

## Devices and Methods to Measure Small Displacements (Yeda)

**code:** T4-1815

[Igor Lubomirsky](#), Chemistry, Materials and Interfaces

### Summary

This novel method utilizes polarized light that in contrast to conventional methods does not interact directly with the material or with the material's surface. Here the material to be tested is secured underneath a reflective material, such that the polarized light reflected off the reflective material does not interact with the sample itself. Accordingly, the polarized light is only affected by expansion/contraction of the material that displaces the reflective material, but is not affected by material's properties such as refractive index and surface-layer composition/thickness. The novel methods of this invention thus allow the isolation of expansion/contraction parameters of a material. Accordingly, the methods of this invention allow facile, fast and accurate measurement of expansion/contraction properties of a material using polarized light.

### Applications

Measuring the expansion/contraction of materials for the evaluation of qualitative and quantitative electro-mechanic properties (e.g. piezo-electric parameters) and thermal expansion properties of materials using a sensitive and non-complex system.


### Advantages

Relatively simple and inexpensive High sensitivity - comparable to extremely complex and expensive interferometers Supports a higher frequency range than existing interferometers.

### Technology's Essence

Here the material to be tested is secured underneath a reflective material, such that the polarized light reflected off the reflective material does not interact with the sample itself. Accordingly, the polarized light is only affected by expansion/contraction of the material that displaces the reflective material, but is not affected by material's properties such as refractive index and surface-layer composition/thickness.

#### Contact for more information:

Maya Gofer , Licensing Officer, +972-8-9344546

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Yeda Research and Development Co. Ltd. - Technology Transfer from the Weizmann Institute. P.O. Box 95, Rehovot, 76100, Israel. Tel: +972-8-947-0617