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[54] **MICRON-SCALE DIFFERENTIAL SCANNING CALORIMETER ON A CHIP**

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[51] **Int. Cl.**[7] **G01N 25/00**

[52] **U.S. Cl.** **374/10**; 374/31; 374/12; 422/51; 422/95

[58] **Field of Search** 374/10, 12, 13, 374/31, 132, 133, 29, 30; 422/51, 95

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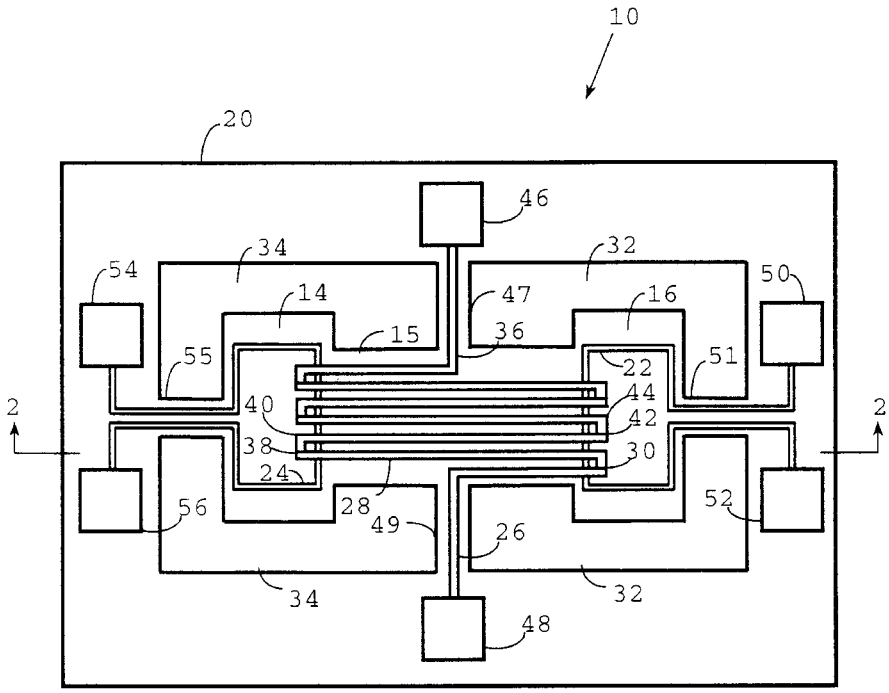
[57] **ABSTRACT**

A differential scanning microcalorimeter produced on a silicon chip enables microscopic scanning calorimetry measurements of small samples and thin films. The chip may be fabricated using standard CMOS processes. The microcalorimeter includes a reference zone and a sample zone. The reference and sample zones may be at opposite ends of a suspended platform or may reside on separate platforms. An integrated polysilicon heater provides heat to each zone. A thermopile consisting of a succession of thermocouple junctions generates a voltage representing the temperature difference between the reference and sample zones. Temperature differences between the zones provide information about the chemical reactions and phase transitions that occur in a sample placed in the sample zone.

20 Claims, 5 Drawing Sheets