

Claims

[Claim 1] An electrophoresis device, comprising:

a plurality of capillaries each filled with a separation medium;

a thermostat chamber for holding the capillaries at a predetermined temperature;

an irradiation detector which executes light irradiation and detection in an electrophoresis process using the capillaries;

a high voltage power supply unit for voltage application to the capillaries;

a liquid feeding mechanism for feeding the separation medium to the capillaries; and

an autosampler for conveying containers each holding a reagent or a sample to the capillary, wherein the voltage application to the capillaries by the high voltage power supply unit is controlled for each of the capillaries,

wherein the high voltage power supply unit includes one high voltage power supply, and a plurality of high voltage ports,

wherein an output from each of the high voltage ports is fixed, and

wherein each connection between the capillaries and the high voltage ports is switchable.

[Claim 2] The electrophoresis device according to claim 1, wherein the high voltage power supply unit includes high voltage power supplies by a number equal to a number of the capillaries.

[Claim 3] The electrophoresis device according to claim 1, wherein:

an output from each of the high voltage ports is variable; and

a number of the high voltage ports is equal to a number of the capillaries.

[Claim 4] The electrophoresis device according to claim 1, wherein:

the high voltage power supply unit includes a plurality of high voltage power supplies each generating a fixed output; and

each connection between the capillaries and the high voltage power supplies is switchable.

[Claim 5] The electrophoresis device according to claim 1, further comprising a plurality of units of the autosamplers.

[Claim 6] The electrophoresis device according to claim 5, wherein:

a number of the autosamplers is equal to a number of the capillaries; and

each of the autosamplers is driven biaxially.

[Claim 7] The electrophoresis device according to claim 5, wherein:

the autosamplers are provided with a plurality of containers which contain reagents or samples;

each of the containers has a connection port to be connected to one of the capillaries; and

the connection ports of the containers are arranged in a single row on each of the autosamplers.

[Claim 8] The electrophoresis device according to claim 6, wherein:

the containers include a cartridge or a sample container for holding the sample, a separation medium container for holding the separation medium, a cathode-side buffer solution container and an anode-side buffer solution container, each holding buffer solution

for the voltage application to both ends of each of the capillaries, and a waste liquid container; and

each of distances between a connection port of the waste liquid container and a connection port of the separation medium container, between a connection port of the cathode-side buffer solution container and a first connection port of the anode-side buffer solution container, and between a connection port of the cartridge or the sample container and a second connection port of the anode-side buffer solution container is equal in length.

[Claim 9] The electrophoresis device according to claim 5, wherein the liquid feeding mechanism for feeding the separation medium to the capillary is installed on each of the autosamplers.

[Claim 10] An electrophoresis device, comprising:

a plurality of capillaries each filled with a separation medium;

a thermostat chamber for holding the capillaries at a predetermined temperature;

an irradiation detector which executes light irradiation and detection in an electrophoresis process using the capillaries;

a high voltage power supply unit for voltage application to the capillaries;

a liquid feeding mechanism for feeding the separation medium to the capillaries; and

an autosampler for conveying containers each holding a reagent or a sample to the capillary, wherein the voltage application to the capillaries by the high voltage power supply unit is controlled for each of the capillaries,

wherein:

the liquid feeding mechanism is connected to a separation medium container which holds the separation medium and a buffer solution container which holds buffer solution for voltage application to the capillaries;

the liquid feeding mechanism includes connection ports for connection to the capillaries, and flow paths for connecting the capillaries to the separation medium container and the buffer solution container; and

the flow path is provided for each of the connection ports.

[Claim 11] The electrophoresis device according to claim 10, wherein a number of the connection ports is equal to a number of the capillaries.

[Claim 12] The electrophoresis device according to claim 10, wherein the flow path is provided with a valve.

[Claim 13] An electrophoresis device, comprising:

a plurality of capillaries each filled with a separation medium;

a thermostat chamber for holding the capillaries at a predetermined temperature;

an irradiation detector which executes light irradiation and detection in an electrophoresis process using the capillaries;

a high voltage power supply unit for voltage application to the capillaries;

a liquid feeding mechanism for feeding the separation medium to the capillaries; and

an autosampler for conveying containers each holding a reagent or a sample to the capillary, wherein the voltage application to the

capillaries by the high voltage power supply unit is controlled for each of the capillaries,

wherein the container for holding the sample is a cartridge in which a pretreatment of the sample is executed.

[Claim 14] The electrophoresis device according to claim 13, further comprising a heating/cooling unit for executing temperature control of the cartridge, wherein the heating/cooling unit includes a heat exchanging element for heating or cooling the cartridge, a radiator for improving cooling efficiency, and a heat conductive block for transferring heat to the cartridge.

[Claim 15] The electrophoresis device according to claim 13, further comprising a heating/cooling unit for executing temperature control of the cartridge, wherein the heating/cooling unit includes a heater for heating the cartridge, and a heat conductive block for transferring heat to the cartridge.

[Claim 16] The electrophoresis device according to claim 13, wherein:

the autosampler includes a cartridge cover for fixing the cartridge to the autosampler; and

the cartridge cover is provided with a heating/cooling unit for executing temperature control of the cartridge.

[Claim 17] The electrophoresis device according to claim 14, further comprising a plurality of heating/cooling units each with differently set temperature.

[Claim 18] The electrophoresis device according to claim 14, wherein the heating/cooling unit is disposed for each of the cartridges to be installed.

[Claim 19] The electrophoresis device according to claim 14, wherein the heating/cooling unit includes a plurality of units of the heat conductive blocks for a single unit of the radiator.

[Claim 20] The electrophoresis device according to claim 19, wherein:

each of the heat conductive blocks of the heating/cooling unit is provided for each of the cartridges to be installed; and

the radiator is used by the plurality of cartridges to be installed.

[Claim 21] The electrophoresis device according to claim 1, further comprising a holder for aligning the capillaries, wherein:

the holder collectively fixes detection regions of the capillaries, which are irradiated with light from the irradiation detector; and

both ends of each of the capillaries are individually separated.

[Claim 22] The electrophoresis device according to claim 21, wherein each of the capillaries is detachable from the holder.