THE INVENTION CLAIMED IS:

1. A mechanical separator for separating a fluid sample into first and second phases within a collection container, comprising:

a separator body having a through-hole defined therein, the through-hole adapted for allowing fluid to pass therethrough, the separator body comprising:

a float, having a first density; and

a ballast, having a second density greater than the first density, wherein a portion of the float is connected to a portion of the ballast.

2. The mechanical separator of claim 1, wherein at least a portion of the mechanical separator has a spheroid shape.

3. The mechanical separator of claim 2, wherein the float comprises an exterior surface and a joining surface, and the ballast comprises a contact surface connected to the joining surface of the float and an exterior surface, wherein the exterior surface of the float and the exterior surface of the ballast taken together form the spheroid shape.

4. The mechanical separator of claim 1, wherein the float defines the through-hole adapted for allowing fluid to pass therethrough.

5. The mechanical separator of claim 1, wherein the through-hole has a circular cross-section.

6. The mechanical separator of claim 1, wherein the through-hole has an elliptical cross-section.

7. The mechanical separator of claim 1, wherein the through-hole is defined along a through-axis and the float is adapted for deformation in a direction perpendicular to the through-axis upon applied rotational force.

8. The mechanical separator of claim 1, wherein the float further comprises a first extended tab adjacent a first opening of the through-hole and a second extended tab adjacent the second opening of the through-hole.

9. The mechanical separator of claim 8, wherein the first extended tab and the second extended tab are provided at least partially above and about the through-hole and extend radially outwardly from a portion of the float in a direction parallel to the through-axis of the separator body.

10. The mechanical separator of claim 8, wherein the first extended tab, an upper surface of the float, and the second extended tab form an at least partially convex upper float surface.

11. The mechanical separator of claim 1, wherein the separator body further comprises an extended tab band disposed about a portion of an outer surface of the float.

12. The mechanical separator of claim 11, wherein a first portion of the extended tab band is disposed adjacent a first opening of the through-hole and a second portion of the extended tab band is disposed adjacent a second opening of the through-hole.

13. The mechanical separator of claim 12, wherein at least one of the first portion and the second portion of the extended tab band have a concave downwardly-directed orientation.

14. The mechanical separator of claim 12, wherein at least one of the first portion and the second portion of the extended tab band are oriented in an outwardly-extending arcuate shape about an upper portion of at least one of the first opening and second opening of the through-hole.

15. The mechanical separator of claim 14, wherein at least one of the first portion and the second portion of the extended tab band extend radially outwardly from the float.

16. The mechanical separator of claim 12, wherein at least a portion of the first extended portion and at least a portion of the second extended portion of the extended tab band have the same shape and curvature.

17. The mechanical separator of claim 12, wherein the extended tab band further comprises a joining portion disposed between and connecting the first extended portion and the second extended portion disposed on each connecting side of the separator body.

18. The mechanical separator of claim 17, wherein the first extended portion and the second extended portion of the extended tab band have a concave downwardly-directed orientation, and the joining portions of the extended tab band have a concave upwardly-directed orientation.

19. The mechanical separator of claim 11, wherein the float comprises the extended tab band.

20. The mechanical separator of claim 11, wherein the float and the extended tab band are formed of TPE and the ballast is formed of PET.

21. The mechanical separator of claim 1, further comprising an initial engagement band circumferentially disposed about at least a portion of the separator body.

22. The mechanical separator of claim 21, wherein the initial engagement band is at least one of continuous and at least partially segmented.

23. The mechanical separator of claim 21, wherein the initial engagement band and the float are formed of the same material.

24. The mechanical separator of claim 21, wherein the initial engagement band bisects at least a portion of the ballast.

25. The mechanical separator of claim 1, wherein the ballast comprises a base portion and a joining structure for engaging a portion of the float.

26. The mechanical separator of claim 25, wherein the joining structure comprises a plurality of arms for engaging a portion of the float.

27. The mechanical separator of claim 25, wherein the joining structure provides flexure between the float and the ballast.

