Title: Effect of temperature on the activity of Bacteriorhodopsin as a candidate for nano protein memory

Authors: monireh besharati vineh, Ahmad Molaeirad

Abstract: <strong>Introduction:</strong> Biological and physical Laws have created the newly scientific movement in the electronics and its allied industries by discovering a newly developed storage solution. Technique involving in the information storage at the molecular level has received special attention in order to increase the capacity and to speed up the data storage. In this technique each molecule plays a role as storage device. Optical storage of information at the molecular level can be performed by using photo reversible materials. Using optical storage is effectively applicable for data processing, because of high rate of chemical reactions of photosynthesis. Bacteriorhodopsin (bR) is a protein with simple optical system in which the variety in chemical states is observed. In present study the effect of protein activity on both bR suspension and bR in a film pre-coated on Polycarbonate Groove was evaluated at different temperatures. 

<strong>Method:</strong> At the first step of experiment, Gelatin-polyvinyl alcohol matrixes weight/volume 1% as a film and bR 3.2 mg/ml were prepared. Then the protein activity in different temperature conditions was examined by measuring changes in the pH.

<strong>Result</strong>: The best action in bR suspension was observed at temperatures below 20 °C. However, the bR in film pre-coated on Polycarbonate Groove obtained the best action at temperatures above 60 °C. These two samples have received appropriate activities at different temperatures ranging between 4 and 65 °C. The results revealed that bR suspension had the best activity at temperatures below 10 °C, on the other hand, bR in film pre-coated on Polycarbonate Groove had the best activity at temperatures above 65 °C.

**Conclusion:**

Bacteriorhodopsin, temperature, nano protein memory

Presentation: Poster