CLAIMS

1. A heat sink comprising:

a heat conducting surface;

a plurality of nozzle arrays arranged such that output ends of nozzles of the plurality of nozzle arrays face the heat conducting surface; and

a plurality of fins configured to at least partially surround each portion of the heat conducting surface facing a respective nozzle array of the plurality of nozzle arrays such that when a nozzle array of the plurality of nozzle arrays ejects a fluid, the plurality of fins direct the fluid ejected by the nozzle array to impinge on a respective portion of the heat conducting surface;

wherein the plurality of fins comprises thermally-activatable fins configured to at least partially surround the respective portion of the heat conducting surface when the respective portion of the heat conducting surface exceeds a predetermined temperature.

2. The heat sink of claim 1, wherein each nozzle array comprises a first nozzle and a second nozzle, wherein a distance between the output end of the first nozzle and the heat conducting surface is shorter than a distance between the output end of the second nozzle and the heat conducting surface.

3. The heat sink of claim 1, wherein the plurality of fins comprises fins of different lengths.

4. The heat sink of claim 1, wherein the plurality of fins extend from the heat conducting surface past an output end of nozzles of the plurality of nozzle arrays.

5. The heat sink of claim 1, wherein the plurality of nozzle arrays protrude from a substrate.

6. The heat sink of claim 1, wherein the plurality of fins comprises rectangular fins or arcuate fins.

7. The heat sink of claim 1, wherein the thermally-activatable fins are at least substantially parallel to the heat conducting surface when the heat conducting surface is below the predetermined temperature.

8. A heat sink comprising:

a heat conducting surface;

a nozzle array arranged such that output ends of nozzles of the nozzle array face the heat conducting surface, the nozzle array comprising a first nozzle and a second nozzle;

a further nozzle array, the further nozzle array being controllable separately from the nozzle array; and

a plurality of fins;

wherein a distance between the output end of the first nozzle and the heat conducting surface is shorter than a distance between the output end of the second nozzle and the heat conducting surface;

wherein the first nozzle is longer than the second nozzle;

wherein each of the first nozzle and the second nozzle is configured to impinge a fluid onto the heat conducting surface; and

wherein the nozzle array faces a first portion of the heat conducting surface and the further nozzle array faces a second portion of the heat conducting surface, wherein the plurality of fins at least partially surround each of the first portion of the heat conducting surface and the second portion of the heat conducting surface; and

wherein the plurality of fins comprises thermally-activatable fins configured to at least partially surround the first portion of the heat conducting surface when the first portion of the heat conducting surface exceeds a predetermined temperature, and configured to at least partially surround the second portion of the heat conducting surface when the second portion of the heat conducting surface exceeds the predetermined temperature.

9. The heat sink of claim 8, wherein each of the output end of the first nozzle and the output end of the second nozzle face the heat conducting surface.

10. The heat sink of claim 8, further comprising:

a reservoir configured to hold the fluid; and

an inlet configured to receive the fluid and further configured to guide the fluid into the reservoir.

11. The heat sink of claim 8, wherein the nozzle array receives a fluid from a first reservoir via a first inlet, and wherein the further nozzle array receives a further fluid from a second reservoir via a second inlet.

12. The heat sink of claim 8, wherein the first nozzle is arranged between the second nozzle and a third nozzle, wherein the distance between the output end of the first nozzle and the heat conducting surface is longer than a distance between the output end of the third nozzle and the heat conducting surface.

13. The heat sink of claim 8, wherein the nozzle array is formed through a stepped substrate, wherein a long nozzle of the nozzle array is accommodated in a tall step of the stepped substrate and wherein a short nozzle of the nozzle array is accommodated in a short step of the stepped substrate.

14. A method for fabricating a heat sink, the method comprising:

arranging a plurality of nozzle arrays such that output ends of nozzles of the plurality of nozzle arrays face a heat conducting surface; and

at least partially surrounding each portion of the heat conducting surface facing a respective nozzle array of the plurality of nozzle arrays with a plurality of fins, such that when a nozzle array of the plurality of nozzle arrays ejects a fluid, the plurality of fins direct the fluid ejected by the nozzle array to impinge on a respective portion of the heat conducting surface;

wherein the plurality of fins comprises thermally-activatable fins configured to at least partially surround the respective portion of the heat conducting surface when the respective portion of the heat conducting surface exceeds a predetermined temperature.