

CLAIMS

1. A device for handling a sample comprising:

a pump;

a pump chamber;

a valve arrangement; and

a mixing chamber;

wherein, said pump will provide a liquid sample from a sample source to said pump chamber, said liquid sample passing through said valve arrangement;

wherein, while said liquid sample is moving through said valve arrangement, a liquid additive is simultaneously pulled from an additive source through said valve arrangement and said liquid sample and said liquid additive are mixed in said pump chamber by the action of said pump to form a mixture;

wherein said mixture can be moved from said pump chamber to said mixing chamber through said valve arrangement by said pump, said mixture being agitated by said movement;

wherein a measurement is taken of said mixture in said pump chamber; and

wherein an additional liquid additive is simultaneously pulled from an additional additive source through said valve arrangement and said liquid sample, said liquid additive, and additional liquid additive are mixed in said pump chamber by the action of said pump on said mixture.

2. The device of claim 1 wherein said mixture can be returned to said pump chamber from said mixing chamber through said valve arrangement by said pump, said mixture being agitated by said movement.
3. The device of claim 1 wherein said measurement is a fluorescence measurement.
4. The device of claim 1 wherein said measurement is a light absorption measurement.
5. A device for handling a sample comprising:

a pump;

a pump chamber;

a valve arrangement; and

a mixing chamber;

wherein, said pump will provide a liquid sample of an emulsion from a sample source to said pump chamber, said liquid sample passing through said valve arrangement;

wherein, while said liquid sample is moving through said valve arrangement, a liquid additive is simultaneously pulled by said pump from an additive source through said valve arrangement and said liquid sample and said liquid additive are mixed in said pump chamber by the action of said pump;

wherein said mixture can be moved from said pump chamber to said mixing chamber through said valve arrangement by said pump, said mixture being agitated by said movement;

wherein a measurement is taken of said mixture in said pump chamber;

wherein said liquid additive is a solvent separating a first immiscible from said emulsion;

wherein said first immiscible is moved from said pump chamber to said mixing chamber through said valve arrangement by said pump and what remains of said emulsion after said first immiscible is left in said pump chamber.

6. The device of claim 5 wherein said measurement is performed on said liquid sample before said emulsion separates.
7. The device of claim 5 wherein said measurement is performed on what remains of said emulsion after said first immiscible has been separated.
8. The device of claim 5 wherein said first immiscible is exhausted from said system and said remains of said emulsion after said first immiscible is separated is moved to said mixing chamber by said pump.
9. The device of claim 8 wherein said remains of said emulsion after said first immiscible is

separated is mixed with an additional additive from said valve arrangement as it is moved to said mixing chamber by said pump.

10. The device of claim 5 wherein said remains of said emulsion after said first immiscible is separated is then exhausted from said system via said valve arrangement by said pump and said first immiscible is moved to said pump chamber by said pump.

11. The device of claim 10 wherein said first immiscible is mixed with an additional additive from said valve arrangement as it is moved to said pump chamber by said pump.

12. The device of claim 10 wherein said measurement is performed on said first immiscible.

13. The device of claim 5 wherein said emulsion is an oil and water emulsion.

14. The device of claim 13 wherein said additive is toluene.

15. The device of claim 5 wherein said measurement is a fluorescence measurement.

16. The device of claim 5 wherein said measurement is a light absorption measurement.

17. A device for handling a sample comprising:

a pump;

a pump chamber;

a valve arrangement; and

a mixing chamber;

wherein, said pump will provide a liquid sample of an emulsion from a sample source to said pump chamber, said liquid sample passing through said valve arrangement;

wherein, while said liquid sample is moving through said valve arrangement, a liquid additive is simultaneously pulled by said pump from an additive source through said valve arrangement and said liquid sample and said liquid additive are mixed in said pump chamber by the action of said pump;

wherein said mixture can be moved from said pump chamber to said mixing chamber through said valve arrangement by said pump, said mixture being agitated by said movement;

wherein a measurement is taken of said mixture in said pump chamber;

wherein said liquid additive is a solvent separating a first immiscible from said emulsion;

and

wherein said emulsion is an oil and water emulsion.

18. The device of claim 17 wherein said additive is toluene.

19. The device of claim 17 wherein said measurement is a fluorescence measurement.

20. The device of claim 17 wherein said measurement is a light absorption measurement.