**CLAIMS:**

1. A system for assessing biomass for a bioreactor including a container and a fixed bed disposed within such container, comprising:

at least one sensor for sensing one or more parameters representative of biomass in the fixed bed; and

a controller adapted to correlate the one or more parameters to an amount of biomass of the fixed bed:

wherein the one or more parameters representative of biomass comprise a cell culture byproduct.

2. The system of claim 1, wherein the one or more parameters representative of biomass comprise a cell culture byproduct, such as glucose or lactate as the cell culture byproduct.

3. The system of claim 1, wherein the at least one sensor comprises a spectroscopic sensor.

4. The system of claim 1, wherein the at least one sensor comprises an enzymatic sensor.

5. The system of claim 1, wherein the at least one sensor comprises a gas sensor associated with the bioreactor.

6. The system of claim 5, wherein the gas sensor and/or controller are adapted to determine one or more of air and oxygen gas flow rate inputs, oxygen outlet concentration, oxygen transfer rate, oxygen uptake rate, carbon dioxide evolution rate, and respiratory quotient.

7. The system of claim 1, wherein the at least one sensor is positioned in the bioreactor, or in a recirculation loop connected to the bioreactor, such as part of a dedicated line for drawing liquid from other than a surface of the bioreactor to minimize bubbles.

8. The system of claim 1, wherein the at least one sensor is associated with an automated sampler for sampling from the bioreactor.

9. The system of claim 1, wherein the controller is adapted to estimate the amount of biomass in the bioreactor at a future time.

10. The system of claim 1, further including a display associated with the controller for displaying the amount of biomass.

11. The system of claim 1, wherein the one or more parameters are selected from the group comprising glucose, lactate, Glu, Gln, Asp, Asn, NH3, or combinations thereof.

12. The system of claim 1, wherein the controller is adapted to use a correlation model for receiving as an input the one or more parameters and processing the one or more parameters using the correlation model to output the amount of biomass of the fixed bed.

13. The system of claim 1, wherein the bioreactor comprises a sealed container.

14. A system for assessing biomass, comprising:

a bioreactor including a container and a fixed bed disposed within such container, the bioreactor associated with a recirculation loop; and

at least one sensor for sensing one or more parameters representative of biomass in the bioreactor, the at least one sensor associated with the recirculation loop.

15. The system of claim 14, further including a controller adapted for correlating the one or more parameters to an amount of biomass of the bioreactor.

16. The system of claim 15, wherein the controller is adapted to estimate the amount of biomass in the bioreactor at a future time.

17. The system of claim 15, wherein the controller is adapted to use a correlation model for receiving as an input the one or more parameters and processing the one or more parameters using the correlation model to output the amount of biomass of the fixed bed.

18. The system of claim 15, further including a display associated with the controller for displaying the amount of biomass.

19. A system, comprising:

a bioreactor including a container and a fixed bed disposed within such container; and

at least one sensor for sensing one or more parameters of a liquid provided to the at least one sensor by a conduit in fluid communication with the bioreactor, and which conduit comprises a dedicated line for drawing fluid from the bioreactor other than at a surface thereof to minimize the incidence of bubbles.

20. The system of claim 19, further including a controller adapted for correlating the one or more parameters to an amount of biomass of the bioreactor.

21. The system of claim 20, wherein the controller is adapted to estimate the amount of biomass in the bioreactor at a future time.

22. The system of claim 20, wherein the controller is adapted to use a correlation model for receiving as an input the one or more parameters and processing the one or more parameters using the correlation model to output the amount of biomass of the fixed bed.

23. The system of claim 20, further including a display associated with the controller for displaying the amount of biomass.