General Chemistry Collection CD-ROM for Students

Abstract of Special Issue 16, 2nd Edition

The *JCE Software* General Chemistry Collection contains software intended for use by introductory-level chemistry students. This CD-ROM includes programs from Series B for PC-compatible, Series C for Macintosh, and Series D for Windows. All of this popular, previously published, peer-reviewed software is now available on a single CD-ROM for convenient access by students.

All programs included in this student edition of the General Chemistry Collection and the general chemistry topics they apply to are listed in the Box on page 512. This 2nd edition expands upon the first edition (*1*) with the general chemistry programs published in 1997: Periodic Table Games (*2*, PC DOS) and Alkanes in Motion (*3*, Windows; *4*, Mac OS). Windows users will also find updated versions of A Window on the Solid State (*5*) including two new chapters; Solid State Structures (*6*) updated for MacMolecule2 and PCMolecule 2; and Lake Study (*7*). In addition, the digital video and animations from Solid State Resources (*8*), an instructor's resource designed to accompany *Teaching General Chemistry: A Material Science Companion* (*9*), are included.

General Chemistry Collection covers a broad range of topics. Students having access to either a Macintosh or PC-compatible computer will find interesting information, tutorials, and simulations that will be useful to them as they study chemistry for the first time.

How To Use This CD-ROM

General Chemistry Collection is intended for student use only and is to be purchased directly by students for their use outside of the classroom. An instructor's version of the CD including suggestions for incorporation of these programs into the high school/college general chemistry curriculum is under development.

Acknowledgment

General Chemistry Collection contains the work of many authors. The time and effort of these dedicated chemistry educators in producing these programs is gratefully acknowledged by the editors, along with the authors' generosity in contributing their work to the chemistry education community by submission to *JCE Software*. Thanks are also due the many volunteer peer reviewers who give their time and expertise to help maintain and assure the high quality of *JCE Software* publications.

Licensing

Purchasers of this collection of software are licensed to install and use the software on a single computer only. This CD-ROM is intended for personal use only; installation onto network servers or computers used by more than a single individual is strictly forbidden.

Hardware and Software Requirements

System requirements are given in Table 1 below. Some programs have additional requirements. See the individual program abstracts (*http://jchemed.chem.wisc.edu/*), or documentation included on the CD-ROM for more specific information.
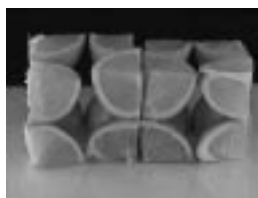
Shown here are three frames from a QuickTime movie included in Solid State Resources on the General Chemistry Collection CD-ROM. In this sequence oranges are cut into eighths and re-assembled to represent the fractional volume contribution of each atom at the corner of a simple cubic unit cell.

**Table 1. Hardware and Software Requirements for *JCE Software* General Chemistry Collection.
Some programs have additional requirements.**

Series	Computer	CPU	RAM	Graphics	Operating System
C	**Mac OS Compatible**	68020 or higher, Power Mac suggested	4 MB 8 MB suggested	256 or more colors 640 × 480 resolution	System 7 or higher
D	**Windows Compatible**	80386 or higher	4 MB 8 MB suggested	VGA; SVGA with 256 or more colors suggested	Windows 3.1 or Windows 95

Contents of JCE Software General Chemistry Collection, 2nd Edition.

Mac OS & Windows	Topics
AnswerSheets	Unit conversions, Inorganic nomenclature, Stoichiometry, VSEPR theory, Chemical structures
Alkanes in Motion	Molecular dynamics
Lake Study	Scientific method, Water chemistry, Environmental chemistry
Solid State Resources	Material Science, Solid state
Solid State Structures	Solid state, Structural chemistry
Window on the Solid State (Parts I and II)	Solid state, Structures of metals

Silica Gel prepared by Sol-Gel synthesis in a petri dish, from Solid State Resources.

Windows Programs	Topics
BCTC	Water chemistry, Environmental chemistry, Chemistry and society
Bonding Theory	History of chemistry, Metal complexes, Structural isomers
Equilibrium Calculator	Equilibrium calculations
Illustrated Periodic Table	History of chemistry, Periodic table, Periodic trends, Descriptive chemistry of elements, Structural chemistry of elements
VizQuiz with WiscQuizzes	Quizzing and homework
Window on the Solid State (Parts III and IV)	Solid state, Structures of ionic compounds

Macintosh Programs	Topics
Acid–Base Package	Titration curves, Buffers, pH, Alpha plots, Atomic Spectra-Graph, Atomic emission spectra
Chemistry Navigator	Periodic table, History of chemistry, Minerals, Periodic trends
Coordination Compounds	Octahedral complexes, Structural isomers
Inorganic Nomenclature	Inorganic nomenclature
MolVib 2.0	Molecular vibration animations
Organic Nomenclature	Organic nomenclature
Precision of Calc. Values	Experimental error

PC Programs	Topics
Alkane Isomers	Organic nomenclature, Organic structural isomers
Animated Demos I	Wave theory of atom, Atomic orbital electron distributions, Ionic compounds, Hydration of Ions, Cleavage of ionic crystal
Animated Demos II	Mass spectrometer, X-ray diffraction
Bravais	Bravais lattices
Chemistry CAI	Nuclear chemistry, Colligative properties, Coulomb's law, Solubility product, Faraday's law of electrolysis, Periodic trends
FactGame	Drill on chemical facts
KinWorks	Experimental determination of rate constants, Design of kinetics experiments
Notebook	Calculations and plotting of data
Periodic Table Games	Periodic table, Inorganic nomenclature
REACT	Balancing equations, ΔH, ΔS, ΔG calculations, Equilibrium constants
Rutherford	Alpha-particle scattering experiment, Nuclear atom
SIRs	Modules covering 24 General Chemistry topics
Spec20	Visible spectrophotometry
TITRATE	Titration curves, Alpha plots

Ordering and Information

Faculty members who would like to recommend that their students purchase this collection for use in their course are encouraged to have their local bookstores order this CD. Alternatively, faculty members may purchase this collection in quantities of 20 or more at the bookstore rate and distribute them to their students. Individual copies of the collection can be ordered directly from *JCE Software.*

Journal of Chemical Education Software (often called *JCE Software*) is a publication of the *Journal of Chemical Education*. There is an Order Form inserted in this issue that provides prices and other ordering information. If this card is not available or if you need additional information, contact: *JCE Software*, University of Wisconsin–Madison, 1101 University Avenue, Madison, WI 53706-1396; phone; 608/262-5153 or 800/991-5534; fax: 608/265-8094; email: *jcesoft@chem.wisc.edu.*

Information about all our publications (including abstracts, descriptions, updates) is available from our World Wide Web site: *http://jchemed.chem.wisc.edu/.*

Literature Cited

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5. Robinson, W. R.; Tejchma, J. F. A Window on the Solid State. *J. Chem. Educ. Software* **1998,** *5D, No. 2.*
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9. Ellis, A. B.; Geselbracht, M. J.; Johnson, B. J.; Lisensky, G. C.; Robinson, W. R. *Teaching General Chemistry: A Materials Science Companion.* American Chemical Society: Washington, DC, 1993.