WHAT IS CLAIMED IS:

1. A sparger assembly (800) for a bioprocessing system (10, 210), comprising:

a first layer (806) having a plurality of pores (808) of a first size; and

a second layer (810) disposed above the first layer (806) and having a plurality of holes (812) of a second size, the second size being greater than the first size;

wherein the pores (808) of the first layer (806) and the holes (812) of the second layer (810) allow for the passage of a sparge gas (814) through the first layer (806) and the second layer (810); and

wherein the second layer (810) is gas and water permeable.

2. The sparger assembly (800) of claim 1, wherein:

the first size is sufficient to allow for passage of gas through the first layer (806), and to inhibit the passage of water through the first layer (806).

3. The sparger assembly (800) of claim 1 or 2, wherein:

the first layer (806) is hydrophobic and has a three-dimensionally interconnected pore structure.

4. The sparger assembly (800) of any preceding claim, wherein:

the first layer (806) is formed from a sintered hydrophobic material.

5. The sparger assembly (800) of any preceding claim, wherein the first layer (806) is formed from: a polymer material, polyethylene, polytetrafluoroethylene (PTFE), polypropylene, and/or fluorocarbons.

6. The sparger assembly (800) of any preceding claim, wherein:

the second layer (810) has a plurality of discrete holes through the second layer.

7. The sparger assembly (800) of claim 6, wherein:

the second layer (810) is configured as a drilled hole sparging element.

8. The sparger assembly (800) of any preceding claim, wherein:

the first size is between about 2 and about 20 micrometers in diameter; and/or

the second size is between about 100 and about 500 micrometers in diameter.

9. The sparger assembly (800) of any preceding claim, further comprising:

a housing (802) receiving the first layer (806) and the second layer (810), the housing (802) being configured to receive a sparge gas (814) from a supply;

wherein the sparge gas (814) supplied to the housing (802) is permitted to pass through the first layer (806) and the second layer (810) into a bioprocessing vessel (20); and

wherein the first pore size of the first layer (806) is such that water is not permitted to pass from the bioprocessing vessel (20) past the first layer (806).

10. The sparger assembly (800) of any preceding claim, wherein:

the first layer (806) is gas permeable and water impermeable.

11. A bioprocessing system (10), comprising:

a vessel (12);

a flexible bioprocessing bag (20) positionable within the vessel (12); and

at least one sparger assembly (800) positioned at a bottom of the flexible bioprocessing bag (20), the sparger assembly (800) being as per the sparger assembly (800) of any preceding claim.

12. The bioprocessing system (10) of claim 11, further comprising at least one of: a magnetic drive (34) external to the vessel (12), a magnetic hub (30) and/or an impeller (28).

13. The bioprocessing system (10) of claim 11 or 12, wherein at least one of said at least one sparger assembly (800) forms part of an aeration manifold (112, 114, 212, 214, 510, 512) that is removably attachable to a base plate (110, 210) therein.

14. The bioprocessing system (10) of claim 13, wherein respective aeration manifolds (112, 114, 212, 214, 510, 512) are arc-shaped.

15. The bioprocessing system (10) of claim 13 or 14, wherein respective pairs of aeration manifolds (112, 114, 212, 214, 510, 512) are connected together.