28. The mechanical separator of claim 25, wherein at least a portion of the float has a circular outer perimeter, and at least a portion of the float has a curved cross-section perpendicular to the through-hole.

29. The mechanical separator of claim 1, wherein the float comprises a joining structure for engaging a portion of the ballast.

30. The mechanical separator of claim 29, wherein the joining structure comprises a plurality of arms for engaging a portion of the ballast.

31. The mechanical separator of claim 29, wherein the joining structure provides flexure between the float and the ballast.

32. A separation assembly for enabling separation of a fluid sample into first and second phases, comprising:

a collection container having a first end, a second end, and a sidewall extending therebetween, the collection container defining a longitudinal axis between the first end and the second end; and

a mechanical separator comprising a separator body having a through-hole defined therein, the separator body adapted to transition from a first initial position in which the through-hole is oriented in an open position for allowing fluid to pass therethrough, to a second sealing position in which the through-hole is oriented in a closed position for preventing fluid from being received therethrough, upon applied rotational force.

33. The separation assembly of claim 32, further comprising a closure adapted for sealing engagement with the first end of the collection container, wherein the mechanical separator is releasably engaged with a portion of the closure.

34. The separation assembly of claim 33, wherein the mechanical separator is engaged with a portion of the closure in the first initial position, and wherein the mechanical separator is engaged with a portion of the sidewall of the collection container in the second sealing position.

35. The separation assembly of claim 33, wherein the closure further comprises an engagement boss disposed within a portion of the through-hole when the separator body is in the first initial position for forming a fluid seal between a portion of the separator body and the closure.

36. The separation assembly of claim 32, wherein at least a portion of the through-hole is oriented along the longitudinal axis of the collection container in the first initial position, and wherein at least a portion of the through-hole is oriented perpendicular to the longitudinal axis of the collection container in the second sealing position.

37. The separation assembly of claim 32, wherein transition of the through-hole from the open position to the closed position coincides with rotation of the mechanical separator from the first initial position to the second sealing position.

38. The separation assembly of claim 32, wherein the mechanical separator sealingly engages a portion of the collection container wall in the second sealing position to prevent flow of fluid therethrough or therearound.

39. The separation assembly of claim 32, wherein the separator body further comprises a first extended tab adjacent a first opening of the through-hole and a second extended tab adjacent the second opening of the through-hole.

40. The separation assembly of claim 39, wherein the first extended tab and the second extended tab engage a portion of the sidewall of the collection container in the second sealing position.

41. The separation assembly of claim 32, wherein the separator body further comprises an extended tab band disposed about a portion of an outer surface of the float.

42. The separation assembly of claim 41, wherein the extended tab band engages a portion of the sidewall of the collection container in the second sealing position.

43. The separation assembly of claim 41, wherein the extended tab band forms a continuous seal with the sidewall of the collection container in the second sealing position.

44. The separation assembly of claim 32, wherein the ballast comprises a joining structure for engaging a portion of the float, and at least a portion of the float comprises a circular outer perimeter having a curved cross-section perpendicular to the through-hole, wherein the outer perimeter of the float forms a continuous seal with the sidewall of the collection container in the second sealing position.

45. The separation assembly of claim 32, wherein the float comprises a joining structure for engaging a portion of the ballast, and at least a portion of the float comprises a circular outer perimeter having a curved cross-section perpendicular to the through-hole, wherein the outer perimeter of the float forms a continuous seal with the sidewall of the collection container in the second sealing position.

46. A separation assembly for enabling separation of a fluid sample into first and second phases, comprising:

a collection container having a first end, a second end, and a sidewall extending therebetween; and

a mechanical separator comprising a separator body having a through-hole defined therein, the separator body having a first sealing perimeter for providing sealing engagement with a first portion of a collection container while allowing a sample to pass through the through-hole into the collection container, and a second sealing perimeter for providing sealing engagement with a second portion of the collection container while maintaining a barrier for separation between the first and second phases.

