

In the microfluidic device 1 according to the first embodiment of the invention, the temperatures of the two or more temperature adjustment heaters 4 can be preferably adjusted independently. The two or more temperature adjustment heaters 4 can have the temperature thereof adjusted independently, which can achieve the temperature control with high accuracy.

[0058]

As mentioned above, the second embodiment can provide the miniaturized microfluidic device 1 with the heater that has a simple structure without needing adhesion means for improving the heat transfer between the heater block and the device, and which can form the uniform temperature regions. The two or more temperature regions with different temperatures can be formed to thereby adjust the fluid in the reaction flow path 3 to various temperatures, which can provide the microfluidic device with good temperature controllability.

[0059]

(Third Embodiment)

Fig. 78 is a top view of a microfluidic device 1 according to a third embodiment of the invention in which temperature regions (first temperature region 10, second temperature region 11, and third temperature region 12) are arranged side by side in three lines. While in the second embodiment, the temperature regions are arranged side by side in two lines, in the third embodiment, the temperature regions are arranged side by side in three lines, which is the different point between the second and third

embodiments. This embodiment is the same as the first and second embodiments except for the above-mentioned point.

[0060]

As shown in Fig. 78, the first temperature region 10,
5 the second temperature region 11, and the third temperature region 12 are formed at the microfluidic device 1. In each of the first, second, and third temperature regions 10, 11, and 12, the reaction flow path formation regions 5 and the temperature adjustment heater formation regions 6 are
10 alternately arranged in the one direction P. The first temperature region 10, second temperature region 11, and third temperature region 12 are arranged side by side in the direction different from the one direction P, for example, in the direction Q substantially perpendicular to
15 the one direction.

[0061]

In the microfluidic device 1 according to the third embodiment of the invention, first reaction flow path formation regions 5a included in the first temperature
20 region 10, and second reaction flow path formation regions 5b included in the second temperature region 11 are arranged in a staggered manner. The reaction flow paths 3 formed in the first and second reaction flow path formation regions 5a and 5b which are disposed close to each other
25 are preferably formed to communicate with each other to thereby form one continuous reaction flow path 3 over the first

[0065]

In this way, the microfluidic device 1 with the temperature regions arranged side by side in three lines can be manufactured. The number of the reaction flow paths 3 and/or temperature adjustment heaters 4 each continuously formed across the two temperature regions can be increased to form four or more lines of the temperature regions.

[0066]

Alternatively, in the microfluidic device 1 according to the ~~second~~third embodiment, the temperature adjustment heater 4 formed in one temperature adjustment heater formation region 6 that is included in each of the first temperature region 10, the second temperature region 11, and the third temperature region 12 may be bent twice or more. This can enhance the reaction efficiency of the fluid (reactive material or the like) in the reaction flow path 3.

[0067]

Further, in the microfluidic device 1 according to the ~~second~~third embodiment, the reaction flow path 3 formed in one reaction flow path formation region 5 that is included in each of the first temperature region 10, the second temperature region 11, and the third temperature region 12 may be bent twice or more.

[0068]

As mentioned above, the third embodiment can provide the miniaturized microfluidic device 1 with the heater that has a