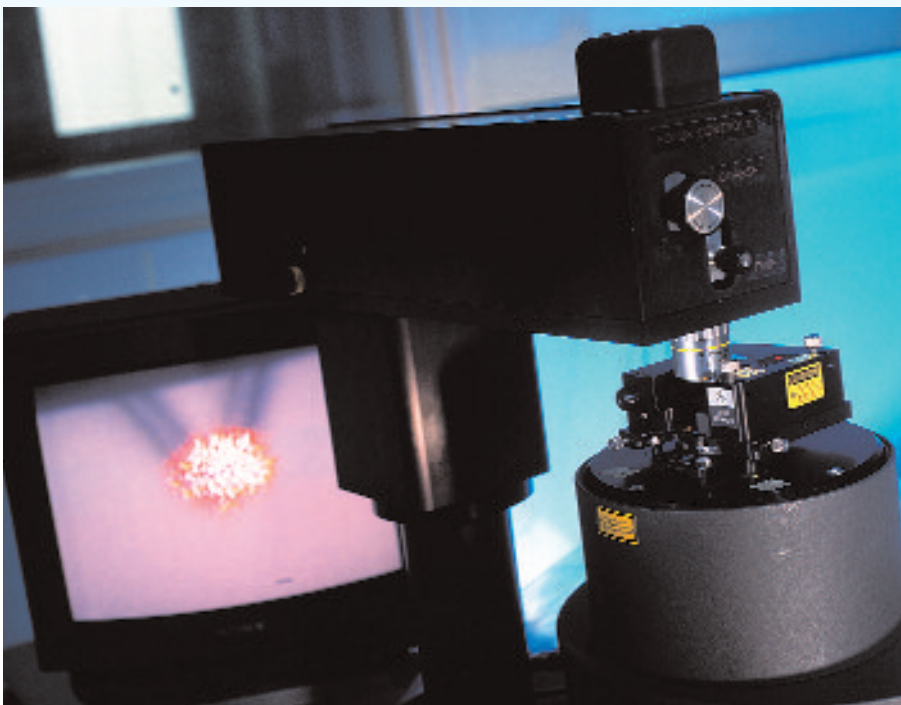


Atomic Force Microscope (AFM)

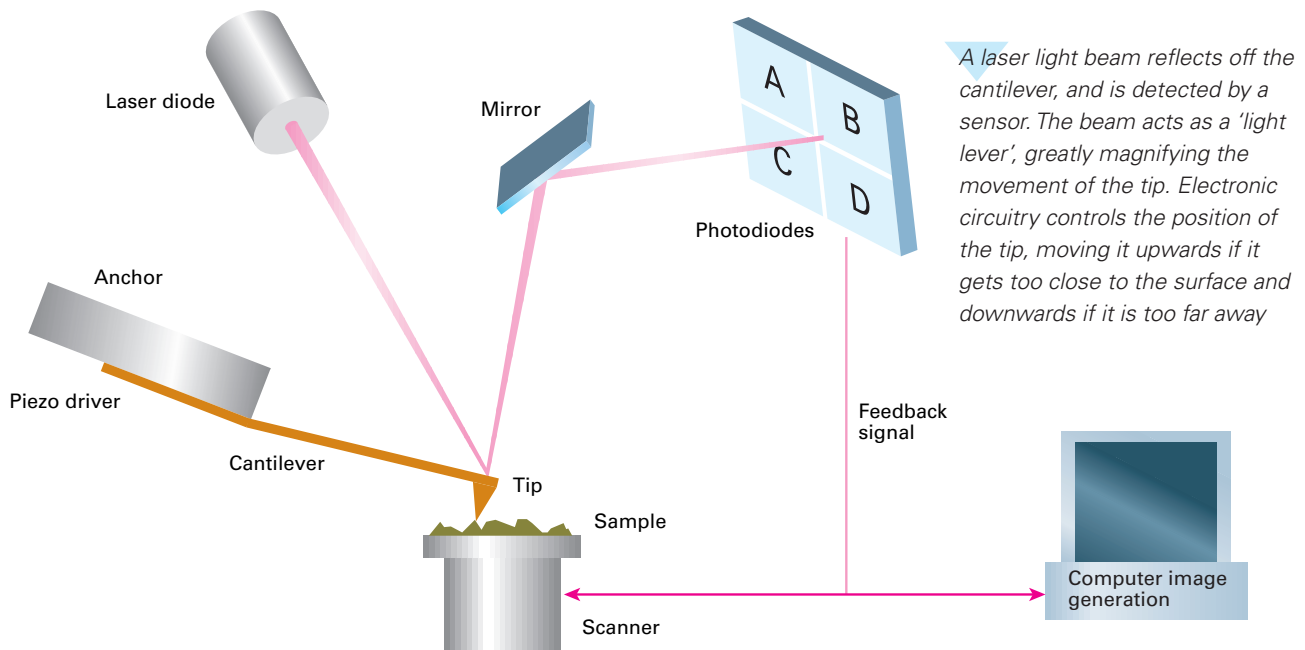
Twenty years ago, your science teacher might have said, 'Atoms are so small, it will never be possible to see them.' Now, thanks to a new generation of microscopes, we can create images of atoms and molecules and see how they are arranged.



Tek Image/SPL

At the heart of the AFM is its scanning tip. Its sharp point is only a few atoms across. To study a surface, the tip is moved steadily across it, pressing down with a force of one billionth of a newton. The tip is mounted on a springy beam or cantilever. As the tip moves over the bumpy surface, the cantilever bends up and down

As the tip scans across the sample, a computer builds up an image of the surface



A laser light beam reflects off the cantilever, and is detected by a sensor. The beam acts as a 'light lever', greatly magnifying the movement of the tip. Electronic circuitry controls the position of the tip, moving it upwards if it gets too close to the surface and downwards if it is too far away