47. The separation assembly of claim 46, further comprising a closure adapted for sealing engagement with the open end of the collection container, wherein the mechanical separator is releasably engaged with a portion of the closure.

48. A separation assembly for enabling separation of a fluid sample into first and second phases, comprising:

a collection container having an open end, a closed end, and a sidewall extending therebetween defining an interior, the collection container further defining a longitudinal axis between the open end and the closed end;

a closure adapted for sealing engagement with the open end of the collection container;

a post engaged with the closure and adapted for positioning within the interior of the collection container, the post having a post through-hole aligned along the longitudinal axis of the collection container; and

a mechanical separator releasably engaged with the post, the mechanical separator comprising a separator body having a through-hole defined therein along a through-axis, the through-hole adapted for allowing fluid to pass therethrough, the separator body comprising:

a float, having a first density; and

a ballast, having a second density greater than the first density, wherein a portion of the float is connected to a portion of the ballast,

wherein a portion of the post is received within the through-hole of the separator forming a fluid path through the post and the mechanical separator in an initial first position.

49. The separation assembly of claim 48, wherein the separator body further comprises an initial engagement band circumferentially disposed about a portion of the separator body.

50. The separation assembly of claim 49, wherein the initial engagement band and the float are formed of the same material and the initial engagement band bisects at least a portion of the ballast.

51. The separation assembly of claim 48, wherein the separator body is adapted to transition from a first initial position in which a portion of the post is disposed within the through-hole and the separator body is oriented in an open position for allowing fluid to pass therethrough, and a second sealing position in which the separator body is disengaged from

the post and the through-hole is oriented in a closed position for preventing fluid from being received therethrough, upon applied rotational force.

52. The separation assembly of claim 51, wherein the transition of the separator body from the open position to the closed position includes an axial movement of the separator body to disengage from the post, and a rotational movement of the separator body from an initial first position to a second sealing position.

53. A separation assembly for enabling separation of a fluid sample into first and second phases, comprising:

a collection container having an open end, a closed end, and a sidewall extending therebetween defining an interior, the collection container further defining a longitudinal axis between the open end and the closed end;

a closure adapted for sealing engagement with the open end of the collection container, the closure having a receiving end for positioning within the open end of the collection container, the receiving end defining an interior cavity and comprising an undercut protrusion extending into the interior cavity; and

a mechanical separator releasably engaged with the closure, the mechanical separator comprising a separator body having a through-hole defined therein along a through-axis, the through-hole adapted for allowing fluid to pass therethrough, the separator body comprising:

a float, having a first density; and

a ballast, having a second density greater than the first density, wherein a portion of the float is connected to a portion of the ballast,

wherein the undercut protrusion of the closure is disposed within the through-hole of the separator and at least a portion of the separator body is disposed within the interior cavity of the closure in an initial first position.

54. A collection container, comprising:

a first region having an open top end and a first sidewall defining a first interior and a first exterior;

a second region having a closed bottom end and a second sidewall defining a second interior and a second exterior, the first region and the second region are aligned along a longitudinal axis such that the first interior and the second interior are provided in fluid

communication, wherein a diameter of the first interior is greater than a diameter of the second interior; and

at least one fluid flute extending between the first region and the second region to allow passage of fluid therethrough from the first region to the second region.

55. The collection container of claim 54, wherein the first exterior has a 16 mm profile and the second exterior has a 13 mm profile.

56. The collection container of claim 54, wherein the first interior is dimensioned to accommodate a mechanical separator therein, and the second interior is dimensioned to at least partially restrain a portion of the mechanical separator from passing therein absent applied rotational force.

