cooling element which can include a plurality of thermoelectric devices, and a heat sink including a surface. The surface includes a plurality of projections for engaging the heating and cooling element to hold the heating and cooling element on the heat sink. The projections can be aligned with a space between adjacent thermoelectric devices such that the projections engage adjacent edges of the thermoelectric devices.

[0008] In another embodiment, a thermal block assembly for use in a biological analysis system includes a heating and cooling element and a sample block having an upper surface with one or more cavities configured to accommodate a sample holder. The sample block includes a lower surface configured to be thermally coupled to the heating and cooling element, the lower surface including one or more slots. The thermal block assembly further includes one or more temperature sensors configured to extend through the one or more slots of the lower surface of the sample block and one or more thermal pads between the one or more temperature sensors and heating and cooling element.

[0009] In another embodiment, a biological analysis system for use with a sample holder configured to receive a plurality of samples includes a sample block configured to accommodate the sample holder, a heating and cooling element, a heat sink, and a drip pan. The drip pan is for engaging the sample block to seal the heating and cooling element and the heat sink from the plurality of samples in the sample holder when the sample holder is positioned on the sample block. The drip pan includes an ejection mechanism for ejecting the sample holder from the sample block.

[0010] Various additional features and advantages of the invention will become more apparent to those of ordinary skill in the art upon review of the following detailed description of the illustrative embodiments taken in conjunction with the accompanying drawings.

Brief Description of the Drawing

What is claimed is:

1. A thermal block assembly for use in a biological analysis system comprising:

a sample block configured to accommodate a sample holder, the sample holder configured to receive a plurality of samples;

a heating and cooling element comprising a plurality of thermoelectric devices; and

a heat sink including a surface, the surface including a plurality of projections for engaging the heating and cooling element to hold the heating and cooling element on the heat sink,

wherein the projections are aligned with a space between adjacent thermoelectric devices such that the projections engage adjacent edges of the thermoelectric devices.

2. The thermal block assembly of claim 1, further comprising:

a thermally conductive material for thermally coupling the heat sink and the thermoelectric devices,

wherein the thermally conductive material includes a plurality of openings and the plurality of projections on the surface of the heat sink are configured to engage the plurality of openings in the thermally conductive material.

3. The thermal block assembly of claim 1, wherein the plurality of projections include a plurality of ridges.

4. The thermal block assembly of claim 1, wherein the heat sink further includes a peripheral edge, the peripheral edge including a plurality of perimeter projections configured to engage a peripheral edge of heating and cooling element.

5. The thermal block assembly of claim 1, wherein the plurality of projections are arranged in a plurality of columns and rows.

6. The thermal block assembly of claim 1, wherein the heating and cooling element includes six adjacent thermoelectric devices and the plurality of projections are arranged in five rows.

7. The thermal block assembly of any of the preceding claims, wherein the sample block has 384 cavities.

8. A biological analysis system comprising a thermal block assembly of any of the preceding claims.