Claims

1. A device for repeatedly modifying the composition of a fluid, comprising
a first module (19) for modifying the composition of the fluid, a second module (21) for modifying the composition of the fluid and a dwell module (20) with an inlet (8) and an outlet (10), the dwell module (20) being configured such that a dwell time of the fluid in the dwell module (20) is from 1 minute to 24 hours,
wherein the first module (19) is connected in a fluid-conducting manner to the inlet (8) of the dwell module (20) and the outlet (10) of the dwell module (20) is connected in a fluid-conducting manner to the second module (21),
wherein the first module (19) or the second module (21) is a filter unit or the first module (19) is a first filter unit and the second module (21) is a second filter unit, the filter unit and/or the filter units each having
at least one supply channel (2, 12),
at least one first filter medium (4, 14),
at least one retentate channel (1, 11),
at least one second filter medium (5, 15), and
at least one permeate channel (3, 13),
arranged so that the first filter medium (4, 14) delimits the supply channel (2, 12) and the retentate channel (1, 11) from one another and the second filter medium (5, 15) delimits the retentate channel (1, 11) and the permeate channel (3, 13) from one another, wherein
the supply channel (2, 12) is connected in a fluid-conducting manner to at least one inlet (6, 16, 24, 27) for a supply medium,
the retentate channel (1, 11) is connected in a fluid-conducting manner to at least one inlet (7, 10, 23) for the fluid and to at least one outlet (8, 17, 32) for the fluid, and
the permeate channel (3, 13) is connected in a fluid-conducting manner to at least one outlet (9, 18, 25, 28) for a permeate.

2. The device as claimed in claim 1,
wherein the first module (19) is a first filter unit and the second module (21) is a second filter unit.

3. The device as claimed in claim 1,
wherein the first or second module (19, 21) is a static mixer.

4. A method for repeatedly modifying the composition of a fluid, comprising

(a) providing the device as claimed in one of the claims 1 to 3;

(b) feeding the fluid into the first module (19); and

(c) conducting away the fluid from the second module (21),

wherein step (b) and/or step (c) comprises/comprise the following steps:

(i) feeding the supply medium into the inlet (6, 16, 24, 27) for the supply medium;

(ii) feeding the fluid into the inlet (7, 10, 23) for the fluid;

(iii) conducting away the fluid from the outlet (8, 17, 32) for the fluid; and

(iv) conducting away the permeate from the outlet (9, 18, 25, 28) for the permeate~~.~~,

wherein the dwell time of the fluid in the dwell module (20) is from 1 minute to 24 hours.

5. The method as claimed in claim 4,

wherein the fluid which is conducted into the first module (19) contains one or more products and possibly one or more contaminants.

6. The method as claimed in claim 4 or 5,

wherein in the first module (19), the pH value of the fluid is reduced and/or increased and in the second module (21), the pH value of the fluid is increased and/or reduced.

7. The method as claimed in claim 6,

wherein in the first module (19), the pH value of the fluid is reduced and in the second module (21), the pH value of the fluid is increased.

~~8. The method as claimed in one of the claims 4 to 7,~~

~~wherein the dwell time of the fluid in the dwell module (20) is from 1 minute to 24 hours.~~

8~~9~~. The method as claimed in one of the claims 4 to 7 ~~8~~,

wherein the first module (19) is a first filter unit and the second module (21) is a second filter unit,

step (b) comprises the following steps:

(b-i) feeding the supply medium into the inlet (6, 24) of the first filter unit for the supply medium;

(b-ii) feeding the fluid into the inlet (7, 23) of the first filter unit for the fluid;

(b-iii) conducting away the fluid from the outlet (8) of the first filter unit for the fluid; and

(b-iv) conducting away the permeate from the outlet (9, 25) of the first filter unit for the permeate, and

step (c) comprises the following steps:

(c-i) feeding the supply medium into the inlet (16, 27) of the second filter unit for the supply medium;

(c-ii) feeding the fluid into the inlet (10) of the second filter unit for the fluid;

(c-iii) conducting away the fluid from the outlet (17, 32) of the second filter unit for the fluid; and

(c-iv) conducting away the permeate from the outlet (18, 28) of the second filter unit for the permeate.

9~~10~~. Use of the device as claimed in one of the claims 1 to 3 for virus inactivation.