57. A separation assembly for enabling separation of a fluid sample into first and second phases, comprising:

a collection container comprising:

a first region having an open top end and a first sidewall defining a first interior and a first exterior;

a second region having a closed bottom end and a second sidewall defining a second interior and a second exterior, the first region and the second region are aligned along a longitudinal axis such that the first interior and the second interior are provided in fluid communication, wherein a diameter of the first interior is greater than a diameter of the second interior; and

at least one fluid flute extending between the first region and the second region to allow passage of fluid therethrough from the first region to the second region; and

a mechanical separator comprising:

a float, having a first density; and

a ballast, having a second density greater than the first density, wherein a portion of the float is connected to a portion of the ballast,

wherein at least a portion of the mechanical separator is prevented from entering the second region in an initial first position, and the mechanical separator is transitioned into the second region upon application of rotational force to a second sealing position.

58. The separation assembly of claim 57, wherein the mechanical separator comprises a separator body having a through-hole defined therein and adapted for allowing fluid to pass therethrough.

59. A separation assembly for enabling separation of a fluid sample into first and second phases, comprising:

a collection container having a first end, a second end, and a sidewall extending therebetween defining an interior;

a closure adapted for sealing engagement with the open end of the collection container;

a mechanical separator releasably restrained by at least one of the closure and the sidewall of the collection container in an initial first position, the mechanical separator comprising a separator body having a through-hole defined therein along a through-axis, the through-hole adapted for allowing fluid to pass therethrough, the separator body comprising:

a float, having a first density; and

a ballast, having a second density greater than the first density, wherein a portion of the float is connected to a portion of the ballast; and

a carrier releasably engaged with a portion of the mechanical separator in the initial position,

wherein upon application of rotational force, the separator body transitions from an initial position in which fluid may pass through the through-hole, to a sealing position in which the mechanical separator prevents passage of fluid therethrough or therearound, and wherein upon application of rotational force, the carrier disengages from the mechanical separator.

60. A separation assembly, comprising:

a collection container having a first end, a second end, and a sidewall extending therebetween defining an interior; and

a mechanical separator comprising a float and a ballast and capable of movement from a first position to a sealing position,

wherein in the sealing position, a sealing perimeter is established between at least a portion of the interior and the separator, the sealing perimeter having a varying position about a portion of the interior, the varying position defining an average sealing height, and

wherein the mechanical separator has a maximum height and a minimum height within the collection container, such that the average sealing height is less than the maximum height minus the minimum height.

THE INVENTION CLAIMED IS:

1. A mechanical separator for separating a liquid sample into first and second phases within a collection container, comprising:

a separator body having a through-hole defined therein, the through-hole adapted for allowing liquid to pass therethrough, the separator body comprising:

a float, having a first density; and

a ballast, having a second density greater than the first density, wherein a portion of the float is connected to a portion of the ballast,

wherein at least a portion of the separator body is adapted to deform upon application of rotational force.

2. The mechanical separator of claim 1, wherein at least a portion of the mechanical separator has a spheroid shape.

3. The mechanical separator of claim 2, wherein the float comprises an exterior surface and a joining surface, and the ballast comprises a contact surface connected to the joining surface of the float and an exterior surface, wherein the exterior surface of the float and the exterior surface of the ballast taken together form the spheroid shape.

4. The mechanical separator of claim 1, wherein the float defines the through-hole adapted for allowing liquid to pass therethrough.

5. The mechanical separator of claim 1, wherein the through-hole has a circular cross-section.

6. The mechanical separator of claim 1, wherein the through-hole has an elliptical cross-section.

7. The mechanical separator of claim 1, wherein the through-hole is defined along a through-axis and the float is adapted for deformation in a direction perpendicular to the through-axis upon applied rotational force.

8. The mechanical separator of claim 1, wherein the float further comprises a first extended tab adjacent a first opening of the through-hole and a second extended tab adjacent the second opening of the through-hole.

9. The mechanical separator of claim 8, wherein the first extended tab and the second extended tab are provided at least partially above and about the through-hole and extend radially outwardly from a portion of the float in a direction parallel to the through-axis of the separator body.

10. The mechanical separator of claim 8, wherein the first extended tab, an upper surface of the float, and the second extended tab form an at least partially convex upper float surface.

