

# Photo-cross-linked Solketal Acrylate Gel Multilayer Thin Films: Fabrication, Characterization and Comprehensive Study Surface Plasmon Resonance/Optical Waveguide

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## Abstract

For the improvement of poly (N-isopropylacrylamide) properties, new series of poly (N- isopropylacrylamide-Co-acrylic acid-Co-vanillin acrylate) terpolymer was fabricated with molar concentrations 5, 10, 15 mol% of acrylic acid (AA) with 10mol% of vanillin acrylate (VA). Monomer and polymers were chemically evaluated using (1H NMR, 13C, FTIR, and UV); all structures emphasized logic results. The post-polymerization has been done for terpolymer with 10 and 10 mol % of AA and VA with tryptophan and threonine; it has simply reacted by click reaction through the formation of Schiff base imine group as the reaction of vanillin's aldehyde group with the nucleophilic amine of amino acid; they were chemically investigated. Polymers and post-polymers have been physically characterized. Molecular weight and dispersity by size exclusion chromatography SEC, crystallinity by X-ray diffraction, glass transition temperature by differential scanning calorimetry, thermogravimetric analysis for the decomposition of polymers, the morphological features of polymers by scanning electron microscopy SEM. lower critical solution temperature of terpolymers and comparing them with homo-PNIPAAm, in addition to, the comparison of terpolymer after and before posting, two methods were used, the first was turbidity by UV-VIS spectroscopy for all polymers, another method used micro-DSC. These polymers and hydrogel will be used in the post-polymerization of many biomolecules for biomedical applications.

## Biography:

Momen S.A. Abdelaty is Assistant Professor at Chemistry department, Faculty of Science, Al-Azhar University. He has finished his bachelor in general chemistry at Al-Azhar University. Mater thesis in polymer chemistry has been finished at Chemistry department, Faculty of Science, Al-Azhar University. He has granted PhD scholarship in University of Paderborn Germany from 2008-2012 with the group of Professor Dr. Dirk Kuckling. The project title was photo-cross-linked polymers and hydrogel thin film. After that he has followed postdoc scholarship with the same group. Till now he is working as Assistant Professor in polymer chemistry at Chemistry department, Faculty of Science, Al-Azhar University

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