



Synthesis and Characterization of Photopolymerizable Hydrogels for Biomedical Applications

Prutha Joshi

Auburn University, USA

Abstract:

The research is based on how the synthesized hydrogels can be made to obtain cellular structures for tissue engineering applications. In our research we focused on the synthesis of different varieties of poly(ethylene glycol) dimethacrylate (PEGDMA) formulated from poly(ethylene glycol) (PEG) of different molecular weights and further photocured in the presence of a photoinitiator (Irgacure 184). The modified gelatin and chitosan were synthesized by controlling the degree of methacrylation of primary amine groups present in polysaccharides. The combination of the properties of poly(ethylene glycol) dimethacrylate (PEGDMA) macromer and polysaccharides were observed in synthesized double networks (DN) for synergistic effects of unique properties of both components resulting in the interpenetrating polymeric network for making it functional for replacement of injured tissues inside the human body. Chemical, thermal, mechanical, rheological, and morphological characteristics were studied, as well as biodegradability. The ability of these hydrogels as material for cell growth was investigated for application towards tissue engineering. The stereolithography (SLA) 3D printing was carried out with the macromer and double network of macromer systems to get variety in properties of the hydrogel to make it a complex-structured scaffold for tissue engineering.



Biography:

Dr. Joshi has completed her Ph.D. in August 2020 at the age of 25 years from Auburn University, Alabama, USA after her M.S. in 2018. She is the Chemical Engineering Consultant at a company, Innovative Billboards. She has presented in many conferences, nationally and internationally while pursuing graduate studies. She has the passion towards the research and will continue to serve more to the field of science.

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