11. The mechanical separator of claim 1, wherein the separator body further comprises an extended tab band disposed about a portion of an outer surface of the float.

12. The mechanical separator of claim 11, wherein a first portion of the extended tab band is disposed adjacent a first opening of the through-hole and a second portion of the extended tab band is disposed adjacent a second opening of the through-hole.

13. The mechanical separator of claim 12, wherein at least one of the first portion and the second portion of the extended tab band have a concave downwardly-directed orientation.

14. The mechanical separator of claim 12, wherein at least one of the first portion and the second portion of the extended tab band are oriented in an outwardly-extending

arcuate shape about an upper portion of at least one of the first opening and second opening of the through-hole.

15. The mechanical separator of claim 14, wherein at least one of the first portion and the second portion of the extended tab band extend radially outwardly from the float.

16. The mechanical separator of claim 12, wherein at least a portion of the first extended portion and at least a portion of the second extended portion of the extended tab band have the same shape and curvature.

17. The mechanical separator of claim 12, wherein the extended tab band further comprises a joining portion disposed between and connecting the first extended portion and the second extended portion disposed on each connecting side of the separator body.

18. The mechanical separator of claim 17, wherein the first extended portion and the second extended portion of the extended tab band have a concave downwardly-directed orientation, and the joining portions of the extended tab band have a concave upwardly-directed orientation.

19. The mechanical separator of claim 11, wherein the float comprises the extended tab band.

20. The mechanical separator of claim 11, wherein the float and the extended tab band are formed of TPE and the ballast is formed of PET.

21. The mechanical separator of claim 1, further comprising an initial engagement band circumferentially disposed about at least a portion of the separator body.

22. The mechanical separator of claim 21, wherein the initial engagement band is at least one of continuous and at least partially segmented.

23. The mechanical separator of claim 21, wherein the initial engagement band and the float are formed of the same material.

24. The mechanical separator of claim 21, wherein the initial engagement band bisects at least a portion of the ballast.

25. The mechanical separator of claim 1, wherein the ballast comprises a base portion and a joining structure for engaging a portion of the float.

26. The mechanical separator of claim 25, wherein the joining structure comprises a plurality of arms for engaging a portion of the float.

27. The mechanical separator of claim 25, wherein the joining structure provides flexure between the float and the ballast.

28. The mechanical separator of claim 25, wherein at least a portion of the float has a circular outer perimeter, and at least a portion of the float has a curved cross-section perpendicular to the through-hole.

29. The mechanical separator of claim 1, wherein the float comprises a joining structure for engaging a portion of the ballast.

30. The mechanical separator of claim 29, wherein the joining structure comprises a plurality of arms for engaging a portion of the ballast.

31. The mechanical separator of claim 29, wherein the joining structure provides flexure between the float and the ballast.

32. A separation assembly for enabling separation of a fluid sample into first and second phases, comprising:

a collection container having a first end, a second end, and a sidewall extending therebetween, the collection container defining a longitudinal axis between the first end and the second end; and

a mechanical separator comprising a separator body having a through-hole defined therein, the separator body adapted to transition from a first initial position in which the through-hole is oriented in an open position for allowing fluid to pass therethrough, to a second sealing position in which the through-hole is oriented in a closed position for preventing fluid from being received therethrough, upon applied centrifugal force.

33. The separation assembly of claim 32, further comprising a closure adapted for sealing engagement with the first end of the collection container, wherein the mechanical separator is releasably engaged with a portion of the closure.

34. The separation assembly of claim 33, wherein the mechanical separator is engaged with a portion of the closure in the first initial position, and wherein the mechanical separator is engaged with a portion of the sidewall of the collection container in the second sealing position.

35. The separation assembly of claim 33, wherein the closure further comprises an engagement boss disposed within a portion of the through-hole when the separator body is in the first initial position for forming a fluid seal between a portion of the separator body and the closure.

36. The separation assembly of claim 32, wherein at least a portion of the through-hole is oriented along the longitudinal axis of the collection container in the first initial position, and wherein at least a portion of the through-hole is oriented perpendicular to the longitudinal axis of the collection container in the second sealing position.

