

Use Adobe Acrobat to Keep Original Resolutions and to Make TIFF Files From Any Program

Jerry Sedgewick
University of Minnesota
sedge001@umn.edu

The use of electronic files made universally readable in Adobe Acrobat will eventually replace paper submission in nearly every avenue used by scientists, whether files go to grants agencies, to reviewers, to colleagues via e-mail, or to publishers. It's for the obvious reason of reducing paper and the costs of mailing, but also because fonts often misbehave when going across operating system platforms, and because seemingly everyone has the Acrobat Reader. A better understanding of Adobe Acrobat can go a long way toward reducing the frustration that can easily arise from using this program inappropriately and ending up with poor image resolution.

Before going any further, however, a distinction between the full version of the product one can purchase as a program in its own right (either through a site license at your institution or from a store) versus the Acrobat Reader which is free at adobe.com must be made: Only the full version of Acrobat allows users to take control over issues such as maintaining resolution (plug-ins to Microsoft Word and PowerPoint may not provide the same options), not to mention the dozens of other useful functions this deceptively simple program provides. Given the increasing use of the Acrobat or PDF file, this program really should be on every shelf.

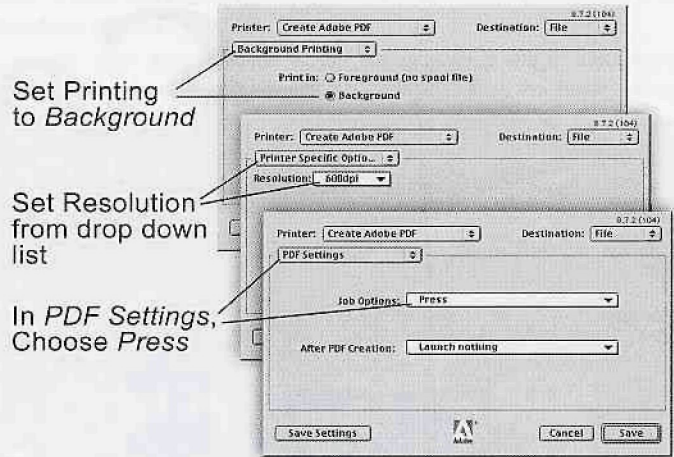
This article will cover two important functions for Acrobat. The best use for this program is for maintaining resolution (perhaps in contrast to the experience of most readers), and a good second use is in making PowerPoint, Excel and other program files into TIFF files for publication purposes. The following instructions are meant for file dimensions that fit up to a standard, letter-sized page and not for posters (these directions also work with posters, but references to using Photoshop for editing should be ignored based upon resulting unwieldy file sizes).

Use Print Command to make Acrobat or PDF files. While it is true that plug-ins can be downloaded for many programs to allow users to export as Acrobat, many do not give users access to crucial settings that control resolution. Instead, the typical, default Acrobat settings are used. These settings are meant for compressing (or what Adobe calls "downsampling") the file to be used on the web versus what would be used for publication purposes. To avoid compression, Acrobat files need to be made one way only: through the Print command. That's the first thing to remember: files are not saved or exported (in most programs, anyway) to Acrobat; files are PRINTED to Acrobat. In a sense, Acrobat functions as a printer, just like your ink jet or laser printer. That's because the universal "language" of Acrobat is the language called Postscript that has been developed early on by Adobe as a way for the computer to communicate with the printer.

Choose "Create Adobe PDF" versus "Distiller." At that point, often—but not always—two options in the Print drop down box or on the Print Monitor are available: either the option to print to "Acrobat Distiller," or to an option that reads something like "Create Adobe PDF," or "PDF Writer." ALWAYS choose the "Create PDF" option; do NOT choose Distiller unless you are adept at making the right decisions for the print shop that the publisher uses. In some instances, only the Distiller option is available, and if that is your only choice, take it.

Choose Press option for the Mac: Search for Settings on the Windows platform. On a Macintosh, the ability to fine tune settings may not exist, and so the only option is to make sure Press is chosen from the drop down list in the PDF Settings area in your print dialogue box (you may have to search around, but it is worth it, for you must find these settings in order to eliminate compression of your files—then write down the procedure for the next time). The Press option will not compress

