J|A|C|S
COMPUTER SOFTWARE REVIEWS

Origin 8. OriginLab Corporation, One Roundhouse Plaza, Northampton, MA 01060. 1-800-969-7720. www.OriginLab. com. See Web site for pricing information.

OriginLab Corporation has released Origin 8.0, the latest version of their software for data analysis and graphing. This review provides a general overview of the software and highlights new or updated features not covered in prior reviews of Origin 7.0 (*J. Am. Chem. Soc.* **2003**, 125, 8438) and Origin 7.5 (*J. Am. Chem. Soc.* **2004**, 126, 6834).

Origin 8.0 is compatible with Microsoft Windows NT 4.0, Windows 2000, Windows XP, and Vista requiring a minimum of a 1 GHz Pentium compatible processor, 512 MB of RAM, 350 MB of disk space, and a CD-ROM drive. The program was evaluated on a 2.4 GHz Intel Core 2 Duo with 2 GB of RAM running Windows XP and Microsoft Office 2003, as well as Vista and Office 2007. No crashes or unusual slowdowns were encountered in either environment. Using the software requires an Internet-based activation step based on a unique ID generated by the software for the user's computer. For activation schemes such as this one, there is a concern that hardware changes could possibly deactivate the software. However, several PCI cards were rotated into and out of the review computer, and no deactivation issues were evident with the software.

Origin 8.0 is an evolutionary step over versions 7.0 and 7.5. The usability and stability of this software package have been greatly improved, while the overall look and feel remain unchanged. This continuity will help users of previous versions quickly adapt to Origin 8.0, which is good because the many features of the software result in a steep learning curve. Fortunately, the manual and tutorial information provided are well written giving the first-time user access to the majority of functionality following the completion of a few tutorials. OriginLab Corporation also provides a plethora of web-based tutorials covering a range of topics covering the user interface, workbooks, statistics, graphing, and data fitting. Additionally, a dedicated help center is available via online chat, e-mail, or phone to assist with technical support issues. Origin 8.0 is compatible with a wide array of file and image formats and supports interfacing with LabVIEW, MATLAB, and Mathematica software programs.

Workbooks are the mechanism by which data are organized and stored in Origin 8.0, and this feature has been substantially upgraded over previous versions. Descriptions of data, known as metadata, are now much easier to manage, thanks to special user-definable cells. Especially useful are Sparklines, which are small plots of data in each column that provide an easy way to check trends or errors in imported data. Spreadsheet formatting has also been improved with support for changing fonts, rich-text formatting, and the embedding of graphs or images inside cells. Format preferences can be modified and saved as a template so that recurring data processing and analysis can be automated. Other improvements in usability include multiple worksheet support within a single workbook and the option to update formulas and graphs automatically. Common statistical tests such as the *t* test and ANOVA calculations are also available, with a more extensive collection of tools for data analysis available in the Pro version. A dialogue box presents options associated with each test, and the resulting output is viewed through nicely formatted reports. Together these changes greatly improve the usability of Origin 8.0 over previous versions. As an example, prior to Origin 8.0, we would use Excel 2003 to combine data files and do preliminary data compositing and analysis, and then the data would be imported into Origin for curve-fitting and graphing. Now, all of these tasks are better handled within Origin, simplifying workflow and data management.

The ability to generate publication quality graphs quickly is a traditional strength of the Origin series. For this update, the look and options associated with graphs remain similar to those of previous versions, whereas improvements in the merge graph and layer management tools deserve special mention. The new merge graph tool brings up a dialogue box that allows the user to choose which graphs to merge, set the layout, apply a theme, and change the spacing with the aid of a preview window. Graphs are similarly manipulated through the layer management window, which allows assembly of many previously disparate options in a single dialogue. These features do not necessarily add functionality to the new version of Origin, but they do greatly simplify the assembly of graphs for papers or presentations.

The curve-fitting capabilities of Origin 8.0 are combined into the nonlinear curve-fitting wizard, which despite its name can be used for linear fits. This wizard provides a single window in which pertinent fitting options can be selected including the data range, function, output, and fit statistics. The number of provided functions is impressive, and custom functions can be added. Sample plots and definitions of variables are provided for each function, which is helpful for deciding how to analyze the data. The simultaneous fitting of multiple peaks, in the Pro version, is handled through the peak analyzer tool. This tool can be used to set a baseline, find peaks through a variety of user selectable methods, integrate peaks, and/or fit data. Each peak can be assigned a different function, and variables can be shared. In addition to standard Gaussian or Lorentzian functions, a wide array of fitting functions are provided, though the number of functions is reduced compared to the nonlinear fit wizard.

Origin 8.0 is a significant advancement of the series, improving upon the usability and stability of previous incarnations. Improvements in the workbook portion of the program are especially impressive, making Origin the top application for data management, analysis, and graphical presentation.

R. Alan May and Keith J. Stevenson,
University of Texas at Austin