Abstract

The volume of digital data is increasing every day. So there is need to develop new memory
architectures to provide more cost-effective storage capacity, processing speed and data transfer bandwidth. For many years, researchers have been studying organic molecules and their potential applications in information technology, such as the use of biological molecules to encode, manipulate and retrieve information. There are existing biological molecules whose two stable states of their atomic structure can be controlled. These states represent the logic states of 0 and 1 by benefiting from the photo cycle of these photosensitive proteins. A number of alternative methods to integrated circuit information storage have surfaced recently. The most promising of the new alternatives is protein-based optical memory storage using Bacteriorhodopsin (bR). In this paper we study about bR (unit of protein memory), process of protein extraction, photocycle, its application and limitations. Various computational methods like – Write-data, Read-data, Erase-data and Refresh-memory with emphasis on Bacteriordopsin are studied. We also throw light on potential areas of application of protein memory.

References


**Index Terms**

Computer Science  
Information Technology

**Keywords**

Optical storage  
protein based memory  
two photon absorption (TPA)  
Bacteriorhodopsin (bR)

3-D matrix

photocycle