14 may be in flow communication with inlet **10** and surround second outlet **22**. The first outlet may be disposed a distance from outlet **18**, of vesicle formation zone **16**, greater than or equal to a distance of second outlet **22** from outlet **18**. Vesicle formation zone **16** may be configured for a flow through of an organic stream, flowing form second outlet **22**, at a volumetric flow rate less than or equal to a volumetric flow rate of an aqueous stream, flowing from the first outlet. The first outlet may be disposed about an outer perimeter second outlet **22**. Device **300** may comprise a unitary outer sheath **12** extending throughout fluid introduction zone **14** and vesicle formation zone **16** and may be annular, for example outer sheath **12** may be a tube, or pipe.

[0043] In at least one aspect of the present disclosure, a device configured for the formation of vesicles comprises a longitudinally extending sheath **300** configured and disposed for the flowthrough of an aqueous stream and a parallel flowing organic stream. The sheath may comprise an aqueous stream inlet **10**, configured and disposed to receive an aqueous stream into sheath **12**, and organic stream inlet **11**, configured and disposed to receive a parallel flowing organic stream centrally within the aqueous stream, and an outlet **18**. The aqueous stream inlet **10** may be disposed at a distance greater than or equal to a distance of organic stream inlet **22**, from outlet **18** of sheath **12**. Aqueous stream inlet **10** may be configured for a first volumetric flow rate and organic stream inlet **22** may be configured for a second volumetric flow rate of an aqueous stream. The first volumetric flow rate may be greater than or equal to the second volumetric flow rate.

[0044] In at least one aspect of the present disclosure, a device for the formation of vesicles comprises an outer longitudinally extending sheath **12** having a fluid introduction zone **14**, a vesicle formation zone **16**, and a vesicle outlet **18**. Sheath **12** is configured for a flow through of an aqueous stream. A longitudinally extending feed line **20** is disposed in outer longitudinally extending sheath **12** and is configured for a flow through of an organic stream. Sheath **12** has an inner diameter greater than an outer diameter of feed line **20**. Feed line **20** and sheath **12** are configured and disposed for a parallel flow of an aqueous stream about an organic stream into vesicle formation zone **16**. The device may be configured for a controlled and substantially uniform dispersion of an organic material in the organic stream at a plane perpendicular to vesicle formation zone **16**.

[0045] Outer sheath **12** may be configured and disposed to create an aqueous flowing stream sheathing a parallel flowing organic flowing stream in at least a portion of vesicle formation zone **16**, during the formation of vesicles. The device may comprise a plurality of longitudinally extending outer feed lines **24** disposed adjacent an inner surface of outer sheath **12**, as shown in FIG. **1**, and each having a terminating end, or outlet **27**, in a plane substantially perpendicular to outer longitudinally extending sheath **12**. Each longitudinally extending outer feed line **24** may be configured for a flow through of an aqueous stream. The device may comprise a terminating plane of each one of the plurality of feed lines, or outlets **27**, at a distance from outlet **18** greater than or equal to a distance of a terminating end, or outlet **22**, of central feed line **20**, from outlet **18**. The device may have vesicle formation zone **16** configured for a flow of an organic stream through central feed line **20** at a volumetric flow rate less than or equal to a volumetric flow rate of an aqueous stream flowing in parallel through sheath **12**. Vesicle formation device **300** may have a smaller cross-sectional flow area of central feed line **20** than a cross-sectional flow area about central feed line **20**.

[0046] FIG. **4** shows a process and mechanism of action for liposome formation using the parallel flow device for the formation of vesicles of the present disclosure. A process for the formation of vesicles may comprise flowing an aqueous stream into longitudinally extending sheath **12**, via sheath inlet **10**. An organic stream may then be centrally fed into longitudinally extending sheath **12** and parallel with the flow of the aqueous stream. The organic stream may be fed through central feed line **20**, via inlet **11**, and into the aqueous stream through outlet **22**. A miscible organic material in the organic stream is then dispersed with the aqueous stream in vesicle formation zone **16** and vesicles may be expelled from outlet **18**.

[0047] For example, an organic stream containing one or more organic molecules, such as amphiphilic molecules, or phospholipids and their derivatives, may be fed into vesicle formation zone **16** through vesicle introduction zone outlet, or vesicle formation zone inlet, **22**. An aqueous stream may be fed into vesicle formation zone **16** through vesicle introduction zone inlet **10**, or a vesicle formation zone inlet disposed about inlet **22**. The organic molecules may then disperse throughout the co-flowing streams as lipid "rafts" depicted in (i). Liposomes may then be spontaneous self-assembled with the lipid mixture assembling into a spherical bilayer membrane in vesicle formation zone **16**, as depicted in (ii), (iii), and (iv). Upon dispersion in water, the phospholipids may form closed vesicles called or liposomes, which may be characterized by lipid bilayers substantially encapsulating an aqueous core or form a spherical bilayer membrane. The outer sheathing of the organic stream with the aqueous stream may create physicochemical conditions in the aggregate co-flowing streams that are substantially symmetric about a cross-section of the co-flowing streams. As the mutually miscible aqueous and organic streams disperse or diffusively mix, as shown in (i), the amphiphilic molecules may self-assemble into liposomal vesicles, as shown in (ii)-(iv).

[0048] FIG. **5** shows the mutual dispersion of miscible fluids in vesicle formation zone **16** of the parallel flow device for the formation of vesicles of the present disclosure. Outer annular longitudinally extending sheath **12** has aqueous solution **25** flowing about a perimeter of central feed line **20** to sheath line outlet **18**. Central feed line **20** is parallel feeding an organic containing solution **23** into a central portion of flowing aqueous solution **25**. This parallel flow of organic stream **23** with aqueous stream **25**, into vesicle formation zone **16**, may provide for feeding an intra-annular organic stream into a parallel flowing annular sheathing aqueous stream. This may result in a device configured for controlled and substantially uniform dispersion of an organic material in the co-flowing streams, at a plane perpendicular to vesicle formation zone **16**.

[0049] FIG. **5** shows a numerical model of an alcohol/water, stream **23** flowing through central feed line **20**, mixing, diffusing, or dispersing, just post exit **22** from an inner PEEK tube **20**. In this gray scale model it is shown that alcohol, represented by the dark gray central longitudinal portion extending from central feed line **20**, is distributed along a channel diameter of outer sheath **12**. The aqueous flow is represented by the dark gray outer flow portion adjacent the inner wall of outer sheath **12**. As can be seen with the controlled reduction of alcohol in the central stream, a controlled