L75 / SDD
Simultaneous **D**ilatometer **D**TA

Standard dilatometer measurement with additional DTA evaluation.

By means of this software any normal installed Linseis Dilatometer is now able to achieve additional DTA information / enthalpy values out of Dilatometer runs.

Typical Dilatometer measurements usually determine the expansion delta L and expansion coefficient CTE of a sample. Very often the samples display an endothermal or exothermal reaction.
These reactions cause a very small effect to the normally constant heating or cooling rate. For example if the sample requires energy during a phase transition, it will draw this energy from of the Dilatometer measuring system. In turn the furnace controller will compensate for this heat loss in order to obtain a constant heat up rate.

These small deviations in the constant heating rate and the real temperature signal which is obtained from a heat loss or gain result in the DTA signal. The actual measured values are compared to a calculated heating or cooling curve. Using this procedure it is possible to get caloric enthalpy measurements from a Dilatometer.

On next page we show an example of this software where the Alpha / Beta transition of quartz is shown. The sample had a mass of 450mg and a volume of 3x4x5mm.

The transition is endothermic during the heating phase and exothermic during the cooling phase. The measured value of the onset temperature is 573°C and it is identical to the literature value. To get these results, a normal Dilatometer measurement file is loaded. Next the Dilatometer file is changed into a DTA curve format. DTA evaluation can now be displayed using normal procedure for evaluating onset and offset temperatures.

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