Recommended Options for Printing to a PDF file from a Macintosh



Set Printing to *Background*

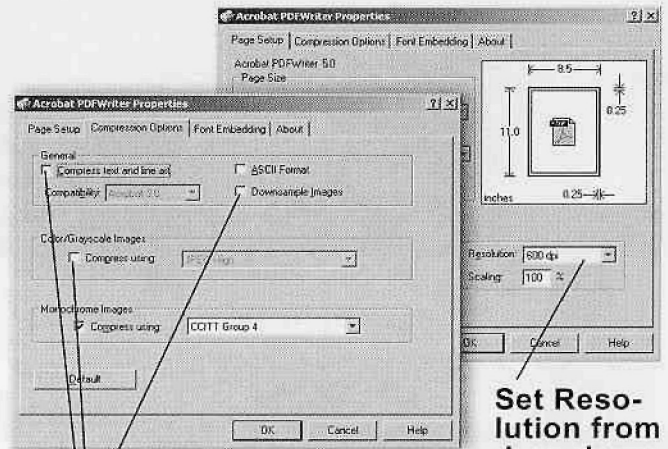
Set Resolution from drop down list

In *PDF Settings*, Choose *Press*

files at resolutions LOWER than 450 dots per inch, thus eliminating 99 percent of potential problems with lowered resolution.

On a PC it is your mission to search out the secret place where the Options or Settings or Edit button exists, for few print dialogue boxes look alike. Search through "tabbed" categories until a way to change Acrobat settings appears. You will know you have found the right place when you see checked options for "downsampling." Uncheck all instances in which downsampling is checked (except the option for compressing monochrome images in most instances). Once finished, you may be prompted to save the settings, which is something you'll need to do.

Setting PDF options on a PC



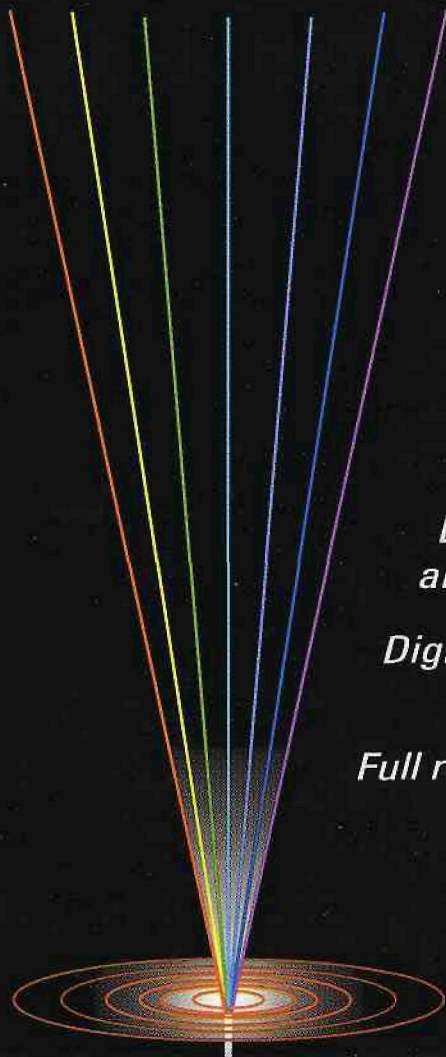
Uncheck *Compress and Downsample*.

Set Resolution from drop down list

Other pointers. One of the tabbed categories (often the "General" category) will specify whether you want Color/24-bit Color or Grayscale from your images. Be sure the correct option is chosen. Also, when creating PDF files from PowerPoint and image-rich Word documents, you may have to create PDF files from a range of pages, or page by page (changing the print options to "Background printing" versus "Foreground: no spool file" is a good preventative measure—that will dedicate the computer's resources to printing, also making the computer unusable until the print job is complete). One is normally alerted to this necessity after the fact when the computer freezes (though one can become confused, since more time must be given to this process than may be indicated by print progress icons, and the file often does not appear where it has been saved for up to several minutes). Ranges



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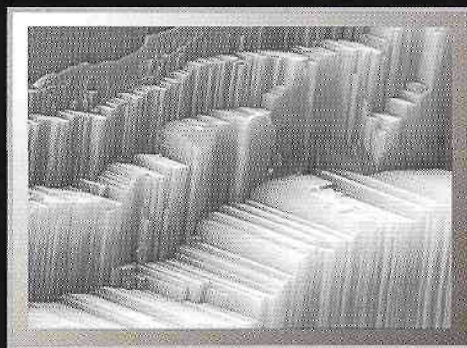
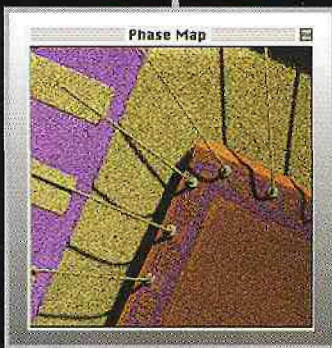
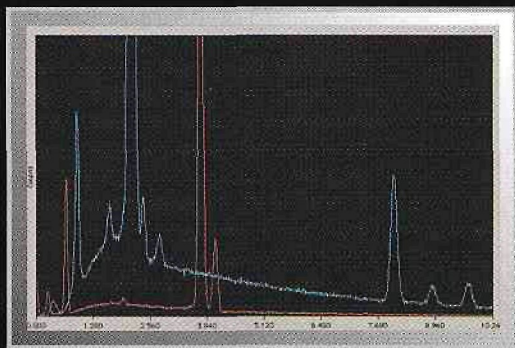


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of pages and individual pages can be inserted into Acrobat later using Document on the Acrobat menu, then Insert Pages.

