second sealing means, disposed in said second cylindrical recess, for providing an air tight seal between said pressurization cap and said ampoule cap when said second threaded neck orifice is tightly connected to said upper threaded opening of said ampoule cap; and,

capilliary tubing means embedded in said pressurization cap for applying a pressurized inert gas to said ampoule container through said pressurization cap and said ampoule cap.

20. A differential calorimeter for measuring the absolute heat capacity of a sample substance, comprising:

a thermally conductive heat sink having a cylindrical middle section, conical end sections adjacent to both ends of said middle section, and end plates integrally attached to said conical end sections, said heat sink having a longitudinal axis through the center of said middle section, said conical end sections and said end plates;

a pair of heat capacity measuring cells symmetrically disposed within said middle section of said heat sink, one of said measuring cells containing a reference substance, and the other of said cells containing a sample substance;

a cylindrical isothermal shield attached to said end plates and surrounding said heat sink;

a pair of first resistance heating elements each having a resistance proportional to the heat capacity of the end plates applied to said end plates for providing heat to said end plates;

a pair of second resistance heating elements each having a resistance proportional to the heat capacity of said conical end sections and middle section applied to the heat sink at the intersections between the end plates and the conical end sections for providing heat to said conical end sections and said middle section;

a third resistance heating element having a resistance proportional to the heat capacity of said shield applied to the shield for providing heat thereto;

said first, second and third resistive heating elements connected electrically in series; and

power supply means coupled to said series connected resistive heating elements for applying a common current to each of said heating elements;

whereby said temperature scanning means uniformly heats said heat sink such that any thermal gradients within said middle section of said heat sink are essentially constrained parallel to said longitudinal axis of said heat sink.

21. A calorimeter according to claim **20**, wherein said resistive heating elements comprise:

non-inductively wound manganin wire heating elements.

22. A calorimeter according to claim **20**, wherein said resistive heating elements comprise:

etched foil heater elements.

23. A calorimeter according to claim **20**, further comprising:

temperature monitoring means for sensing the temperature of said heat sink at various points in time;

processor control means coupled to said temperature monitoring means for computing an instantaneous temperature scanning rate at said various points in time, and for generating a feedback control signal proportional to the difference between said calculated instantaneous temperature scanning rate and a predetermined temperature scanning rate; and

programmable power supply means coupled to said calculating means and said plurality of heating elements for applying power to said heating elements in accordance with said feedback control signal generated by said processor control means.

24. A calorimeter according to claim **23**, further comprising:

a source of cold fluid;

cooling coils connected to said source of cold fluid, said cooling coils surrounding said isothermal shield and reducing the temperature of said heat sink upon application of cold fluid through said cooling coils;

whereby negative temperature scans of said heat sink from high to low temperatures are enabled, said cold fluid in said cooling coils providing coarse control of the temperature scan, and said processor control means, said programmable power supply means and said heating elements providing fine control of the temperature scan.

25. In a method for determining the absolute heat capacity of a sample substance using a differential scanning calorimeter based on the heat leak principle, wherein said sample substance and a reference substance are disposed in a thermally conductive heat sink surrounded by an isothermal shield, the improvement in scanning the temperature of said heat sink comprising:

attaching a plurality of individual heating elements to the surfaces of parts of said heat sink and said isothermal shield for providing amounts of heat to respective of said parts of said heat sink and said isothermal shield in proportion to the heat capacity thereof, said heating elements each having a resistance proportional to the heat capacity of said parts of said heat sink and said isothermal shield to which said heating elements respectively provide heat;

surrounding said heat sink and said isothermal shield with cooling coils;

passing a cooling fluid through said cooling coils, thereby lowering said temperature of said heat sink and producing a negative temperature scan;

measuring the instantaneous heat sink temperature at various points in time;

determining the instantaneous temperature scanning rate at said various points in time;

generating a feedback control signal based on a variation of said instantaneous scanning rate from a predetermined constant scanning rate;

applying power proportionately to said individual heating elements based on the individual resistances thereof and in accordance with said feedback control signal, thereby minimizing any deviation in said scanning rate from said predetermined constant scanning rate.

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