Flying over Atoms

Instructor Notes

Suggestions for Use

Students need guidance as they use the materials in Flying over Atoms. It is necessary for the instructor to use the materials in Flying over Atoms to learn about STM, then present an explanation to students. It is the author's experience that students will not sit down with materials like Flying over Atoms and go through all the reference materials independently. They need the materials presented to them in an interesting and thought provoking way. Then, they will enthusiastically explore the STM images, Vistapro atomic landscapes, and make movies. A good place to get started learning about STM is the Introduction to Scanning Tunneling Microscopy (STM), IntroSTM.HTM.

☞ Note that the STM imaging mechanism measures the electronic state density, not the physical features of the surface. Although often times these two are similar, it is very easy to get a misleading interpretation. Many people just becoming familiar with STM technology are confused by this. The suitable description is that you are imaging the electronic state density, not the actual atoms in STM.

Vistapro settings that work well with STM data:

Rendering Options: Quality Excellent; Texture High; Shading; Backface culling (default); Gouraud Shading.

Color Controls: Sky-white; Sky haze-white; haze-white.

Landscape menu: Use the Smooth option two or three times to reduce noise that shows up as spikes in the image.

Landscape menu: Increase the vertical scale with the Vertical Scale option. Using 150% or 200% usually works well.

For more information, see [Lesson.PDF.](Lesson.PDF)

Contacts

The Hamers Research Group Information: http://www.chem.wisc.edu:80/~hamers/

Vistapro Information: http://www.romt.com/

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Organization of Materials

The files on Flying over Atoms fall into several categories and are divided into the following folders/directories:

Installation/INSTALL: Contains all installation files.

DOCS: Contains documentation files in .PDF format.

HTML: Contains HTML pages that allow you to access the images, movies, and data included in Flying over Atoms.

SURFACES: Contains QuickTime movies, still images, and Vistapro data files for each surface.

Flying over Atoms as a Developer's Resource

Owners of Flying over Atoms are encouraged to use the still images and QuickTime movies in the development of their own lessons, tutorials, and other presentations, provided this is done within the bounds of the *JCE Software* License Agreement, LICENSE.PDF in the DOCS folder/directory. Such derivative works may not be duplicated or distributed without permission from *JCE Software*. *JCE Software* welcomes the submission of such works for possible publication. A copy of our submission guidelines and submission forms is provided; SUBMIT.PDF in the DOCS folder/directory.

How To…

This section gives detailed instructions for using images and movies from Flying over Atoms

I. … incorporate a still image into a word processing document.

If you need to edit the graphic or change its format before inserting it, the following method should yield good results. There are several reasons you might wish to edit the graphic. For example, if you intend to print the document on a non-color printer, you may get better results if you convert the graphic from color to grayscale before printing. You may also need to change the file format from JPG in order to use the file in your word processor. The default graphic format in most Macintosh applications is PICT; in most Windows applications, BMP. For best printing results convert the file to TIFF or EPS (for PostScript® printers only!) format.

1. The first step is to identify the image on the CD.

2. Go to the root level of the CD (Mac users, go to the Finder and double click the Flying over Atoms CD icon.).

3. For images of the surfaces, open the SURFACES folder/directory.

4. Open the STILLS folder/directory. Inside open the folder/directory for the type of image you wish to use, Photoshop, TIFF, JPEG, or PICT. Inside that directory, locate the image you wish to use. Copy the file to your hard drive.

5. Open the graphic in a compatible graphics editor (or drawing/painting program) and make any changes needed. Save the file.

6. Open your word processor document and insert the graphic file. The exact method will depend on the word processor you are using. Microsoft Word users can select **Picture…** from the **Insert** menu and then navigate to the location of the edited graphic file in the resulting dialog.

7. Be sure to acknowledge *JCE Software's* Flying over Atoms as the source of the graphic. Consult your *JCE Software* license agreement for limitations on duplicating or distributing a document including image(s) from Flying over Atoms.

8. *JCE Software* welcomes the submission of student worksheets, quizzes, exams, etc. that incorporate graphics from our publications, or any document intended for use with our publications.

II. … incorporate a QuickTime movie from Flying over Atoms in a PowerPoint presentation.

1. To locate the movie you want to use on the Flying over Atoms CD, go to the root level of the CD (Mac users, go to the Finder and double click the Flying over Atoms CD icon.).

2. Find the folder/directory called SURFACES. Inside this folder/directory you should see a folder/directory named MOVIES.

3. Copy the movie file to your hard drive, or to the same drive media as you will use to run the presentation. If the movie is not located on the same drive as the presentation, PowerPoint may be unable to find it later when you play the presentation.

4. Open the PowerPoint presentation and go to the slide where you want the movie to appear.

5. Select **Movie**… from the Insert menu and navigate to the location of the movie in the resulting dialog.

6. After the movie preview (the first frame of the movie with a QuickTime icon in the lower left corner) appears on the slide, click and drag it to the desired position on the screen.

7. To see the movie, click the QuickTime icon. When the control bar appears, play the movie as you normally would. When you play the presentation as a slide show, the movie will begin playing immediately when the slide opens.

8. Be sure to acknowledge Flying over Atoms as the source of the movie. Consult your *JCE Software* license agreement for limitations on duplicating or distributing the presentation including movie(s) from Flying over Atoms.

9. *JCE Software* welcomes the submission of computer presentations including video and/or still images from our publications.

III. …use images and video from Flying over Atoms in your HTML document.

☞ Special licensing is required to use images or movies from Flying over Atoms on a wide area network (WAN) or on the World Wide Web. Contact the *JCE Software* office for details.

Locate the image(s) you want to use as described in section I above and the movie(s) as described in section II. Copy the images to your hard drive, into the directory/folder you plan to use for media for your HTML page or note the location if you plan to access them from the CD.

Incorporate the item as you would any still picture or movie following the instructions given in your HTML editor.

For examples of HTML statements used to incorporate graphics and movies, direct your browser to the page including the images or movie your want to use. Select **Document Source** from the View menu. The HTML source code for the page you are viewing is displayed. You will need to edit the address given in the statement so that your document can locate the movie.