

being successively formed between end portions of said first metallic layer patterns and said second metallic layer patterns, and with successive ones of said junctions being alternately disposed over the peripheral portion of said substrate and the central portion of said substrate respectively, the central portion of said substrate being removed therefrom; and

water droplet sensing means formed on an insulating layer over the junctions in the central portion of said substrate.

3. Humidity sensing apparatus comprising:

a substrate having central and peripheral portions; Peltier cooling means formed upon said substrate;

an insulating layer formed between said Peltier cooling means and said substrate, said Peltier cooling means comprising a plurality of first metallic layer patterns, each first pattern having an end portion overlaying the peripheral portion of said substrate and an end portion overlaying the central portion of said substrate, and a plurality of second metallic layer patterns disposed in an alternating manner with said first patterns, each second pattern having an end portion overlaying the peripheral portion of said substrate and an end portion overlaying the central portion of said substrate, with junctions being successively formed between end portions of said first metallic layer patterns and said second metallic layer patterns, and with successive ones of said junctions being alternately disposed over the central region of said substrate and the peripheral region of said substrate respectively, the central portion of said substrate being removed therefrom; water droplet sensing means formed on an insulating layer over the junctions in the central portion of said substrate;

current generating means for passing electrical current through said Peltier cooling means;

temperature difference sensing means for sensing an open circuit voltage produced by said Peltier cooling means;

switching means for selectively connecting said Peltier cooling means to said current generating means and said temperature difference sensing means;

ambient temperature sensing means for sensing the ambient atmospheric temperature around Peltier cooling means; and

signal processing means for performing computations to derive values of relative humidity and absolute humidity by utilizing measured values which are obtained by said ambient temperature sensing means and said temperature difference sensing means when said water droplet sensing means detects a change in the adherence of water droplets thereto resulting from variation in the level of current produced by said current generating means.

4. Integrated circuit cooling apparatus according to claim 1 in which said first metallic layer patterns and said second metallic layer patterns are thin-film layers.

5. Integrated circuit cooling apparatus according to claim 1 in which said end portions of said first metallic layer patterns and said second metallic layer patterns are electrically connected through a third metallic thin-film layer.

6. Integrated circuit cooling apparatus according to claim 1 in which:

an insulating layer with contact apertures there-through is formed over said Peltier cooling means; and

a metallic thin-film layer is formed passing through said contact apertures to thereby provide contact pads for said Peltier cooling means.

7. Integrated cooling apparatus according to claim 2 in which an insulating layer with contact apertures therethrough is formed over said water droplet sensing means; and

a metallic thin-film layer is formed thereon to provide contact pads for said water droplet sensing means and said Peltier cooling means.

8. Integrated cooling apparatus according to claim 3 in which said ambient temperature sensing means are formed peripherally around said Peltier cooling means.

9. Integrated circuit cooling apparatus comprising: a substrate having a peripheral portion at least partially surrounding an aperture;

an insulating layer overlaying said substrate; and

a Peltier device having a first plurality of metallic elements, each first element having separate end portions overlaying the peripheral portion of said substrate and the aperture respectively, and a second plurality of metallic elements of a dissimilar metal, each second element having separate end portions overlaying the peripheral portion of said substrate and the aperture respectively, the first and second metallic elements being alternately arranged and end portions thereof joined to form a succession of alternate first and second junctions, the first and second metallic elements being disposed on said insulating layer so that the first junctions are located over the peripheral portion of said substrate and the second junctions are located over the aperture, whereby electric current of a suitable polarity through said Peltier device causes cooling of the region surrounding the second junctions.

10. A method of fabricating integrated circuit cooling apparatus, comprising the steps of:

providing a substrate having a major surface with peripheral and central regions;

forming a first insulating layer on the major surface of said substrate;

forming a pattern of first metallic segments of a first metal on the first insulating layer, each first segment having first and second terminal portions located over the peripheral and central regions respectively of the substrate;

forming a second insulating layer over the first insulating layer and first metallic segments;

providing apertures through the second insulating layer at the terminal portions of the first metallic segments;

forming a pattern of second metallic segments of a second metal dissimilar from the first metal, the second segments having first and second terminal portions which are joined to the terminal portions of the first metallic segments so as to provide a Peltier device having a succession of alternate first and second junctions located over the peripheral and central regions respectively of the substrate; and

removing the central region of the substrate to at least a predetermined depth beneath the second junctions.

11. The method of claim 10 including the further steps of: