

Nanooptics and nanophotonics

Small-sized holographic devices with polymer based reversible recording medium

**N.A.Davidenko, I.I.Davidenko, V.A.Pavlov, S.L.Studzinsky, N.G.Chuprina,
E.V.Mokrinskaya, N.N.Kuranda**

*Chemical Department, Kiev Taras Shevchenko National University.
Volodymyrs'ka Str., 64, Kiev-01601, Ukraine.
E-mail: mokrinskaya@ukr.net*

The information systems with low cost and high processing speed are preferable in energy saving technologies. Holographic and electro-magneto-optical light modulators are the important components of such systems. In these components storage, accumulation and processing of the optical information is accomplished in recording (photoactive) mediums [1]. The films of polymeric composites where optical anisotropy or conductivity can be induced by illumination appear among these mediums. The mediums for following purposes are developed for practical application and tested: (i) polarization holography and electro-magneto-optical light modulators; (ii) photothermoplastic holographic recording. New azobenzene polymers and their polycomplexes with metals were chemically synthesized for the first case. Cooligomers of vinylcarbazole doped with organic dyes were used in the case (ii). Stage of fundamental investigations of photophysical properties preceded creation of the mediums. The model conceptions of formation of photoinduced optical anisotropy, photogeneration and transport of nonequilibrium charge carriers as well as formation and development of latent holographic image were elaborated. Selective spectral sensitivity for light wavelength of used lasers is the significant advantage of these mediums as compare to another known information mediums. This fact allows to use the mediums practically without special protection against external illumination.

1. http://www.youtube.com/watch?v=EZynG_qkGvM