temperature) is sensed between leads **89** and **90**. Lead wire **90** is attached to ground. Lead wire **91** of the reference RTD supplies excitation current to the reference RTD, and lead wire **92** is attached to ground. Lead wires **93** and **94** are the voltage sensing leads. The voltage representing the RTD resistance (and hence its temperature) is sensed between leads **93** and **94**. Lead wire **94** is attached to ground.

To apply this sensor in the constant calorimetric sensitivity DSC system described in FIG. **2**, lead wire **87** corresponds to lead wire **14** in FIG. **2**, **90** corresponds to **16**, **91** corresponds to **15**, **93** corresponds to **17** and **88**, **90**, **92** and **94** all correspond to **18**.

The foregoing disclosure of embodiments of the present invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise forms disclosed. Many variations and modifications of the embodiments described herein will be obvious to one of ordinary skill in the art in light of the above disclosure. The scope of the invention is to be defined only by the claims appended hereto, and by their equivalents.

What we claim is:

1. A sensing system for a differential scanning calorimeter comprising:

(a) an electrically insulating substrate;

(b) a sample thin-film resistance temperature detector sensor having a sample output and mounted in a sample region on the electrically insulating substrate;

(c) a reference thin-film resistance temperature detector sensor having a reference output and mounted in a reference region on the electrically insulating substrate;

(d) sample current means for providing a sample current to the sample temperature detector sensor for producing a sample output voltage across the sample resistance temperature detector sensor and reference current means for providing a reference current to the reference current detector sensor for producing a reference output voltage across the reference resistance temperature detector sensor;

(e) a sample temperature amplifier amplifying the sample output voltage and a reference temperature amplifier amplifying the reference output voltage;

(f) a sample temperature calculation function calculating a temperature for the sample region;

(g) a reference temperature calculation function calculating a temperature for the reference region;

(h) means for determining the amplitude of the sample current and means for determining the amplitude of the reference current;

(i) means for amplifying the difference between the temperature of the sample region and the temperature of the reference region; and

(j) means for calculating a differential heat flow to the sample with respect to the reference from the amplified difference between the temperature of the sample region and the temperature of the reference region,

wherein the determined amplitude of the sample current and the determined amplitude of the reference current are modified so as to obtain an amplitude for said currents such that the calorimeter has constant calorimetric sensitivity over a desired temperature range.

2. The sensing system of claim **1**, wherein the temperature of the sample region and the temperature of the reference region are determined using the modified Callender-VanDusen equation.

3. The sensing system of claim **1**, further comprising a sample pan placed on the side of the substrate opposite to the side on which the sample resistance temperature detector is mounted, and a reference pan placed on the side of the substrate opposite to the side on which the reference resistance temperature detector is mounted.

4. The sensing system of claim **1**, wherein the reference thin-film sample temperature detector is a platinum thin film resistor, and wherein the reference thin-film resistance temperature detector is also a platinum thin film resistor.

5. The sensing system of claim **4**, wherein the platinum thin films are deposited on the insulating substrate.

6. The sensing system of claim **4**, further comprising a layer of dielectric material over the sample resistance temperature detector sensor and a layer of dielectric material over the reference resistance temperature detector sensor.

7. The sensing system of claim **1**, wherein the electrically insulating substrate comprises a symmetric pair of lugs and a base.

8. The sensing system of claim **1**, wherein the electrically insulating substrate is a polycrystalline ceramic disk.

9. The sensing system of claim **1**, wherein the electrically insulating substrate is a disk fabricated from an amorphous material.

10. A method for measuring the differential heat flow to a sample with respect to a reference comprising:

(a) providing a sample thin-film resistance temperature detector sensor deposited on a sample region on a first surface of an electrically insulating substrate and a reference thin-film resistance temperature detector sensor deposited on a reference region on the first surface of the electrically insulating substrate;

(b) placing a sample in a sample pan and a reference pan on a surface of the electrically insulating substrate opposite to the first surface of the electrically insulating substrate;

(c) providing a sample sensing current to the sample thin-film resistance temperature detector, said sample sensing current producing a sample output voltage across the sample resistance detector, and providing a reference sensing current to the reference thin-film temperature detector, said reference sensing current producing a reference output voltage across the reference resistance detector;

(d) measuring the amplitude of the sample output voltage and measuring the amplitude of the reference output voltage;

(e) determining the amplitude of the sample sensing current and the amplitude of the reference sensing current, and modifying the determined amplitudes of said sample and reference sensing currents so as to obtain amplitudes for said sensing currents such that the calorimeter provides constant calorimetric sensitivity over a desired temperature range;

(f) calculating the temperature of the sample region and the temperature of the reference region from the amplitude of the sample output voltage and the amplitude of the reference output voltage;

(g) amplifying the difference between the temperature of the sample region and the temperature of the reference region; and

(h) calculating a differential heat flow to the sample with respect to the reference from the amplified difference between the temperature of the sample region and the temperature of the reference region.

11. The method of claim **10**, further comprising calibrating a zero differential heat flow line, said zero differential