37. The separation assembly of claim 32, wherein transition of the through-hole from the open position to the closed position coincides with rotation of the mechanical separator from the first initial position to the second sealing position.

38. The separation assembly of claim 32, wherein the mechanical separator sealingly engages a portion of the collection container wall in the second sealing position to prevent flow of fluid therethrough or therearound.

39. The separation assembly of claim 32, wherein the separator body further comprises a first extended tab adjacent a first opening of the through-hole and a second extended tab adjacent the second opening of the through-hole.

40. The separation assembly of claim 39, wherein the first extended tab and the second extended tab engage a portion of the sidewall of the collection container in the second sealing position.

41. The separation assembly of claim 32, wherein the separator body further comprises an extended tab band disposed about a portion of an outer surface of the separator body.

42. The separation assembly of claim 41, wherein the extended tab band engages a portion of the sidewall of the collection container in the second sealing position.

43. The separation assembly of claim 41, wherein the extended tab band forms a continuous seal with the sidewall of the collection container in the second sealing position.

44. A separation assembly for enabling separation of a fluid sample into first and second phases, comprising:

a collection container having a first end, a second end, and a sidewall extending therebetween; and

a mechanical separator comprising a separator body having a through-hole defined therein, the separator body having a first sealing perimeter for providing sealing engagement with a first portion of a collection container while allowing a sample to pass through the through-hole into the collection container, and a second sealing perimeter for providing

sealing engagement with a second portion of the collection container while maintaining a barrier for separation between the first and second phases,

wherein the through-hole is defined along a through-axis and the first sealing perimeter and the second sealing perimeter are at different angles with respect to the through-axis of the through-hole.

45. The separation assembly of claim 44, further comprising a closure adapted for sealing engagement with the open end of the collection container, wherein the mechanical separator is releasably engaged with a portion of the closure.

46. A separation assembly for enabling separation of a fluid sample into first and second phases, comprising:

a collection container having an open end, a closed end, and a sidewall extending therebetween defining an interior, the collection container further defining a longitudinal axis between the open end and the closed end;

a closure adapted for sealing engagement with the open end of the collection container;

a post engaged with the closure and adapted for positioning within the interior of the collection container, the post having a post through-hole aligned along the longitudinal axis of the collection container; and

a mechanical separator releasably engaged with the post, the mechanical separator comprising a separator body having a through-hole defined therein along a through-axis, the through-hole adapted for allowing fluid to pass therethrough, the separator body comprising:

a float, having a first density; and

a ballast, having a second density greater than the first density, wherein a portion of the float is connected to a portion of the ballast,

wherein a portion of the post is received within the through-hole of the separator forming a fluid path through the post and the mechanical separator in an initial pre-use_first position.

47. The separation assembly of claim 46, wherein the separator body further comprises an initial engagement band circumferentially disposed about a portion of the separator body.

48. The separation assembly of claim 47, wherein the initial engagement band and the float are formed of the same material and the initial engagement band bisects at least a portion of the ballast.

49. The separation assembly of claim 46, wherein the separator body is adapted to transition from a first initial position in which a portion of the post is disposed within the through-hole and the separator body is oriented in an open position for allowing fluid to pass therethrough, and a second sealing position in which the separator body is disengaged from the post and the through-hole is oriented in a closed position for preventing fluid from being received therethrough, upon applied rotational force.

50. The separation assembly of claim 49, wherein the transition of the separator body from the open position to the closed position includes an axial movement of the separator body to disengage from the post, and a rotational movement of the separator body from an initial first position to a second sealing position.

