

[Claims]

1. A reaction processor that performs a reaction process of a sample by causing the sample to reciprocate repeatedly between a denaturation temperature region and an annealing and elongation temperature region inside the channel of a reaction processing vessel, comprising:

a liquid feeding system that controls the pressures on the respective sides of the sample inside the channel in order to move the sample between the temperature regions and stop the sample in each of the temperature regions,

wherein the liquid feeding system includes a liquid feeding pump that allows the pressure on a primary side and the pressure on a secondary side to be equal to each other when stopped,

wherein the liquid feeding system maintains the pressure inside the channel to be higher than the atmospheric pressure in the surrounding environment of the reaction processor,

wherein the liquid feeding pump is arranged inside a pressurized chamber having an internal pressure higher than the pressure in the surrounding environment of the reaction processor,

wherein an output of the liquid feeding pump communicates with a first communication port that is provided at one end of the channel of the reaction processing vessel, and

wherein an inside of the pressurizing chamber communicates with a second communication port that is provided at the other end of the channel of the reaction processing vessel.

2. The reaction processor according to claim 1,

wherein a difference between pressures on the respective sides of the sample inside the channel is generated by the operating the liquid feeding pump such that the difference serves as a propulsive force for the sample to move between the temperature region inside the channel.

3. The reaction processor according to claim 2, wherein,

by stopping the pump, the pressures on the respective sides of the samples inside the channel are equalized and the sample is stopped in each of the temperature regions inside the channel.

4. The reaction processor according to any one of claims

1 to 3, wherein the liquid feeding pump is a micro blower.

5. The reaction processor according to any one of claims

1 to 4, wherein the reaction processor performs PCR.

6. The reaction processor according to claim 5, comprising:

a connection channel that connects the denaturation temperature region and the annealing and elongation temperature region;

one or more fluorescence detectors for detecting fluorescence emitted from the sample inside the connection channel; and

a control unit for controlling the liquid feeding system based on a signal detected by the fluorescence detectors.

7. A reaction processing method that performs a reaction process of a sample by causing the sample to reciprocate repeatedly between a denaturation temperature region and an annealing and elongation temperature region inside the channel of a reaction processing vessel, comprising:

moving the sample between the temperature regions and stopping the sample in each of the temperature regions by controlling the pressures on the respective sides of the sample in the channel; and

maintaining the pressure inside the channel to be higher than the atmospheric pressure in the surrounding environment of the reaction processor,

wherein the liquid feeding pump is arranged inside a

pressurized chamber having an internal pressure higher than the pressure in the surrounding environment of the reaction processor,

wherein an output of the liquid feeding pump communicates with a first communication port that is provided at one end of the channel of the reaction processing vessel, and

wherein an inside of the pressurizing chamber communicates with a second communication port that is provided at the other end of the channel of the reaction processing vessel.

8. The reaction processing method according to claim 7, comprising:

moving the sample in the channel while using a difference between pressures generated on respective sides of the sample inside the channel as a propulsive force by operating a liquid feeding pump communicated to the channel; and

stopping the sample inside the channel by stopping the liquid feeding pump so as to equalize the pressures on the respective sides of the sample inside the channel.

9. The reaction processing method according to claim 8,

wherein the liquid feeding pump allows the pressure on a primary side and the pressure on a secondary side become equal

to each other when stopped.

10. The reaction processing method according to any one of claims 7 to 9, wherein the reaction processing method is a PCR method.

11. The reaction processing method according to claim 10, comprising:

detecting fluorescence emitted from the sample inside a channel connecting the temperature regions; and

controlling the movement and stopping of the sample based on a fluorescence signal detected by the fluorescence detectors.