STUDY OF CARRAGEENAN FERRIC OXIDE TENSION SENSORS

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This research presents a comprehensive exploration of the development and experimental study of piezoresistive sensor prototypes based on carrageenan and ferric oxide (Fe_2O_3), while also highlighting their key features and properties. These materials, abundant and accessible, showcase promising potential for the spread of green technologies in sensing applications.

Carrageenan, recognized for its favorable structure and compatibility with biomedical applications, takes centre stage as the foundational element of the sensor. Its selection is strategic, capitalizing on its properties to optimize sensor performance. Simultaneously, the inclusion of Fe_2O_3 in the sensor design exploits its semiconductor properties, facilitating the exploration of current variations induced by strain and establishing a reliable range of effective sensing.

Incorporating glycerol becomes essential to improve elasticity and shield the material from environmental impact. This addition ensures flexibility, preserving the sensor's integrity across diverse conditions. The research not only contributes to sustainable sensing technologies but also highlights the affordability, accessibility, and eco-friendly attributes of carrageenan and Fe_2O_3 based sensors, showcasing their potential applications in various fields.

[1] U. Žaimis, J. J. Petronienė, A. Dzedzickis, and V. Bučinskas. Biodegradable Carrageenan-Based Force Sensor: An Experimental Approach. Sensors, vol. 23, no. 23, p. 9423, Nov. 2023. doi: 10.3390/s23239423.