

## Computer Software Reviews

**DADiSP Worksheet. Version 1.03.** DSP Development Corp.: One Kendall Square, Cambridge, MA 02139. List price \$795.00, 20% discount for academic users and site-wide licensing available. Purchase price includes six months of free updates and technical support. After the initial six months, an annual support/update contract is available for 15% of the product purchase price. A demonstration disk is available from DSP systems for \$20.00.

The DADiSP worksheet is a sophisticated signal analysis program that allows analyses to be carried out in a spreadsheet format. The program is designed to accept as input files consisting of single columns of numbers in ASCII, 8-bit Byte, 16-bit Integer, Lotus PRN, and several other formats. The interval between data points may be specified with the input. Units may also be specified, and DADiSP will process engineering units along with the signal. Once the file containing the signal has been loaded into DADiSP (using a simple command sequence), the signal may be displayed and operated upon using an extensive library of functions, described in more detail below.

DADiSP will run on IBM PC/XT/AT and compatibles with 512 K memory (640 K is recommended). DADiSP runs best with one hard drive and one floppy, but it also runs well on two-floppy systems. IBM PC-DOS 2.0 or later and the IBM CGA, EGA, or Hercules graphics adapter card are required. The current version (1.03) does not take advantage of the high-resolution capability of the IBM EGA card, but the next version due out in Summer 1987 will have high-resolution display with the EGA card. Another problem with the current version is that the only hard copy available is a rather slow screen dump to an Epson printer. This problem will also be cured with the next release which will be able to dump displays to HP plotters, with other hardcopy devices to follow. Versions of DADiSP are also available to run on the DEC Microvax II, DEC Vax, HP 9000 series 300, and several other workstation computers.

DADiSP is extremely user friendly, and many features can be learned immediately with the tutorial program (about 15 min) without consulting the manual. Once the program is started, the user loads the files containing the desired signals into the DADiSP program, then enters a worksheet, and displays the desired signals in windows on the screen. A worksheet consists of a user-specified number of windows which contain signals related by a user-specified sequence of functions. A typical worksheet display is shown in Figure 1. Two signals have been loaded in the first two windows. Operations may be performed on these signals by entering an empty window and typing an operation such as "INTEG(W1)" which calculates the integral of the signal currently in window 1. The result of the operation is displayed in the window as shown for the two integrals in Figure 1. If new signals are loaded, the operations are automatically performed on the signals and all necessary windows in the worksheet are updated, as when an item in a business spreadsheet program is changed. Individual signals or entire worksheets

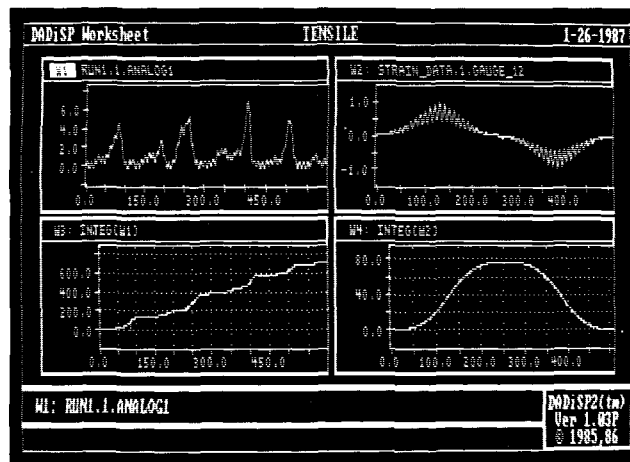


Figure 1.

may be saved and are stored in a compact binary format by DADiSP.

A wide variety of signal processing functions are available in the package, including waveform generation, integrals and derivatives, fast Fourier transforms, and smoothing functions. The most recent documentation did not include details on algorithms for some of the more complex functions (Fourier analysis, integration, etc.) but this was to be remedied with the next release. Calculations run quickly, and even long chains of operations can be performed on a signal in reasonable times.

Information such as the date and time of acquisition, comments, units, and other parameters may be stored with the signal and displayed on the screen. A cursor mode is available, and any window may be selected and examined with the cursor mode with zoom and scroll functions. The quality of the screen display is good, and the zoom function allows the data to be examined in any desired degree of detail.

In addition, a feature called DSP pipeline allows users to interactively run their own data acquisition and processing programs from DADiSP, greatly increasing the flexibility of the package. About 200 K memory is left for other programs on a 640 K system with DADiSP running.

DADiSP is sold on three floppies and a very complete manual with examples is included. A tutorial program and several sample files are included on the floppies. DADiSP is a very attractive program for industrial or academic chemists who must analyze extensive amounts of data generated or collected by computer.

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## Book Reviews

**Electroanalytical Chemistry. Volume 14.** Edited by Allen J. Bard (University of Texas). Marcel Dekker, Inc.: New York. 1986. xv + 459 pp. \$101.50. ISBN 0-8247-7608-9

This volume is part of a series aimed at authoritative reviews of electroanalytical techniques and related areas of investigation. Volume 14 clearly maintains the high standards and proven usefulness of the series.

The first chapter differs from the others in that it discusses conformation change and isomerization associated with electrode reactions rather than a particular family of techniques. Written by Dennis H. Evans and Kathleen M. O'Connell, it provides a particularly lucid organization and a summary of a diverse, but important, body of literature. The use of diagrammatic schemes with associated examples is extremely helpful. Conformational conversions and isomerizations preceding, succeeding, and congruent with electron transfer are reviewed. In summarizing the authors point out that such work can yield new insights and

information to organic and inorganic chemistry, as well as new information on the details of heterogeneous electron transfer mechanisms.

Infrared Vibrational Spectroscopy of the Electrode-Solutions Interface is the title of the last and largest chapter written by the group including S. Pons at the University of Utah. They outline early work on vibrational spectroscopy at electrode surfaces including SERS and un-enhanced Raman spectroscopy but specifically review work since 1979 using specular reflectance infrared methods involving modulation. Electrochemically applied voltage modulation with subtractively normalized interfacial FTIR (SNIFTIRS) and with dispersive IR (EMIRS) are included. Also polarization modulation IR absorption spectroscopy (IRRAS) is treated. In addition to these techniques the principles of applied voltage induced difference spectra and the uses of far-infrared and of time-resolved spectroscopy are treated. The cell is designed to allow easy adjustment of optical path length according to solvent requirements. A series of applications with literature references includes