

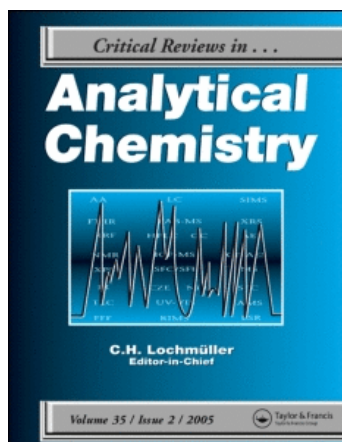
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ERRATA

Following are corrections to *Advances in the Application of X-Ray Photoelectron Spectroscopy (ESCA) Part I. Foundation and Established Methods* by Tery L. Barr which appeared in Volume 22, Issues 1,2.

Table 1, on page 119, beginning with line 13 should read:

Cu	Cu°	Cu(2p _{3/2})	932.47(1.01)	530.3
	CuO	Cu(2p _{3/2})	933.7	
	Cu ₂ O	Cu(2p _{3/2})	932.5(1.2)	
	Cu(OH) ₂	Cu(2p _{3/2})	934.75	531.7

The first paragraph on page 131 should read:

Unfortunately, the Koopmans' theorem or Frozen Orbital Approximation is just that—an approximation, and it only applies (reasonably) to a few systems. Generally, there are substantial differences between the results realized on the left side of Equations 3 and 5 and those calculated employing Koopmans' theorem. Also, there are numerous, often significant, secondary peaks or relaxations realized in the experimental spectra. None of these facts can be described inside the limits of Koopman's theorem. This necessitates the documentation of final state effects that may lead to relaxations and secondary peaks, and thus remove some of the "chemical" from the (Siegbahn) chemical shift. It has been noted that the relaxation effects to be described are those for a particular orbital of a particular atom in two different chemical states. Therefore, some have suggested that these relaxation effects may often cancel when one considers the chemical shift subtraction (Equation 4). In fact, sometimes substantial parts of this relaxation do cancel. However, as demonstrated by Davis and Shirley, the relaxation to be described has both an interatomic and extraatomic part.⁵³ The latter, which depends primarily upon the interaction of a particular atom with its neighbors, will often vary substantially when those neighbors are changed, making the relaxation effect quite different for states 1 and 2 in a 1 → 2 chemical change.

Equation 29 on page 131 should read:

where

$$\langle \phi | F_i | \phi \rangle = \langle \phi | h_0(i) | \phi \rangle_p + \sum_p \{ \langle \phi | \phi_p' | v_{ij} | \phi | \phi_p' \rangle - 1 | 2 \langle \phi' | \phi_p' | v_{ij} | \phi_p' \phi \rangle \} \quad (29)$$

The second paragraph from the bottom of page 132 in the left column should read:

As mentioned, this description provides a reasonably accurate rendition for the final state behavior of a system that suffers a (relatively) slow ejection of a photoelectron.⁵⁴ Many observed photoelectron peaks fall into this classification. They are generally seen as singular (principal only) discrete lines in the resulting spectrum. Thus, a reasonable theoretical description of their realized E^m may be achieved with Equations 31 and 32.

Equation 45 on page 137 should read:

$$\frac{I_{AX}}{I_{BT}} \simeq \frac{\sigma_{AX}}{\sigma_{BT}} \cdot \frac{N_{AX}}{N_{BT}} \quad (45)$$

The last line of Table 2 on page 138 should read:

$\gamma\text{-Al}_2\text{O}_3$ — — 0

The second paragraph in the first column of page 142 should read:

After exposure to STP air,^{85,86} polypropylene (despite its visual indication of inertness) is subjected to modest oxidation, producing a variety of products. Instead of just an indiscernible mixture, high resolution analysis (employing the detailed XPS analyses achieved on pure organic systems with different functional groups by Clark⁸⁷ and others⁸⁸) is able to demonstrate that the NP process produces a variety of discernable oxidized byproducts. Repeated angular resolution analyses suggest that these products are realized (produced and deposited) in repetitive layers.^{86,87} The products formed and their semidiscrete interfaces are depicted in Figure 16. One should note that the resulting oxidized carbon products do not entirely cover the surface, but do seem to form a product distribution that is still present more than 35 to 40 Å below the outer surface.

The first paragraph in the second column of page 142 should read:

The general lack of oxidized products formed (during NP), and the fact that they always occur in mixtures, greatly complicates detailed analysis. Fortunately, the degree of oxidation is dramatically enhanced following exposure of the polymer to various simulated liquid environments, particularly the sea water. In all of these fluid exposure cases the large preponderance of retained C-H and C-C type carbons ensures that the C(1s) spectra will be dominated by these species making positive analysis of the C(1s)-oxygen species very difficult. Therefore, most of the identifications were rendered using AR versions of the resulting O(1s) spectra. Several typical examples^{85,86} of these spectra are presented in Figure 15.

Equation 61 on page 151 should read:

$$H_{\text{Coli}} = \sum_{k < k_c} \left[\frac{P_k P_k^*}{2} + \frac{w_p^2 Q_k^* Q_k}{2} \right] \quad (61)$$

Equation 70 on page 152 should read:

and the collective (plasmon) type field:

$$H_{\text{int}}^{\text{L,R,(2)}} = \sum_{k, k' < k_c} v''_{kk'} (a_k \nabla^2 a_k^+) b b^+ \quad (70)$$

Equation 78 on page 154 should read:

$$w^2 = w_p^2 + \frac{4\pi e^2}{\hbar k^2} \sum_n \frac{2|w_{\text{no}}(\rho_k)_{\text{no}}|^2 w_{\text{no}}}{w^2 - w_{\text{no}}^2} \quad (78)$$

+ higher order corrections

Equation 82 on page 156 should read:

$$E_{\text{L}}^{\wedge(1)'} = K\sqrt{n_i} + \frac{\hbar^2 k^2}{2m} \left(\frac{m}{m^*} \right) + \text{HOT} \quad (82)$$

Equation 90 on page 160 should read:

$$E_{\text{o}}^2(i) \equiv \sum_{j=1} \frac{|\langle \phi_j | H_{\text{int}} | \phi_{\text{o}} \rangle|^2}{(E_{\text{o}}^0 - E_j^0)} \quad (90)$$

The second section of Table 9 on page 169 should read:

Select III-V Systems

GaAs	1.4	0.32	16.3	16.2	Ga(3d)→C.B. ↓ VB ↑
GaSb	0.8	0.27	15.3	14.8	Ga(3d)→C.B. ↓ V.B. ↑
InN	1.7	0.5	19.0	15.5	In(4d)→C.B. ↓ Ion ↓
InSb	0.2	0.33	13.9	13.4	In(4d)→C.B. ↓ VB ↑

The upper case pi in the fourth line of page 172 should be a lower case pi.

Both upper case pi's in the last paragraph of page 176 should be lower case.

Reference 47 on page 178 should read:

47. Sagurton, M., Bullock, E. L., and Fadley, C. S.,
The Analysis of Photoelectron Diffraction Data Obtained with Fixed Geometry and Scanned Photon Energy, *Surf. Sci.*, 182, 287, 1987.

Reference 107 on page 180 should read:

107. Barr, T. L., XPS Analysis in Pt-Metal Catalysis, *ACS Div. Petrol. Chem.*, 33, 649, 1988.