Evaluating the Acrobat PDF file. Once your document has been "printed" to a PDF file, it can be opened in Acrobat or Photoshop for evaluation (when opening in Photoshop, you may have to specify resolution either by pixels across and down; or by inches across and down and a specified printer resolution: normally 300 or 400dpi when going to a publication or reviewer). When the image file is opened in Acrobat, the resolution of the monitor (or screen or display) becomes the limitation (i.e., the monitor typically contains far less resolution than the image and so horizontal lines, small letters, etc. can disappear). The image should be evaluated ONLY after zooming in. Of course, one can zoom in too far to see the pixels surrounding letters, but that zoom is far too great because none of that will appear when printed. The Acrobat PDF file should show absolutely no reduction in resolution from the original image.

Make into TIFF or use Save As Command. At this point the file can be saved in Acrobat as a TIFF file (under File, choose Save As and choose TIFF from the drop down list—be sure to choose the Settings button to change the compression to None, unless you wish to keep LZW compression, something that may make the file impossible to open in any program but Photoshop), or it can be kept as a PDF file. If you wish to keep the file as PDF, be sure to use the Save As command under File to save over your existing file. Acrobat, at that point, compresses the file in such a way that no difference can be seen between the "Save As" file and the original PDF file (it appears to be "non-lossy" compression).

If file is still too large. If requirements exist for grant submission concerning the size of the PDF file, then open that file in Photoshop (you may have to type settings into a dialogue box—see above). Under File select Save As, and choose Photoshop PDF from the drop down list. A second dialogue box appears. In that box for Encoding: choose JPEG (versus ZIP) and then set the slider for Quality: to Maximum. Once the file is saved, be sure to look for the new file size by going back to the desktop versus looking at the size at the bottom of the Photoshop window (it's listed incorrectly in Photoshop). The loss of resolution from a "maximum JPEG" cannot be visibly differentiated from the non-compressed PDF image and the file size ends up significantly smaller.

Troubleshooting. Two problems come up from time to time when printing to PDF. Bulleted items can turn into symbols from Microsoft products because of the odd font used for Bullets. These can be corrected in Acrobat by using the Text Touch Up tool to delete the symbol, then by using the circle tool to make a bullet-sized circle (right click on the circle after it's drawn to show Properties for fill and color options). Drawings, objects and images can be lost or shifted (reformatted). That problem can exist when images are bounced around between Macintosh and PC operating systems, when object embedding is used, or for reasons that are inexplicable. Original images and drawings may have to be found for re-insertion, or the PDF file can be opened in Photoshop for editing, and then re-saved as what's called a "Photoshop PDF" or TIFF file.

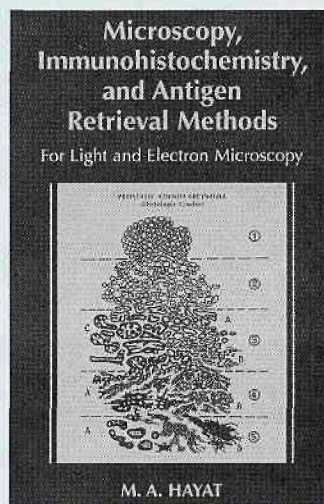
While the number of steps and the level of understanding of what appears to be excessive minutiae may seem overwhelming at first reading, going through these steps successfully only once will settle potential anxieties. Even better, the result will provide a PDF file indistinguishable from the original. And, finally, an electronic means for making files at publishable resolutions from programs that do not have options for saving as TIFF files can be a reality. ■

Relevant Reference Text:

"PDF with Adobe Acrobat." Anita Dennis, Peachpit Press, Berkely, CA 2002.

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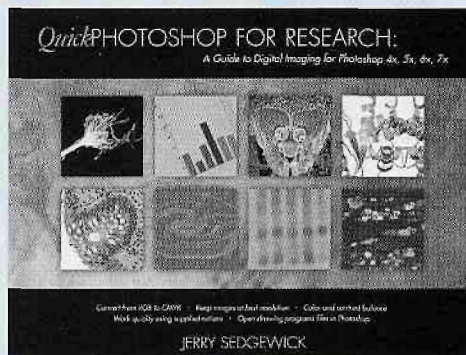
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Gerald Sedgewick

Biomedical Image Processing Lab, University of Minnesota, MN, USA

Quick Photoshop for Research: A Guide to Digital Imaging contains essential information on the use of Photoshop specific to researchers. This step-by-step guide is the only book published for users whose needs are not for the purpose of graphic or web design; instead, this book only addresses the tools and functions necessary for the ethical enhancement of scientific images, and subsequent layout of these images into figures or plates. The aim is to provide information about digital imaging in an easy-to-follow guide from the beginning of the imaging process to its end. Additional information about scanning and acquiring images via a digital camera or laser/PMT system is also covered, as well as information about printers and PowerPoint.

