

COMPUTER SOFTWARE REVIEWS

WordPerfect 5.1 for Chemists

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Received March 22, 1990

Although WordPerfect has been the best selling word-processing software for IBM-compatible microcomputers during the past several years,¹ it has lacked many features that chemists and other scientists need. With the release of WordPerfect version 5.1,² however, WordPerfect Corp. has demonstrated a commitment to scientific and mathematical word processing.

FEATURES FOR CHEMISTS

New features of WordPerfect versions 5.0 and 5.1 that chemists will especially enjoy include the following:

Symbols. WordPerfect 5.1 supports hundreds of mathematical and scientific symbols for virtually any printer. Figure 1 gives a sampling of the symbols that chemists might use in preparing manuscripts and examinations. For more information, consult the section on **Compose** and Appendix F, "WordPerfect Characters," in the WordPerfect user's manual.³

Advanced Macro Programming and Keyboard Layouts. The difficulty of typing chemical formulas and mathematical equations can be significantly reduced through the new features of macro programming and through the use of specialized keyboard layouts.

WordPerfect 5.1 macro programming supports IF ... THEN ... ELSE structures, WHILE and FOR loops, subroutines, used-named variables, access to system information (document modification status, character at cursor, number of the current endnote or footnote, and the like), and many other features.^{4,5}

For example, the author has applied these programming features to write a macro that saves 25–90% of the keystrokes necessary to type chemical equations⁶ and nuclear formulas. With an advanced macro, a chemist can type the formula CH_3COO^- in 9 keystrokes rather than the normal 15 keystrokes it takes without a macro. With another advanced macro, a chemist can type the formula for pentane, $\text{CH}_3\text{—CH}_2\text{—CH}_2\text{—CH}_2\text{—CH}_3$, or any other straight-chain alkane, by pressing only four keystrokes. Without the macro, this representation of pentane would take 39 keystrokes.

By combining the power of advanced macros with the capability of keyboard layouts, chemists can greatly increase their efficiencies at preparing scientific documents.⁷

However, there are disadvantages to WordPerfect macro programming, including the following: (1) the built-in macro editor supports only rudimentary editing features (no search and replace or block operations); (2) macro programming can be difficult to learn and apply (the documentation in the WordPerfect 5.1 user's manual is complete but brief and is devoid of significant examples); and (3) some complex macros execute slowly because macro programs are interpreted rather than compiled.

α	ϕ	\rightarrow	∇	$\frac{1}{2}$
β	ψ	\neq	∂	$\frac{1}{4}$
γ	\pm	Σ	e	$\frac{1}{8}$
δ	\mp	Π	ℓ	$\frac{3}{8}$
Δ	\leq	\int	\hbar	$\frac{1}{16}$
ε	\geq	∞	\equiv	\AA

Figure 1. Examples of mathematical and scientific symbols. WordPerfect version 5.1 can print these symbols on all printers that support graphics.

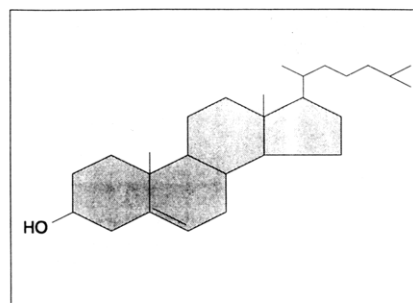


Figure 2. Graphic image of cholesterol printed from WordPerfect 5.1. This image was created with DrawPerfect, but WordPerfect 5.1 supports graphics created with any of the popular graphics programs.

Graphics. WordPerfect allows importing of image files from a wide variety of graphics-producing software packages, including AutoCAD, Chemfile 11, Chemtext, Harvard Graphics, and Adobe Illustrator. WordPerfect supports the import of most of the popular file formats, including EPS, HPGL, CGM, TIFF, IMG, PCX, and PNTG.⁸ Once imported into WordPerfect, a graphic image may be sized, cropped, rotated, and inverted.

The graphics capabilities of WordPerfect allow chemists to include ring structures, projection diagrams, electron dot structures, and other chemical images in their documents. For example, Figure 2 shows the structure of cholesterol (created by using WordPerfect Corp.'s graphics software called DrawPerfect) imported into and printed by WordPerfect 5.1.

