

## Dye Retention by a Photochemically Crosslinked Poly(2-Hydroxy-Ethyl-Meth-Acrylic) Network in Water

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**Abstract :** The purpose of this work is to study retention of dye dissolved in distilled water, by an hydrophilic acrylic polymer network. The polymer network considered is Poly (2-hydroxyethyl methacrylate) (PHEMA): it is prepared by photo-polymerization under UV irradiation in the presence of a monomer (HEMA), initiator and an agent cross-linker. PHEMA polymer network obtained can be used in the retention of dye molecules present in the wastewater. The results obtained are interesting in the study of the kinetics of swelling and de-swelling of cross linked polymer networks PHEMA in colored aqueous solutions. The dyes used for retention by the PHEMA networks are eosin Y and Malachite Green, dissolved in distilled water. Theoretical conformational study by a simplified molecular model of system cross linked PHEMA / dye (eosin Y and Malachite Green), is used to simulate the retention phenomenon (or Docking) dye molecules in cavities in nano-domains included in the PHEMA polymer network.

**Keywords :** dye retention, molecular modeling, photochemically crosslinked polymer network, swelling deswelling, PHEMA, HEMA

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