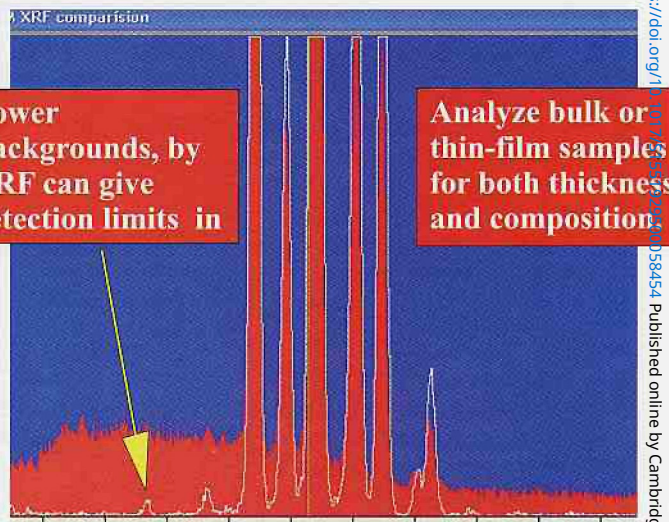
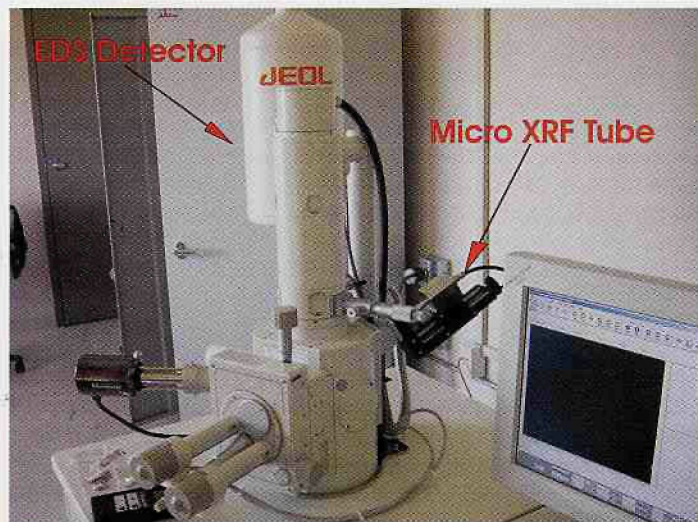
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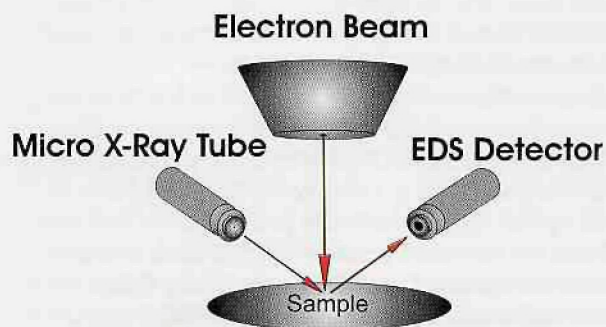
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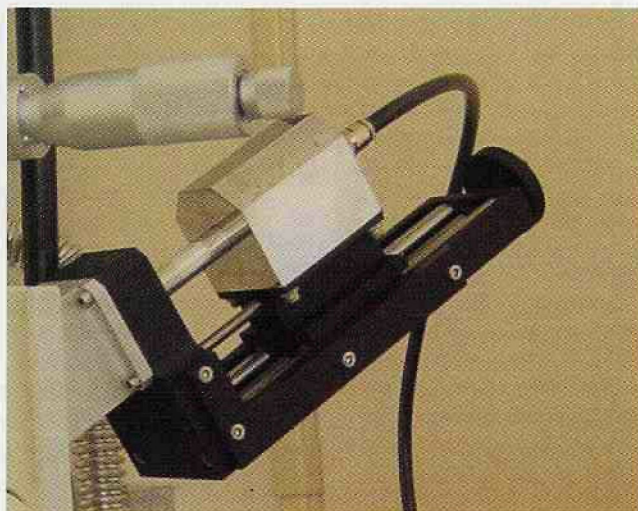
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