into the microscope chamber in the first place. If the entire microscope is placed into a sealed glove box, it may be exposed to reactive chemicals. Furthermore, it would not be possible to start sparging of the microscope sample chamber until after the microscope is passed out of the glove box and gas lines connected to the sample chamber. An adapter which allows easy mating of the microscope with a glove box is shown in FIGS. **21** and **22**. Referring to FIG. **21**, the microscope **340** seats against a plate **342** to form a hermetic seal. A glass chamber **344** may be attached to the bottom of the plate **342**. The plate **342** is bolted onto a glove box **346**. Inert gas may be passed through the glove box **346** by means of the gas supply lines **348**, **350**. A similar pair of gas supply lines **352**, **354** permits gas flow through the glass chamber **344** when it is in place. The gas supply lines **348**, **350**, **352**, **354** may be shut off by means of corresponding gas valves **348***a*, **350***a*, **352***a*, **354***a* when not in use. A detailed section is shown in FIG. **22**. The microscope body **340** is pushed into the plate **342** where it is retained by an O-ring **356**. The plate **343** seats against the glove box **346**, to which it is affixed by bolts **358***a*, **358***b*. Magnets **360** pull a magnetic ring **362** up against the plate **342**. The glass chamber **344** is affixed to the magnetic ring **362**. Thus, the glass chamber **344** may be easily pushed into place and retained by the magnets **360**.

The plate **342** is first bolted into place on the glove box **346** and the microscope body **340** inserted into the plate **342**. The gas supply lines **352**, **354** through plate **342** are sealed with valves **352***a* and **354***a* and inert gas flowed through the glove box **346** using the gas supply lines **348** and **350** until the glove box **346** is purged of oxygen and other undesired gasses and vapors. At this point, the sample can be prepared, placed on sample platen **364**, and sample platen **364** mounted to the microscope **340** in the inert atmosphere maintained by glove box **346**. Once the sample platen **364** is mounted to microscope **340**, the glass chamber **344** may then be placed into position on the plate **342** and gas flow started through the gas supply lines **352**, **354**. The plate **342** may now be unbolted from the glove box **346** with the sample protected inside the glass chamber **344**. The microscope, now resting on the glass chamber **344** to which it is sealed, may now be placed into an enclosure for high resolution microscopy. With long gas lines **352**, **354** connected to the chamber **344**, this enclosure can be situated remotely from the glove box **346** in operation. For low resolution microscopy, when acoustic isolation of the microscope is not so important, the microscope may be operated in-situ in the glove box **346**.

Sample Platen with Adjustable Kinematic Mounts

The sample platen described in U.S. patent application Ser. No. 08/388,068, supra, is translated by means of adjustment pegs which locate in slots in the sample platen. However, it is sometimes desirable to be able to remove and replace the sample platen while retaining its position with respect to the microscope tip. For example, a very small sample might be used and positioned with the use of an optical microscope. It would be desirable to be able to remove and replace the sample platen with no loss of alignment. FIG. **23** shows an arrangement which permits this. The sample platen **366** mounts onto the magnetic balls disposed at the ends of threaded vertical adjustment rods by means of the cone **368** vee-groove **370** and plane bearings **372** which form a standard kinematic mount, allowing precise removal and replacement of the sample platen **366**. In order to allow adjustment of the tip with respect to a sample mounted on this platen **366**, the vee groove **370** is made adjustable. It is formed into a piece **374** which slides in a slot **376** in the platen **366**. The sliding piece **374** is locked into position by means of two bolts **378**, **380** which slide, respectively, in slots **382**, **384**. In the microscope, the tip is located over the sample in one direction of movement by sliding the vee-groove **370** in its slot **376**. It is then locked into place with the bolts **378**, **380**. The perpendicular adjustment is achieved by rotating the scanner in the body of the microscope.

Alternative Embodiments

Although illustrative presently preferred embodiments and applications of this invention are shown and described herein, many variations and modifications are possible which remain within the concept, scope, and spirit of the invention, and these variations would become clear to those of skill in the art after perusal of this application. The invention, therefore, is not to be limited except in the spirit of the appended claims.

What is claimed is:

1. A scanning probe microscope comprising:

a frame;

a plurality of support members engaged with and extending from said frame;

a positioning scanner attached to said frame;

a sample stage suspended from said support members;

a scanning probe suspended from said positioning scanner and disposed in close proximity to said sample stage; and

an optical microscope including an electronic camera disposed so as to project an image of said scanning probe to said electronic camera.

2. A scanning probe microscope according to claim **1** wherein said optical microscope is disposed below said sample stage and is arranged to view said scanning probe through said sample stage.

3. A scanning probe microscope according to claim **2** wherein said electronic camera includes a charge coupled device array at its focal plane.

4. A scanning probe microscope according to claim **1** wherein said electronic camera includes a charge coupled device array at its focal plane.

5. A scanning probe microscope comprising:

a frame;

a plurality of support members engaged with and extending from said frame;

a positioning scanner attached to said frame;

a sample stage including a transparent portion in contact with said support members;

a scanning probe suspended from said positioning scanner and disposed in close proximity to said transparent portion of sample stage; and

an optical microscope including an electronic camera disposed so as to project an image of said scanning probe through said transparent portion of said sample stage to said electronic camera.

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