51. A separation assembly for enabling separation of a fluid sample into first and second phases, comprising:

a collection container having an open end, a closed end, and a sidewall extending therebetween defining an interior, the collection container further defining a longitudinal axis between the open end and the closed end;

a closure adapted for sealing engagement with the open end of the collection container, the closure having a receiving end for positioning within the open end of the collection container, the receiving end defining an interior cavity and comprising an undercut protrusion extending into the interior cavity; and

a mechanical separator releasably engaged with the closure, the mechanical separator comprising a separator body having a through-hole defined therein along a through-

axis, the through-hole adapted for allowing fluid to pass therethrough, the separator body comprising:

a float, having a first density; and

a ballast, having a second density greater than the first density, wherein a portion of the float is connected to a portion of the ballast,

wherein the undercut protrusion of the closure is disposed within the through-hole of the separator and at least a portion of the separator body is disposed within the interior cavity of the closure in an initial pre-use first position.

52. A collection container, comprising:

a first region having an open top end and a first sidewall defining a first interior and a first exterior;

a second region having a closed bottom end and a second sidewall defining a second interior and a second exterior, the first region and the second region are aligned along a longitudinal axis such that the first interior and the second interior are provided in fluid communication, wherein a diameter of the first interior is greater than a diameter of the second interior; and

at least one fluid flute extending between the first region and the second region to allow passage of fluid therethrough from the first region to the second region,

wherein at least a portion of the second region extends beyond the at least one fluid flute.

53. The collection container of claim 52, wherein the first exterior has a 16 mm profile and the second exterior has a 13 mm profile.

54. The collection container of claim 52, wherein the first interior is dimensioned to accommodate a mechanical separator therein, and the second interior is dimensioned to at least partially restrain a portion of the mechanical separator from passing therein absent applied rotational force.

55. A separation assembly for enabling separation of a fluid sample into first and second phases, comprising:

a collection container comprising:

a first region having an open top end and a first sidewall defining a first interior and a first exterior;

a second region having a closed bottom end and a second sidewall defining a second interior and a second exterior, the first region and the second region are aligned along a longitudinal axis such that the first interior and the second interior are provided in fluid communication, wherein a diameter of the first interior is greater than a diameter of the second interior; and

at least one fluid flute extending between the first region and the second region to allow passage of fluid therethrough from the first region to the second region; and

a mechanical separator comprising:

a float, having a first density; and

a ballast, having a second density greater than the first density, wherein a portion of the float is connected to a portion of the ballast,

wherein at least a portion of the mechanical separator is prevented from entering the second region in an initial first position, and the mechanical separator is transitioned into the second region upon application of rotational force to a second sealing position.

56. The separation assembly of claim 55, wherein the mechanical separator comprises a separator body having a through-hole defined therein and adapted for allowing fluid to pass therethrough.

57. A separation assembly for enabling separation of a fluid sample into first and second phases, comprising:

a collection container having a first end, a second end, and a sidewall extending therebetween defining an interior;

a closure adapted for sealing engagement with the open end of the collection container;

a mechanical separator releasably restrained by at least one of the closure and the sidewall of the collection container in an initial first position, the mechanical separator comprising a separator body having a through-hole defined therein along a through-axis, the through-hole adapted for allowing fluid to pass therethrough, the separator body comprising:

a float, having a first density; and

a ballast, having a second density greater than the first density, wherein a portion of the float is connected to a portion of the ballast; and

a carrier releasably engaged with a portion of the mechanical separator in the initial position,

wherein upon application of rotational force, the separator body transitions from an initial position in which fluid may pass through the through-hole, to a sealing position in which the mechanical separator prevents passage of fluid therethrough or therearound, and wherein upon application of rotational force, the carrier disengages from the mechanical separator.

58. A separation assembly, comprising:

a collection container having a first end, a second end, and a sidewall extending therebetween defining an interior; and

a mechanical separator comprising a float and a ballast and capable of movement from a first position to a sealing position,

wherein in the sealing position, a sealing perimeter is established between at least a portion of the interior and the separator, the sealing perimeter having a varying position about a portion of the interior, the varying position defining an average sealing height, and

wherein the mechanical separator has a maximum height and a minimum height within the collection container, such that the average sealing height is less than the maximum height minus the minimum height.