

# 8<sup>th</sup> World Congress on Chromatography

4<sup>th</sup> International Conference on

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## Polymer Science and Technology

September 13-14, 2018 | Prague, Czech Republic

### L-Alanine induced Thermally Stable Self-Healing Guar gum hydrogel as Potential Drug Vehicle for Sustained Release of Hydrophilic Drug



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Hydrogels are 3D polymeric networks, which are hydrophilic and cross-linked via covalent or non-covalent interactions. Because of their soft nature with similar physical properties to soft tissues attracts more attention in biomedical application but due to its weak mechanical strength and non-healable nature, its application are still restricted in biomedical field. This article introduces a simple approach of preparing self-healable guar gum-graft-acrylic acid (GG-PAA) hydrogel using first time L-alanine as a cross-linking agent which alters the various properties of hydrogel such as mechanical strength ( $G' = 90,570 \text{ Pa}$ ). A series of guar gum (GG) based hydrogel were synthesized by varying the concentration of L-alanine (from 0.4-1% w/v) which was used as a cross-linking agent. Hydrogel was characterized by HRSEM and Rheology studies which explore the morphology and mechanical strength of hydrogel; further it was investigated that synthesized GG based hydrogel showed good swelling ability with excellent self-healing property. The highly water soluble drugs have a tendency to burst rapidly into human body which is undesirable and thus, this hydrogel may be helpful to overcome this problem too and found fruitful applications in biomedical field.

#### Biography

Swati sharma is persuing her Ph.D programe in polymer chemistry, from Institute of science, Banaras Hindu university. She has published four papers in reputed journal, and three are in under review. She is now Ph.D research scholar in chemistry department, Banaras hindu university, INDIA.

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