

Questions to the subject **Optical Properties of Crystals**

1. Polarization of light. Polarization of planar harmonic wave
2. Description polarization by Jones vectors and matrices.
3. Reflection and refraction
4. Fresnel equations, basic of ellipsometry
5. The principles of interferometric methods, Michelson, Mach-Zehnder, Twyman-Green interferometers.
6. Use of interferometer for measuring of small piezoelectric-induced displacements
7. Holography
8. Optics of anisotropic crystalst. Permittivity tensor, normal directions of polarization, optical Fresnel ellipsoid
9. Uniaxial and biaxial crystals
10. Phase plates
11. Birefringence, the induced birefringence, photoelasticity
12. Precise measurement of birefringence
13. Optical microscopy. Basic methods of microscopy
14. Polarized light microscopy, compensators
15. Conoscopic microscopy, determining of the angle of optical axes
16. Electro-optical phenomena, Pockels and Kerr effects, measuring of electro-optic coefficients
17. Phase modulators, rotators
18. Magneto-optical phenomena, Faraday effect, Magneto-optical Kerr effect
19. Optical activity and its measurement
20. Nonlinear optics, generation of the second and third harmonics, phase automodulation
21. Acousto-optical phenomena