Generalized Procedure for Operation of NT-MDT Atomic Force Microscope/Scanning Probe Microscope

AFM Procedure

1. Turn on computer
2. Turn on Controller box
3. Open AFM/STM application on desktop (it should initialize and indicate "OK")
4. Open door
5. Move sample stage to a low position
6. Bring in AFM head
7. Load probe cantilever
8. Place sample on magnetic block and load on the 3 detents
9. Rotate probe head into position
10. Raise sample stage until "close" (~1mm separation from tip)
11. Close door (laser should turn on)
12. Turn on sample light
13. Open camera view and verify tip position and angle
14. Open laser Aiming window
15. Perform 2D scan to find cantilever followed by a fine AutoSearch (signal should be ~20nA or so)
16. Find resonance peak for cantilever (range is on the box…usually ~100-300kHz or so). Adjust Gain as needed to get a reasonable signal.
17. Choose mode (usually semi-contact)
18. Make Setpoint about 50-60% of Magnitude value
19. Do final Approach (Landing) with feedback turned on and a higher Gain absolute value (~-2-4)
20. Watch Approach with Mag stripchart
21. Move sample to area of interest (keep feedback on)
22. Set Scanning area and data type (this is where you set "magnification")
23. Set Scan Rate (faster for large areas and low resolution ~5Hz; lower for small areas)
24. Collect images (they store automatically)
25. Analyze Data as appropriate

When done, simply retract sample, tilt probe head up a little and remove sample and move head back into position. No need to remove probe (it may still be good).