\pi (calc) of Table III are all in error, being too large by a factor of 2.

The author would like to thank Mr. Alfred Büchler for pointing out this error.

Errata: Diffusion and Heterogeneous Reaction. II. Catalytic Activity of Solids for Hydrogen-Atom Recombination

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It should be noted that the pressures involved in these experiments were in the region below 2 \times 10^{-2} mm Hg and not 2 \times 10^{-3} mm Hg as stated in the first paragraph of the communication.


Notes

Thomas-Fermi Model for Diatomic Hydrides

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In this paper, assuming the Thomas-Fermi method, we have calculated numerically, using the accurate Kobayashi and Taima table\(^2\) for the Thomas-Fermi function \(\varphi_0\) and \(\varphi'_0\), the number of free electrons \(N\), force constants \(k_e\), and the molar diamagnetic susceptibilities \(\chi\) of the diamagnetic hydrides. As known\(^3\) for \(N\) and \(k_e\), we have following formula:

\[ N = Z_u [\varphi_0(x_e) - x_e \varphi'_0(x_e)] \]

\[ k_e = 7.1915 \times 10^5 \left[ \frac{Z_u \varphi_0(x_e)}{r_e} \right]^{3/2} \]

(1)

The internuclear equilibrium distance \(r_e\) is given in Angstroms and \(x_e\) is related to \(r_e\) by \(x_e = Z_u r_e / 0.4683\), where \(Z_u\) is the nuclear charge of the united atom.

In Table I we have collected our results for \(N\) and \(k_e\) in 10^6 dynes/cm. Table I gives a comparison of our results for \(k_e\) with observed \(k_e\) and calculated \(k_e\) by Platt\(^4\) who used the Slater functions. Our results for \(N\) are better than those of Varshni\(^3\) by about 6%.

The results of Table I for \(N\) agree well with the results of Braunbek\(^5\) as also of Fajans and Bauer.\(^6\) Using the formula of Gombás\(^7\) for \(x\),

\[ x = -9.43 \left[ 1 - 3.01 N/Z_u + 3.92 (N/Z_u)^2 \right] \left( Z_u - N \right) / Z_u^{2/3} \times 10^{-6} \text{ cm}^3, \]  

(2)

we have in Fig. 1 \(-x\times10^6\) as a function of \(Z_u\).

For such diatomic hydrides as are paramagnetic we can use the formula given by Landau\(^8\), \(\kappa = 1.47 \times\)
$10^{-14} \chi^2$, where $\chi$ is the volume susceptibility. Figure 1 does not give a comparison with experimental data for $\chi$ since such experimental results are unknown in most cases.