

The relevance of physical and chemical fundamentals to boost industrial application of natural deep eutectic systems

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Sugars, aminoacids or organic acids are typically solid at room temperature. Nonetheless when combined at a particular molar fraction they present a high melting point depression, becoming liquids at room temperature. These are called Natural Deep Eutectic Solvents – NADES. NADES are envisaged to play a major role on different chemical engineering processes in the future, playing a significant role towards the development of greener and sustainable processes. NADES applications go beyond chemical or materials engineering and cover a wide range of fields from biocatalysis, electrochemistry and carbon dioxide capture. In this presentation we review some of the work we have developed on the exploration of these systems in applications with significant impact in our well-being. For this reason, and owing to their many desirable solvent characteristics, NADESs have been rapidly accumulating from the beginning of this century in scientific literature as green media. For the vast potential applications of NADESs to come to reality, the availability of physical properties is a prerequisite. Furthermore, the physical properties of compounds, such as density, viscosity, surface tension, boiling and freezing points, etc., play crucial roles in identifying the nature of compounds at a microscopic level. In this communication we will discuss the fundamental properties of NADES coupled with the relevance of their understanding in the design of new chemical engineering processes.

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