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Name of Scholar : **Suhail Ahmad**
Name of the Supervisor : **Dr. Saiqa Ikram (Supervisor)**
Prof. Roli Purwar (Co-Supervisor)
Name of the Department/Centre : **Chemistry**
Topic of Research : **Synthesis, Characterization of Polysaccharide based Hydrogels and their Inorganic Nanocomposites as Superabsorbents.**

Findings

Natural gums possess numerous exciting properties. They are remarkably renewable, biodegradable, biocompatible, easily available, and in-expensive. Often, the functional and structural properties of these polymers are superior to the synthetic polymers. Nevertheless, their value can be enhanced by inducing various chemical modifications into their structural backbone. Functionalization of natural polymers generates variety of derivatives that have tendency to form special architectures such as nanogels and hydrogels. Keeping these facts in mind, we established the objective of testing several chemical modifications to these natural polymers to increase their interest and utility in hydrogel formation for agriculture and hygienic application. Different hydrogels were developed based on natural polymers. These modified natural polymers like natural gum based crosslinkers were then covalently crosslinked with other biopolymers like poly vinyl alcohol resulting in the formation of hydrogels. The hydrogels were formulated via acetal, Schiff base and amide linkages. Different types of inorganic salts were loaded on to these hydrogels and their sustained release behavior was studied. The crosslinker concentration dominantly affects the various properties like mechanical strength, swelling, water retention, reswelling and salt sensitivity behavior of these hydrogels. which suggests potential application of these hydrogels in agriculture and hygienic application.