

JOURNAL OF Chemical Education: Software

Abstracts for Volume IVC, Number 1

Demo-Deck: A Hypercard Stack of Chemistry Demonstrations

Fred Juergens

University of Wisconsin—Madison
Madison, WI 53706

Demo-Deck is a HyperCard 2.0 database that catalogs nearly 1400 chemical demonstrations published during the past 20 years in references 1–6. Each demonstration is summarized on a separate card that gives a complete reference to the original article describing the demonstration. Each card also contains a brief description and up to ten keywords that categorize the demonstration in terms of substances used or concepts (kinetics, catalysis, activation energy, ...). The search capabilities built into HyperCard allow you to find all cards that contain one or a pair of terms—not necessarily keywords. All words on each card are searched.

Demo-Deck does not contain procedures for the cited demonstrations, since this would violate copyright restrictions; its purpose is to allow you to find original articles that contain procedures and, in many instances, information about safety and waste disposal. Demo-Deck allows you to enter your own procedure, safety information, etc. for any demonstration listed. This information is linked to Demo-Deck so that when a successful search has been done you can display your own description and procedure for the demonstration you found.

Frost Diagrams: A Tool for Predicting Redox Reactions

James P. Birk
Heidi Hocker

Arizona State University
Tempe, AZ 85287–1604

Frost Diagrams is a HyperCard stack that provides an easily used format for making redox reaction predictions for one or two elements by comparing slopes of the lines connecting two oxidation states. Comparisons are simplified by copying the Frost diagram for one element to a new

card, then overlaying the diagram for the second element, so that the second diagram remains transparent and movable. The two diagrams can be aligned in any way desired, and any two half reactions can be compared. In addition, some common reduction half-reactions are collected on a single card with their lower energies aligned, thus making possible predictions of which common reduction half-reactions can cause a desired oxidation half reaction. Frost Diagrams contains diagrams for 98 elements, each of which can be selected by clicking on that element's symbol in a periodic table.

About This Issue

John W. Moore and Jon L. Holmes, Editors

University of Wisconsin—Madison

With all the journals, books, and other publications about chemical demonstrations, how do you actually find a description and a procedure for a demonstration that will effectively get across exactly the point you want to teach? Use Demo-Deck. Fred Juergens has collected in one rapidly accessible form descriptions of about 1400 chemical demonstrations to help you illustrate chemistry better. The database and search capabilities of HyperCard make this an easy-to-use and very valuable resource.

Frost diagrams, plots of free energy versus oxidation state, are useful tools for predicting whether oxidation–reduction reactions will occur. James Birk and Heidi Hocker have made it much easier to explore Frost diagrams by using the graphics capabilities of HyperCard. Each element can be selected from a periodic table by clicking with a mouse, its Frost diagram is quickly displayed, and diagrams for two elements can easily be overlaid and compared.

In addition to Demo-Deck and Frost Diagrams, there is a note with part of the index to the *Journal of Chemical Education* as a text file, continuing the practice of publishing such files that was begun in our first Macintosh issue.

Hardware Requirements

Demo-Deck requires a Macintosh that can run HyperCard 2.0 with at least 2MB RAM; a hard disk is strongly recommended. Frost Diagrams requires a Macintosh that can run HyperCard 1.2.2 or greater. For those who wish to use Frost Diagrams for class presentations a large monitor or overhead projection panel for the Macintosh will be needed. Several such panels and monitors are available (7).

Literature Cited

1. Shakhshiri, B. Z. *Chemical Demonstrations A Handbook for Teachers of Chemistry*, Volumes 1–4, University of Wisconsin: Madison, 1983, 1985, 1989, and 1992.
2. Summerlin, L. R.; Ealy, J. L. Jr., *Chemical Demonstrations: A Sourcebook for Teachers*, Volume 1, 2nd ed.; American Chemical Society: Washington, DC, 1988.
3. Summerlin, L. R.; Borgford, C. L.; Ealy, J. B., Jr. *Chemical Demonstrations: A Sourcebook for Teachers*, Volume 2, 2nd ed.; American Chemical Society: Washington, DC, 1988.
4. *Journal of Chemical Education* 1969 to present. All articles having demonstration procedures, from the "Tested Demonstrations" column and others. Demonstrations prior to 1969 can be found by using the decennial indexes to *J. Chem. Educ.*
5. *Chem 13 News*, 1978 to present. All articles having demonstration procedures.
6. Sarquis, M.; Sarquis, J. *Fun with Chemistry: A Guidebook of K-12 Activities*, Vol. I, Institute for Chemical Education: Department of Chemistry, University of Wisconsin-Madison, 1101 University Avenue, Madison, WI 53706.
7. Susskind, T. Y. *J. Chem. Educ.*: Soft. 1988 1A(1), 16–24.

