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## STD-NMR Applied to Study Intermolecular Organization of Polymers-Ionic Liquids Hydrogels

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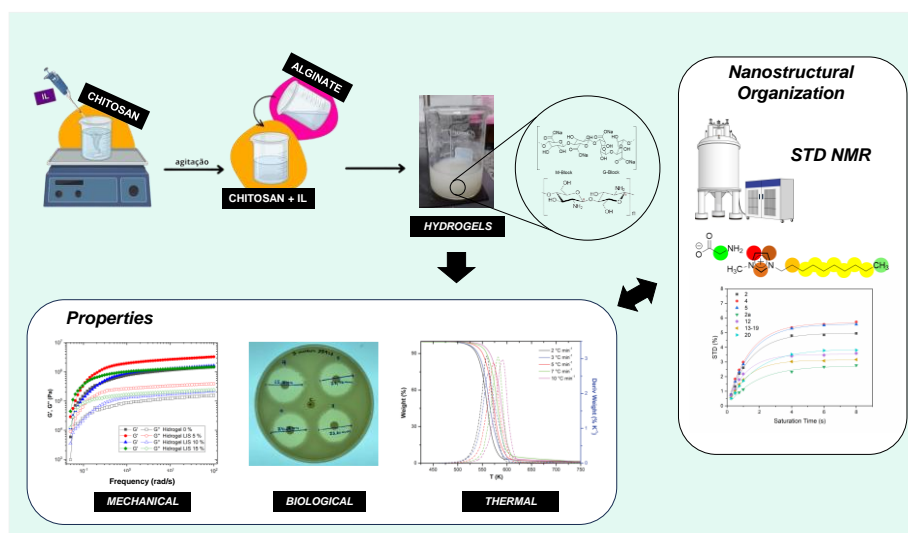
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### ABSTRACT

The interaction between two natural polysaccharides, an anionic (sodium alginate) and a cationic (chitosan) one in the presence of ionic liquids in an aqueous medium, can result in the formation of promising hydrogels for applications such as cosmetics and in food industry. In this study, four ILs were synthesized and applied in the obtention of hydrogels derived from polyelectrolyte complexes<sup>1,2</sup>. The ILs are derived from imidazolium cation with an alkyl side chain and an organic anion – from amino acids (glycine and lysine) or essential oils (clove and cinnamon). The synthesis involved an S<sub>N</sub>2 reaction of methylimidazole with the respective alkyl halide, followed by anion exchange (from halide to hydroxide) using resin and subsequent neutralization with acid of the anion of interest. The physicochemical properties of pure ILs and as additive of gels were evaluated. Structural characterization of hydrogels was conducted using Saturation Transferance Difference-Nuclear Magnetic Resonance (STD-NMR). Thermal properties were assessed through Thermogravimetric Analysis (TGA) and Differential Scanning Calorimetry (DSC) to determine thermal behavior and stability. Mechanical properties were evaluated using oscillatory rheology.



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