



National Academy of Sciences of Ukraine
DONETSK PHYSICS&TECHNOLOGY INSTITUTE
named after A. Galkin

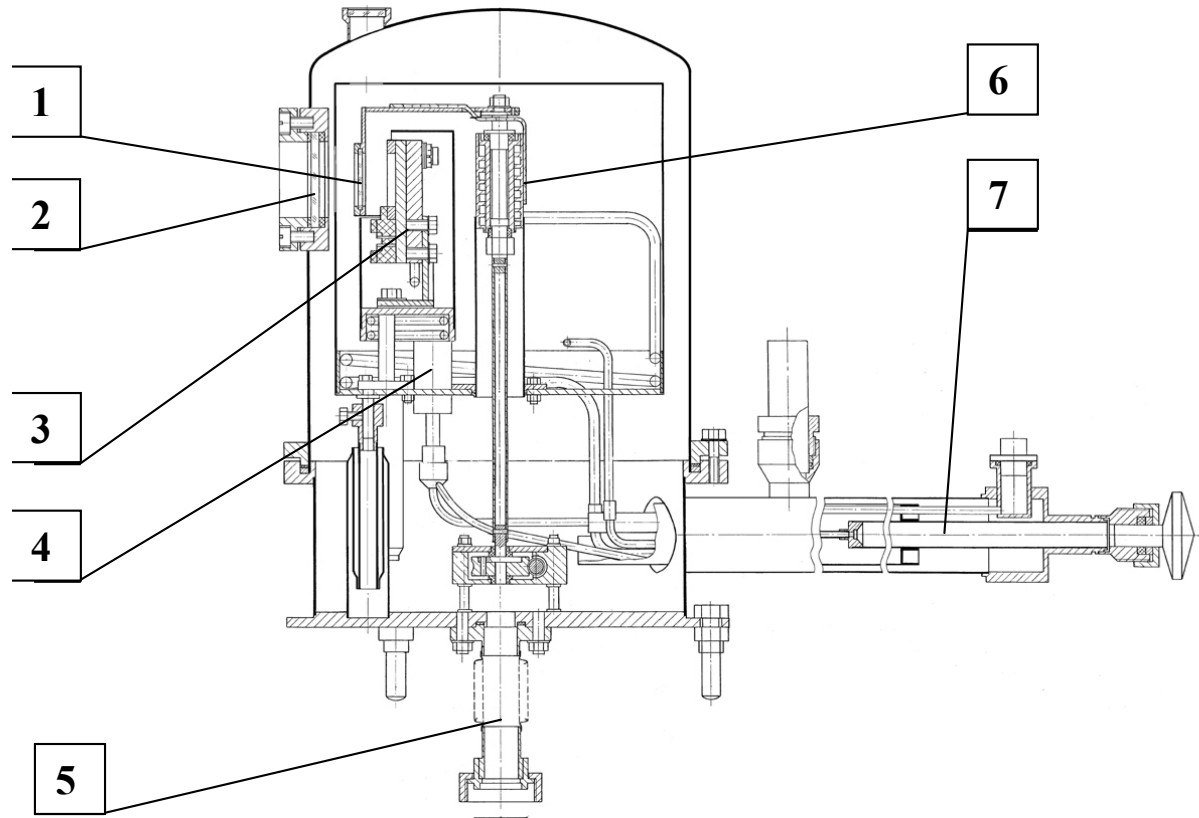
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CRYOSTAT FOR RESEARCH OF PHOTORECEIVERS CRYOSTAT PR.



Cryostat PR is intended for complete solution of research and certification problems relating to characteristics of photosensitive materials and photoreceivers for the 10-300K temperature range in the visible and infra-red regions of radiation spectrum.

Cryostat design is schematically shown in the figure.



1- Cassette with filters, 2 - Window-filter of entrance, 3 – sample holder , 4 - heat exchanger for sample temperature control system, 5 –joint with prepumping vacuum system, 6 – heat exchanger for filter - container temperature control system, 7 – coolant feeding joint

A 60-80 mm PR holder with the built-in heat exchanger is in vacuum. PR thermostating is done by blowing – through the PR holder heat exchanger with coolant of required temperature fed from the temperature – control system heat exchanger equipped with built-in heater.

The heat exchanger of temperature control system is fed with coolant via transfer siphone by vacuum pumping of blowing – through at the expense of excessive pressure generated in transport Dewar vessel.

The cryostat is equipped with two filters for making measurements in the whole spectral range under a single experiment . The first input filter is warm. The second one is cold, it is from the set of intermediate filters. Intermediate filters (5-10 pcs differing in transmission range) are located in a special rotating container, so they can be replaced during the experiment. Moreover, temperature of the filters can be controlled in the 30-300K range irrespective of PR holder temperature. Clear demission of the port and filters makes – 40mm.

In PR holder there are contact arrangements and leads for measuring PR characteristics under operating conditions.

Perfect and high vacuum preventing the formation of precepitates on sample, port and filter surfaces is provided due to :

- prepumping the system in several stages by " flushing" it with gaseous nitrogen for several times, during preparation of experiment;
- maintenance of high vacuum by an incorporated carbon cryosorption pump cooled to helium temperature;
- cleaning the vacuum space for several times by using the incorporated carbon cryosorption pump cooled to helium temperature.

Sample is replaced under cryostat disassembly.

The cryostat and the technique of measurings realized with it allow to imitate the real terms of the PR work in the regular mode with the large degree of authenticity.

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