Subject: Re: Scanning Probe Microscopy
Posted by Struan Gray on Fri, 26 Feb 1999 08:00:00 GMT
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Stuart Lindsay, Stuart.Lindsay@asu.edu writes:

> I'm interested in using IDL for analyzing SPM data
> and would appreciate any advice or links that will help.

As you probably know, Omicron have built their data taking and analysis software using IDL. If you have one of their microscopes they will sell you the IDL source code, which we ported to the Mac very easily, even when we knew very little about IDL as a programming language. It's mostly a question of adapting file system calls, which in any case have been made much more portable in recent versions of IDL.

In my group we now use mostly home-written IDL to analyse and present data on various PC-class machines, and it's fast, powerful and versatile enough for us. At some point I plan to kick everything into shape and make it sufficiently presentable to release as free/shareware but it's not ready yet. One of the strengths of IDL is the ability to mix established processing routines and widgets with new bare-bones prototypes, but it's also easy to end up with a lot of sealing wax and twine holding half-finished modules together.

There are other packages which will read, measure and display SPM images (including a free SPM-specific version of NIH-image that reads all the major manufacturers' file formats), and for that alone IDL is overkill if you're on a tight budget, particularly with the spread of cheap 3D plotting into the PC world. There are also some things IDL doesn't do well; in particular I don't think it's graphical output is truly 'publication quality' and the user interfaces you can build are fairly crude by today's standards.

That said, for extracting useful information from raw SPM data I like it a lot. For investigating spectroscopy files I think it's unsurpassed. My work relates STM spectroscopy to the crystal's geometry and electronic structure, and for that I find IDL's mix of built-in analysis, display and interface-building componants saves me a lot of time and effort.

Struan