TABLE 2-continued

Flow rate ratio Distance between adjacent partition walls (μm)	0.375	0.625	1.000	1.250	2.500
200	1.7	2.7	0.0	5.4	4.2
400	69.0	56.1	0.0	35.9	56.3
800	67.4	45.8	12.4	32.5	20.5
Comparative Example	77.3	33.3	46.3	38.6	46.3
Contamination percentage of aqueous phase to organic phase (%)					
50	2.3	0.0	1.7	2.8	64.3
100	4.8	1.4	1.4	7.3	26.3
200	0.5	0.7	9.6	8.7	54.3
400	21.3	29.9	3.1	59.2	26.3
800	15.8	30.5	7.3	45.3	72.6
Comparative Example	23.6	24.5	33.9	41.9	32.2

[0138] Table 2 shows contamination percentages of fluid: a contamination percentage (%) of an organic phase to an aqueous phase and a contamination percentage (%) of an aqueous phase to an organic phase, at flow rate ratios of 0.375, 0.625, 1.000, 1.250 and 2.500 respectively. Minimum distance between adjacent partition walls in a flowing direction of fluid are determined to be 50, 100, 200, 400 and 800 μm respectively.

[0139] As understood from the result in Example 2, when the minimum distance between adjacent partition walls in a flowing direction of fluid was 200 μm or less, a contamination percentage of less than 10% could be achieved at a flow rate ratio in a range of from 0.625 to 1.25. When minimum distances between adjacent partition walls in a flowing direction of fluid were 400 μm and 800 μm, a contamination percentage of less than 10% could not be achieved in cases except that the ratio of flow rate was 1:1.

Comparative Example 1

[0140] In Comparative Example 1, a fine channel device having the construction as shown in **FIG. 5**(*b*) was prepared. A fine channel **19** formed in the fine channel device was branched into two fine channel portions in a Y-letter like form at each side of fluid inlet and outlet ports. The inner structure of the fine channel was such that, as shown in **FIG. 5**(*a*), a guide-like portion **16** having a height of about 20% as much as the depth **17** of the fine channel was formed continuously along a flowing direction of fluid **37** at a substantially central portion with respect to a width direction of the fine channel. The width of the fine channel was 100 μm, the depth was 20 μm and the length was 30 mm. The thickness **36** of the guide-like portion **16** was about 5 μm.

[0141] As shown in **FIG. 5**(*b*), the fine channel was formed in a Pyrex (trademark) glass substrate **32** having a size of 70 mm×38 mm×1 mm (thick) according to conventional photolithographic and wet etching techniques, and a cover member **34** comprising a Pyrex (trademark) glass substrate having the same size as the fine channel substrate in which penetration holes **35** having a diameter of 0.6 mm were formed mechanically at positions corresponding to inlet ports A **28**, B **29** and outlet ports C **30**, D **31**, was prepared. The cover member was thermally bonded on the fine channel substrate to seal hermitically the fine channel.

[0142] Water and cyclohexane were supplied respectively into the fine channel device at the same flow rate in a range of from 5 μL/min to 20 μL/min in the same manner as in Example 1. Water was supplied from an inlet port A **28** and cyclohexane was supplied from an inlet port B **29** under the above-mentioned flow rate condition, and an amount of cyclohexane in which an amount of water was contaminated discharged from an outlet port C **30** and an amount of water in which an amount of cyclohexane was contaminated discharged from an outlet port D **31** were measured by a graduated cylinder respectively. Table 1 shows a result of measurement. As a result, contamination percentages of water to cyclohexane and contamination percentages of cyclohexane to water showed very high values such as 30% or more even at any flow rate.

[0143] Further, by using the same fine channel device and in the same manner as Example 2, cyclohexane was supplied at a fixed flow rate of 8 μL/min, and water was supplied by changing the flow rate in a range of from 3 μL/min to 20 μL/min. Namely, water was supplied from the inlet port A **28** and cyclohexane was supplied from the inlet port B **29** under the above-mentioned flow rate condition so that a ratio of the flow rate of water to that of cyclohexane is in a range of from 0.375 to 2.5, and an amount of cyclohexane in which an amount of water was contaminated discharged from the outlet port C **30** and an amount of water in which an amount of cyclohexane was contaminated discharged from the outlet port D **31** were measured by a graduated cylinder respectively. Table 2 shows a result of measurement. As a result, contamination percentages of water to cyclohexane and contamination percentages of cyclohexane to water showed very high values such as 20% or more even at any flow rate ratio.

Example 3

[0144] In Example 3, fine channel devices having the structure as shown in **FIG. 6**(*b*) and having the inner structure of fine channel as shown in **FIG. 6**(*a*), used in Example 1, were used wherein minimum distances between adjacent partition walls in a flowing direction of fluid were 200 μm and 400 μm. One side of the inner wall of the fine channel of each of the fine channel devices was subjected to a hydrophobic treatment according to the following procedures.

[0145] First, a saturated KOH-ethanol solution was supplied from the inlet port A **28** and the inlet port B **29** at a flow rate of 5 μL/min for about 30 min. Then, toluene was supplied from the inlet port A and a toluene solution of 10% octadecyltrichlorosilane was fed from the inlet port B at a flow rate of 5 μL/min for about 3 hr. As a result, one side of the inner wall of the fine channel through which only the toluene was supplied from the inlet port A to the outlet port C **30** was kept to have hydrophilic properties which was derived from the nature of the Pyrex (trademark) glass substrate itself, and the other side of the inner wall of the fine channel through which the toluene solution of 10% octadecyltrichlorosilane was fed from the inlet port B to the outlet port D **31** was modified to have hydrophobic properties.

[0146] Water and cyclohexane were supplied respectively at the same flow rate in a range of from 3 μL/min to 50