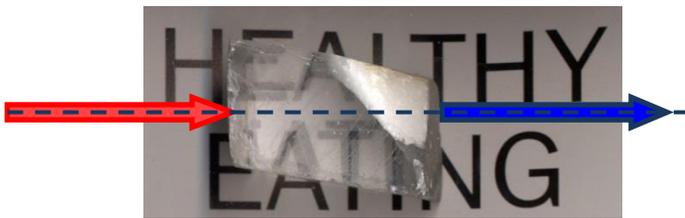
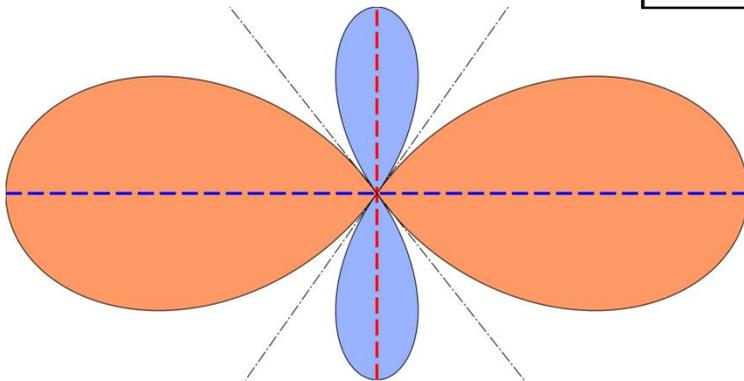


Lecturer: Dr Semën Gorfman

Start date: 09/04/2014



## Course aim

To gain an understanding of peculiar physical properties of crystals.

## Content

### **Introduction.**

- Materials properties: physical and mathematical concepts
- Tensors and matrices: mathematical introduction, coordinate systems, transformation of tensor components
- Symmetry of crystals and their properties. Crystal classes.

### **Physical properties. Description and applications.**

- Pyroelectric and electrocaloric effect
- Thermal expansion and piezocaloric effect
- Direct piezoelectric and converse piezoelectric effect
- Thermodynamics of materials properties
- Elastic stiffness and elastic compliance
- Propagation of sound waves in crystals
- Elements of crystal optics: birefringence, optical activity, second harmonic generation