

DRIVES BASED ON PHOTSENSITIVE LAYERS

Belarusian State University of Informatics and Radioelectronics
Minsk, Republic of Belarus

Voevoda V.V.

Lazarenko A.M – Senior Lecturer

The purpose of this article is to describe about a new type of disks based on polymeric photosensitive layers.

Despite the digital age and the dominance of cloud storages, the traditional optical technologies, hardware and other computer memory components are still being widely used, in the first turn in large corporations and governmental organizations.

Every individual requires on average about 1.5 Tb of the computer memory. All the data is used on a daily basis and needs to be stored. In order to store information CD-ROMs were developed.

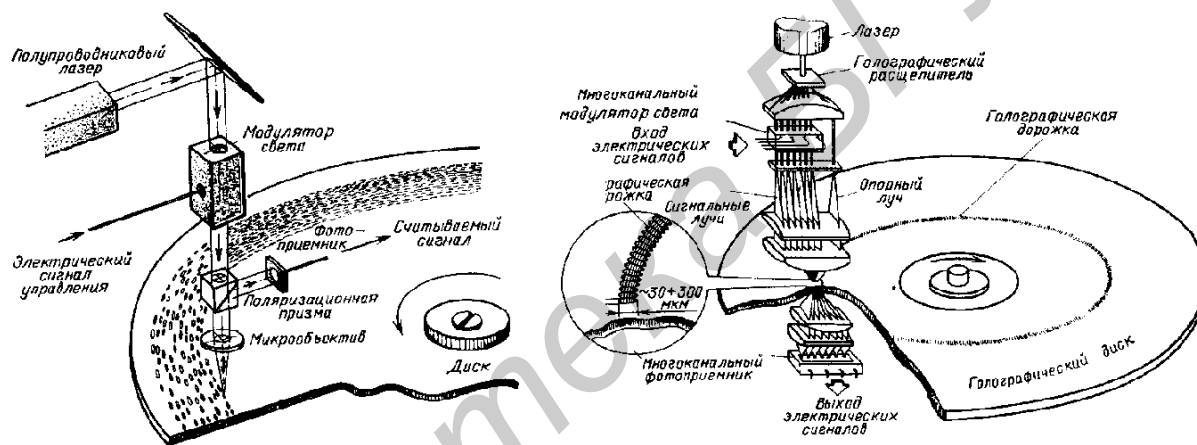
A new type of drives, developed in OWL "Technopolis", has many differences from the old types.

In comparison with drives that are used now, new carriers have a number of advantages.

Engineers managed to considerably increase the capacity of the new disks: DVD drive volume from 4.7 GB to 8.5 Gb, Blu-ray from 25 up to 128 GB, while the polymer reaches from 60 GB to 1 TB.

Write speed of polymer discs reaches 12 Gb/s while the DVD does not exceed 25 Mb/s and 40 MB/s Blu-ray.

One layer of functionality of the new drive can burn up to 30 GB of information. DVD layer 2.5 GB is stored at 25 Gb Blu-ray.



This amount of information can be written down due to a decrease in the size of the holes on the layer and an increase in their number, respectively. The record is produced by Ray in the 700 nm, and read only 440 nm.

The number of functional layers was increased up to 60. 2 layers are used on each DVD side, which makes 4 layers in total. Blue ray has 8 functional layers, 4 on each side correspondingly.

Media developed by the Moscow "Technopolis" OWL are based on waveguide structure with alternating polymer and photo-functional layers. In this case in the polymer layers there are built-in diffraction gratings that provide the addressing of the reading radiation to the selected functional layer.

Substances of the class of chromons (phenolic compounds with the general formula C6-C3 formed in plants) are used to form functional layers. Their properties to change the optical characteristics due to two-photon absorption are used to realize the process of recording information on a carrier. The information is read in parallel mode due to the single-photon excitation of the fluorescence of a plurality of recorded bits in a predetermined region of the layer.

In addition, the surface of the disc is some polymeric layers for light distribution laser reader. Allegedly engineers of "Technopolis" say: "Such a disc can contain a much larger number of recording layers than any existing format discs. In the future, the number of recorded information can reach 360 terabytes. "

Development of media tap is important in a rapidly developing world.