

stability



Pressure Perturbation Calorimetry

Pressure Perturbation Calorimetry (PPC) measures differential heat change (ΔQ) in a biopolymer solution when the pressure above the solution is changed. The differential heat change is used to calculate volumetric properties of biopolymers in solution. PPC expands the capability of differential scanning calorimetry to include information on macromolecular solvation, accessible surface area and solvent structure. (US Patent Number 6,485,173).

Features include:

- Fully compatible accessory for VP-DSC
- Small footprint
- User selectable pressures from 0 to 5 atm
- Automatic data collection in VPViewer™ software
- Push-button routines for complete data analysis in Origin® software

Applications of PPC:

- Coefficients of thermal expansion (α)
- Volumetric properties of proteins in solvents
- Volumetric changes of lipid bilayers
- Volumetric changes associated with binding
- Volumetric changes of polymers in solution



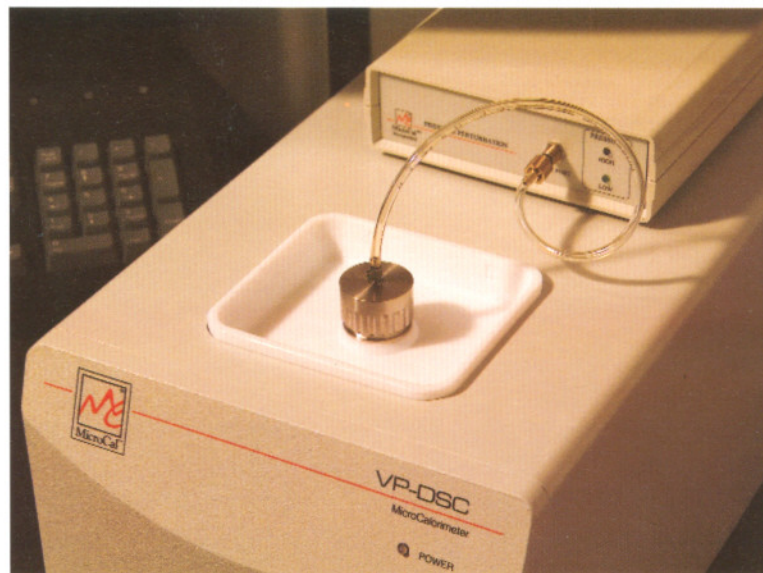
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PPC is an innovative technique that can be integrated into a standard VP-DSC instrument, thereby providing important capabilities over-and-above those available with other DSC instruments. With dilute biopolymer solution in the sample cell and the corresponding buffer in the reference cell, an induced change in pressure above the solutions produces a differential heat between two cells whose magnitude can be used to calculate the thermal expansion coefficient (α) of the biopolymer volume. This parameter can in turn be used to determine volume changes associated with conformational changes related to ligand binding and molecular interactions. Thermal expansion coefficients are known to be strongly influenced by biopolymer-solvent interactions and thereby provide important information on accessible surface and hydrophobic interactions.

Designed for ease of use, the PPC accessory for the VP-DSC calorimeter is easily integrated and controlled by an intelligent user-interface (VPViewer™) and data analysis is performed in Origin®, a market leading data analysis package. All functions are operated through helpful push-button routines thereby facilitating fast and accurate analyses without the need for extensive knowledge of thermodynamics.

PPC benefits:

- True in-solution method - no chemical tagging or immobilization of components
- PPC accessory easily integrated to VP-DSC calorimeter
- Gives additional information for optimizing binding affinities
- Gives information on molecular solvation, accessible surface area and solvent structure
- Fast and knowledge-rich compared to other analytical methods
- Easy data analysis with Origin® software and push-button routines



Operating Pressure Range	0 to 5 atm
Weight (PPC accessory)	0.5kg / 1 lb
Dimensions (PPC accessory)	13 x 4 x 14 cm 5 x 1.5 x 5.5 inches



Ultrasensitive Calorimetry for the Life Sciences™

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