

## C626678 : MAJOR BIOTECHNOLOGY

KEY WORD: ORGANIC POLYMER / BIOPOLYMER / OPTICAL PROPERTIES / ELECTRIC FIELD / LENS  
KAESINEE WONGTHAVORNPINIT : ORGANIC POLYMER WITH OPTICAL PROPERTIES  
UNDER ELECTRIC FIELD. THESIS ADVISOR : LERSON THANASUKARN, Ph. D. 95 pp  
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Some physical and optical properties of organic and biopolymer were studied by varying the internal factors (charges) and external factors [dielectric constant (20.7 - 68.6), pH (2.25 - 6.25), electric field (1.75 - 13.5 v/cm)] with the aim of developing a polymer lens whose focal length can be controlled by adjusting the electric field passing through the lens. Organic polymer were cross-linked polyacrylamide gel slab, cross-linked polyacrylamide gel microsphere (0.4 - 8.0  $\mu$ m), acrylamide acrylic acid copolymer, Carbopol 940 gel and non cross-linked polyacrylamide gel. Biopolymer were kappa-carrageenan, sodium alginate and gelatin. Results showed that polyacrylamide gel was suitable for optical properties because it was transparent ( $A_{700} = 0$  and  $A_{400} = 0.03$ ) and its size and shape could easily be changed by varying the electric field through the gel. By focal length were function of electric field (58.8 cm at 1.75 v/cm and 13.6 cm at 8.11 v/cm)

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