Photocyclization of organic compounds as a universal method of creating recording systems for optical memory devices

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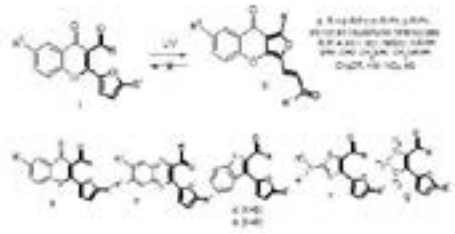
In recent years, the prospects of an increase in the capacity of data storage media (up to 1 Tera-bytes/cm3) are related to the development of multilayer light-sensitive optical discs using light-sensitive organic compounds for data recording and readout. Preparation of the effective com-pounds, which undergo photochemical transformations providing 3D operative and archival op-tical memory with ultra-high storage capacity due to non-destructive fluorescence readout, is one of the key problems of molecular electronics. This presentation discusses our results on the de-velopment of photochromic and photochromogenic polymer materials and recording media thereof for three-dimensional (3D) bitwise working and archival optical memory. The synthesis of original chromones and their analogues, photochromic diarylethenes, as well as their charac-terization are reported. The results of spectral-kinetic studies were applied to the development of polymeric recording layers based on the synthesized compounds and the design of multilayer recording media for optical disks. We demonstrated that UV-irradiated acylchromones and their analogues that show no fluorescence irreversibly rearrange into fluorescent furano[3,4-b] chromenones II. Based on the latter, we have developed multilayered recording media for optical discs of the WORM type.



Biography

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