

Dr. Prachi. R. Bonde: A Study on Structural, Optical, and Electrochemical Properties of Nanoparticles of Polyaniline along with its application

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A Study on Structural, Optical, and Electrochemical Properties of Nanoparticles of Polyaniline along with its application

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Abstract:

In this study, the structural, optical, and electrochemical properties of chemically oxidatively polymerized polyaniline nanoparticles (PANi NPs) are investigated. The researchers get more understanding of the optical band gap, shape, electrical structure, charge transport behaviour, and redox characteristics of the nanoparticles by employing a variety of analytical approaches. This paper also explores potential applications of PANi NPs in biological applications, sensors, electrochromic devices, energy storage, and corrosion prevention. PANi NPs' high specific capacitance and energy density are examined as potential supercapacitor electrode materials. As analyte contact occurs, conductivity changes are used in the fabrication and characterization of gas sensors. Additionally, PANi NPs are assessed for altering light transmission in displays and smart windows. Because of their self-healing and conductive qualities, they are also being investigated for corrosion prevention coatings. The study's conclusion highlights important findings and offers recommendations for more PANi NP research and development for cutting-edge technological applications.

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