

Special Course "Physics and Technology of Thin Films" for Students of Specialty "Applied Physics"

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Obtaining high quality and reproducible electrical parameters for the thin film layers is one of the most important technological processes of forming structures as discrete diodes and transistors, and active and passive elements IC. Reliability and quality of microelectronic products, technical level and economic indicators of their production, the effectiveness of modern equipment for applying thin films largely depends on the level of personal training. So important and topical is reading course "Physics and Technology of Thin Films" for students specialty "Applied Physics".

The course is read in two semesters. The first dealt with technological aspects of thin film materials, during the second - the main focus is on the physics of thin films.

During the study of thin film technology, students acquire various methods of their creation, particular, methods of thermal evaporation and ion sputtering, liquid and gas phase epitaxy, molecular-beam epitaxy. At the same time study various vacuum systems and equipment for creation thin films, especially the technological modes and control parameters of their creation. The program of special course involves acquaintance of students with the basics of electronic vacuum hygiene and safety at growing thin films.

In the second semester are studied processes of nucleation and films growth, their physical properties. In particular, consider the following question: electric current in thin films, internal tension in films and coatings, thermoelectric properties.

Are considered experimental and theoretical study of the effect of technological factors of growing on properties of thin films based on lead chalcogenides and tin telluride. The use of thin films in semiconductor devices and microcircuits.

The program of special course provided for fulfillment of four laboratory works:

1. Preparation and measurement of high vacuum.
2. Obtaining thin films by thermal evaporation in open vacuum.
3. Obtaining thin films by hot wall method.
4. Measurement of electric parameters of thin films.

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