one beam tracking element and from said at least one beam tracking element to a focus at said reflective surface of said cantilever forming a reflected beam of radiant energy emanating from said reflective surface; and

a position sensitive detector positioned to intercept said reflected beam of radiant energy and produce a signal responsive to angular movement of said reflected beam of radiant energy.

19. An atomic force microscope according to claim **18** wherein said position sensitive detector comprises a multi-cell photodetector.

20. An atomic force microscope according to claim **19** wherein said multi-cell photodetector is a bi-cell photodetector.

21. An atomic force microscope according to claim **18** wherein said scanner element is a piezoceramic scanner.

22. An atomic force microscope according to claim **21** wherein said piezoceramic scanner is a tube.

23. An atomic force microscope according to claim **22** wherein said tube is an S-shaped scanner.

24. An atomic force microscope according to claim **18** wherein said at least one beam tracking element comprises at least one lens.

25. An atomic force microscope according to claim **24** wherein said at least one lens is bi-convex.

26. An atomic force microscope according to claim **18** wherein said source includes a laser.

27. An atomic force microscope according to claim **26** wherein said laser is a diode laser.

28. An atomic force microscope according to claim **27** wherein said source further includes means for adjusting the position of said source with respect to said frame.

29. An atomic force microscope according to claim **18** wherein said position sensitive detector further includes means for adjusting the position of said position sensitive detector with respect to said frame.

30. An atomic force microscope for examining the surface properties of a sample surface, said atomic force microscope comprising:

a frame;

a sample stage;

a tube scanner element having a scanner end capable of motion relative to said frame in response to signals applied to said scanner element;

a cantilever having a reflective surface, a first cantilever end and a second cantilever end, said first cantilever end having a sharp probe tip extending therefrom toward said sample stage;

at least one beam tracking lens fixed in operation to a portion of said scanner element;

a source of a beam of radiant energy including a diode laser module, said source fixed in operation to said frame, said source arranged to project said beam of radiant energy through said at least one beam tracking lens and to a focus at said reflective surface of said cantilever forming a reflected beam of radiant energy emanating from said reflective surface; and

a position sensitive photodetector fixed in operation to said frame and positioned to intercept said reflected beam of radiant energy and produce a signal responsive to angular movement of said reflected beam of radiant energy.

31. An atomic force microscope according to claim **30** wherein said position sensitive photodetector further includes means for adjusting the position of said position sensitive detector with respect to said frame.

32. An atomic force microscope according to claim **30** wherein said source further includes means for adjusting the position of said source with respect to said frame.

33. An atomic force microscope for examining the surface properties of a sample surface, said atomic force microscope comprising:

a frame;

a sample stage disposed under a portion of said frame;

a tube scanner element having a scanner end capable of motion relative to said frame in response to said scanner element;

at least one beam tracking element held in a fixed relationship to a portion of said scanner element:

a cantilever having a reflective surface, a first cantilever end and a second cantilever end, said first cantilever end having a sharp probe tip extending therefrom toward said sample stage;

a source of a beam of radiant energy, said source fixed in operation to said frame, said source arranged to project said beam of radiant energy to a focus at said reflective surface of said cantilever forming a reflected beam of radiant energy emanating from said reflective surface; and

a position sensitive photodetector fixed in operation to said frame and positioned to intercept said reflected beam of radiant energy and produce a signal responsive to angular movement of said reflected beam of radiant energy.

34. An atomic force microscope for examining the surface properties of a sample surface, said atomic force microscope comprising:

a frame;

a sample stage having an upper surface for supporting a sample, said sample stage disposed under a portion of said frame wherein said upper surface of said sample stage is not in contact with said frame;

a tube scanner element having a scanner end capable of motion relative to said frame in response to said scanner element;

at least one beam tracking element held in a fixed relationship to a portion of said scanner element;

a cantilever-type reflective atomic force probe for interacting with the sample surface disposed on said sample stage, said probe suspended from said tube scanner,

a source of a collimated light beam, said source fixed in operation to said frame, said source arranged to project said collimated light beam to a focus at said reflective surface of said cantilever forming a reflected light beam emanating from said reflective surface; and

a position sensitive photodetector fixed in operation to said frame and positioned to intercept said reflected light beam and produce a signal responsive to angular movement of said reflected light beam.

* * * * *