

Claims

1. A method of measuring a breath analyte comprising:
monitoring a series of breaths with an analyte sensor;
determining a plurality of breath segments of the series of breaths to capture, wherein each of the plurality of breath segments comprises a duration shorter than an analyte response time of the analyte sensor;
collecting the plurality of breath segments together in a multiple sample bolus;
reversing flow of the multiple sample bolus through the analyte sensor; and
measuring an analyte concentration of the multiple sample bolus using the analyte sensor, wherein the reversed flow of the multiple sample bolus comprises a duration longer than a response time of the analyte sensor.
2. The method of claim 1, wherein monitoring the series of breaths comprises monitoring a breath rate of the series of breaths.
3. The method of claim 1, wherein monitoring the series of breaths comprises monitoring a capnometry signal of each breath.
4. The method of claim 1, wherein determining a plurality of breath segments of the series of breaths to capture comprises identifying breaths with a normal end-tidal profile.
5. The method of claim 1, wherein determining a plurality of breath segments of the series of breaths to capture comprises excluding one or more of a non-steady state breath, an episodic breath, and an erratic breath.
6. The method of claim 1, wherein the breath analyte is CO₂.
7. The method of claim 1, wherein the analyte sensor is an infrared CO₂ sensor.
8. The method of claim 1, wherein each of the plurality of breath segments has a duration of about 150 ms.

9. A system for measuring a breath analyte comprising:
an analyte sensor that generates data from a series of breaths;
a processor that receives the data and determines a plurality of breath segments of the series of breaths to capture based on the data, wherein each of the plurality of breath segments comprises a duration shorter than an analyte response time of the analyte sensor;
a chamber that collects the plurality of breath segments together in a multiple sample bolus; and
a pump that reverses flow of the multiple sample bolus through the analyte sensor,
wherein the analyte sensor measures an analyte concentration of the multiple sample bolus, and wherein the multiple sample bolus comprises a duration longer than a response time of the analyte sensor.
10. The system of claim 9, wherein the analyte sensor generates data on a capnometry signal of each breath of the series of breaths.
11. The system of claim 9, wherein the processor determines the plurality of breath segments of the series of breaths to capture by identifying breaths with a normal end-tidal profile.
12. The system of claim 9, wherein the processor determines the plurality of breath segments of the series of breaths to capture by excluding one or more of a non-steady state breath, an episodic breath, and an erratic breath.
13. The system of claim 9, wherein the breath analyte is CO₂.
14. The system of claim 9, wherein the analyte sensor is an infrared CO₂ sensor.
15. The system of claim 9, wherein each of the plurality of breath segments comprises a duration of about 150 ms.