The major disadvantage of the graphics system is that WordPerfect 5.1 itself has no capability for creating images or for modifying the objects within an image. Other software packages must be employed. A secondary disadvantage is that documents containing graphics take much longer to print, in some case 3–4 times longer, than a document without graphics.

Tables. WordPerfect 5.1 provides powerful, easy-to-use features for creating and editing complex tables. Figure 3 is an example of a table created by using WordPerfect's table

WordPerfect 5.1 Features for Chemists	
Feature	Description
Symbols	Displays scientific and mathematic Symbols
Macros	Increases efficiency of typing chemical formulas and equations
Graphics	Displays chemical structures (such as ring compounds)
Tables	Allows easy creation and editing of tables
Cross References	Supports multiple references to endnotes, figures, etc.
Equation Editor	Permits creation and display of complex equations

Figure 3. Table prepared by using the WordPerfect 5.1 table editor.

Figure 4. WordPerfect 5.1 equation editor. The top window shows an expanded view of the equation, and the bottom window shows the text commands used to generate the figure. The commands window at the right shows a few of the many commands available.

editor. Setting or changing the size (number of "cells"), specifying the width of each column, adjusting the background shading, assigning the types of lines surrounding rows or columns of cells, moving columns or rows of data, and setting the alignment of text or numbers within the rows or columns of a table are all easily accomplished through the table editor.

Cross-References. One disadvantage of WordPerfect 4.2 and earlier versions was the lack of support for making multiple references to the same footnote or endnote and at the same time making use of WordPerfect's automatic numbering fa-

cility. With the release of versions 5.0 and 5.1, however, WordPerfect allows cross references to numbered document items: footnotes, endnotes, figures, tables, or equations. When you add, insert, or delete a numbered item, WordPerfect automatically rennumbers the items and automatically rennumbers all references to those items.

Creating cross-references involves (1) creating the original footnote, endnote, figure, or other numbered item, (2) marking that item with a cross-reference, or "target," name, and (3) using the target name in all references to the original numbered item.⁹

Equation Editor. Complex equations can be created and edited by using the new WordPerfect equation editor. It supports all the symbols available through the **Compose** command (see above) and many commands for creating, editing, arranging, aligning, resizing, and numbering (or rennumbering) scientific equations.

Figure 4 shows the WordPerfect equation editor screen with an example equation.

SUMMARY

In summary, WordPerfect version 5.1 supports scientific symbols, advanced macro programming, graphics, tables, cross-references, and equations. Although its software and documentation have some minor weaknesses, WordPerfect will satisfy the needs of most chemists in preparing technical documents.

REFERENCES AND NOTES

- (1) Mendelson, E. Two Aces and a King: The Big Three Word Processors. *PC Mag.* **1989**, 8, (20), 97-128.
- (2) WordPerfect for the IBM, version 5.1, is available from WordPerfect Corp., 1555 N. Technology Way, Orem, UT [(800) 225-5000] (\$495).
- (3) *WordPerfect for IBM Personal Computers Reference Manual*; WordPerfect Corp.: Orem, UT, 1989.
- (4) Zimmerman, S. S. Magic Potions: Basic Principles of Advanced Macros. *WordPerfect, Mag.* **1989**, Feb, 8-10.
- (5) Zimmerman, S. S. Magnificent Macros: 5.1's New Commands. *WordPerfect, Mag.* **1990**, March, 49-51.
- (6) Zimmerman, S. S. Macro Magic: The Right Chemistry. *WordPerfect, Mag.* (in press).
- (7) To receive a free copy of CHEM.WPK (a keyboard file containing 24 simple and advanced macros for chemists) and its accompanying documentation (in WordPerfect 5.1-readable format), send the author a self-addressed stamped disk mailer and a 5.25-inch formatted diskette.
- (8) For a complete list of the graphics programs and file formats that WordPerfect supports, see "Graphics, Formats and Program" in the WordPerfect 5.1 user's manual.
- (9) Zimmerman, S. S. Cross That Reference ... When You Come to It. *WordPerfect, Mag.* **1990**, Feb, 19-23.