

Theory

A solid state sample of original length l_0 expands to length l if heated from t_0 to t . This length alteration moves a mirror mounted on the sample, in one arm of a Michelson interferometer and results in changes in optical path difference between the two arms of the Michelson interferometer causing N interference fringes variation. The relationship is:

$$|l - l_0| = \Delta l = N \cdot \lambda / 2 \quad (2-1)$$

The linear thermal expansion coefficient of the sample under test can be calculated as:

$$\alpha = \frac{l - l_0}{l_0(t - t_0)} \quad (2-2)$$

Under “Setup” mode, the sample temperature to be reached can be preset on the digital Temperature Controller by tuning the “Setup Knob”. Under “Measurement” mode, current oven temperature is acquired and displayed on the digital panel. Through the control of a temperature sensor, the oven will continue to heat the sample until the preset temperature is reached.