CLAIMS

1. A lens system~~holder for a microsphere, the holder~~ comprising:

a microsphere; and

a holder comprising:

a first body portion and

a second body portion coupled to the first body portion, ~~the first body portion and the second body portion being configured to provide a receiving position therebetween for the microsphere,~~ the first body portion and the second body portion being spaced apart to define respective sides of a slot, the slot substantially extending along a first axis providing a plurality of selectable positions therebetween distributed along the first axis,

such that when the microsphere is received at ~~the~~ a receiving position selected from any of the plurality of selectable positions, the microsphere is coupled to the first body portion and the second body portion.

2. The holder as recited in claim 1, wherein the microsphere is coupled to the first body portion at a first coupling portion and the microsphere is coupled to the second body portion at a second coupling portion, and wherein the first coupling portion is distinct from the second coupling portion.

3. The holder as recited in claim 2, wherein the first body portion and the second body portion are configured to at least clasp the microsphere at the receiving position.

4. The holder as recited in claim 1, wherein ~~the first body portion and the second body portion are configured to provide a plurality of selectable positions such that the receiving position is one selected from any of the plurality of selectable positions~~the slot is configured to simultaneously hold a plurality of the microspheres~~s~~ of different sizes at respective plurality of selectable positions.

5. The holder as recited in claim 41, wherein ~~the first body portion and the second body portion are spaced apart to define respective sides of a slot, the slot substantially extending along a first axis, and wherein the plurality of selectable~~

~~positions is distributed along the first axis.~~ the slot is configured to secure each of ~~a~~the plurality of the microspheres~~s~~ of different sizes at the same receiving position.

6. The holder as recited in claim ~~5~~1, wherein the first body portion and the second body potion are spaced apart by a spacing, the spacing having at least two different widths along the first axis.

7. The holder as recited in claim ~~5~~1, wherein the first body portion and the second body portion are non-parallel relative to one another.

8. The holder as recited in claim 1, wherein the first body portion defines a first distal surface substantially in a first plane, and the second body portion defines a second distal surface substantially in a second plane, and wherein the first plane and the second plane are non-coplanar.

9. The holder as recited in claim 8, wherein the first distal surface and the second distal surface define a reflex angle therebetween.

10. A lens system for near-field optics, the lens system comprising:

an objective lens;

a holder coupled to the objective lens, the holder having a first body portion and a second body portion, the first body portion and the second body portion ~~are~~being spaced apart to define respective sides of a slot, the slot substantially extending along a first axis and providing a plurality of selectable positions therebetween distributed along the first axis ~~configured to provide a receiving position~~; and

a microsphere received at ~~the~~ a receiving position, the receiving position being selected from any of the plurality of selectable positions, the microsphere being coupled to the first body portion and the second body portion.

11. The lens system as recited in claim 10, wherein the microsphere is coupled to the first body portion at a first coupling portion and the microsphere is coupled to the second body portion at a second coupling portion, and wherein the first coupling portion is distinct from the second coupling portion.

12. The lens system as recited in claim 11, wherein the first body portion and the second body portion are configured to at least clasp the microsphere.

13. The lens system as recited in claim 11, wherein the first body portion defines a first distal surface substantially in a first plane, and the second body portion defines a second distal surface substantially in a second plane, and wherein the first plane and the second plane are non-coplanar.

14. The lens system as recited in claim 13, wherein the first distal surface and the second distal surface define a reflex angle therebetween.

15. The lens system as recited in claim 13, wherein the holder has reflection symmetry about a center plane, the center plane being defined by a center of the microsphere and an intersection line, the intersection line being an intersect of the first plane and the second plane.

16. An optical microscope comprising the holder as recited in any of claims 1 to 15.

17. A microsphere assembly, the microsphere assembly being attachable to an objective lens for near field optics, the microsphere assembly made by a process comprising:

bending a sheet from a first state to a second state, the sheet having a first body portion and a second body portion spaced apart to define respective coupling sides of a slot, the slot substantially extending along a first axis providing a plurality of selectable positions therebetween distributed along the first axis,~~at least one receiving position for receiving a microsphere~~ such that when a microsphere is received at a receiving position selected from any of the plurality of selectable positions, the microsphere is couplable to the first body portion and the second body portion at the respective coupling sides, wherein the bending makes the first body portion and the second body portion non co-planar relative to one another.

18. The microsphere assembly made by the process as recited in claim 17, wherein the sheet in the second state is configured to clasp the microsphere between the respective coupling sides.

19. The microsphere assembly made by the process as recited in claim 18, wherein the coupling sides are non-parallel relative to one another when the sheet is in the second state, and wherein the coupling sides are substantially parallel to one another when the sheet is in the first state.

20. The microsphere assembly made by the process as recited in claim 18, wherein the microsphere is further fixed to the respective coupling sides by an adhesive.