



Fondazione  
Cottino

## **NONINVASIVE DEVICE FOR THE DETECTION OF PATHOLOGY IN THE HUMAN CORNEA and SCLERA**

### **DESCRIPTION:**

The purpose of the project is to design, realise and validate a new device for the non-destructive and noninvasive measurements of the local thermoelastic properties of cornea and sclera.

### **ABSTRACT:**

The purpose of the project is to design, realise and validate a new device for the non-destructive and noninvasive measurements of the local thermoelastic properties of cornea and sclera. **Material and Methods:** The proposed device uses two semiconductor lasers. The pump laser is used to produce a weak local temperature gradient to induce a reversible weak thermoelastic deformation. The thermal expansion is recorded by a position sensor that reveals the change of reflection angle of the reflected probe beam. **Discussion:**

Preliminary results show the validity of the proposed photothermal displacement method for measuring locally the thermal expansion coefficient in materials. The device will give further information on those pathologies related to the viscoelastic properties (nearsightedness, farsightedness, glaucoma, corneal dystrophies such as keratoconus, inflammatory diseases of the sclera, as well as the responses to refractive surgery, especially the crosslinking etc).