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Mechanical, rheological and viscoelastic properties of polysaccharide and protein based aerogels

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ABSTRACT:

Aerogels are light and porous solid materials derived from gels and find applications in catalysis, wastewater treatment, and in automotive and aerospace industries. Aerogels are considered as a viable bio-based alternative for petroleum derived foams. This chapter is an in-depth review of different types of polysaccharides and protein based aerogels, such as cellulose, starch, hemicellulose, whey protein, soy protein and silk fibroin. A description of the factors affecting the mechanical properties of aerogels, and the rheological and viscoelastic concepts of hydrogels is presented. The chapter also focuses on how the properties of aerogels can be improved through chemical or physical routes.