



PSGR
Krishnammal College for Women



Affiliated to Bharathiar University | Autonomous | College of Excellence | Accredited with A++ Grade | Ranked 9th in NIRF 2025

INTERNATIONAL CONFERENCE on **ADVANCED MATERIALS FOR SUSTAINABLE TECHNOLOGIES – 2026**

8 – 9 January 2026



**INSTITUTION'S
INNOVATION
COUNCIL**
(Ministry of Education Initiative)



Souvenir

organized by

PG & Research Department of Chemistry

Synthesis, Structural Characterization, and Electrochemical Analysis of La–Sr Doped NiO₃ Perovskite for Energy Storage Applications

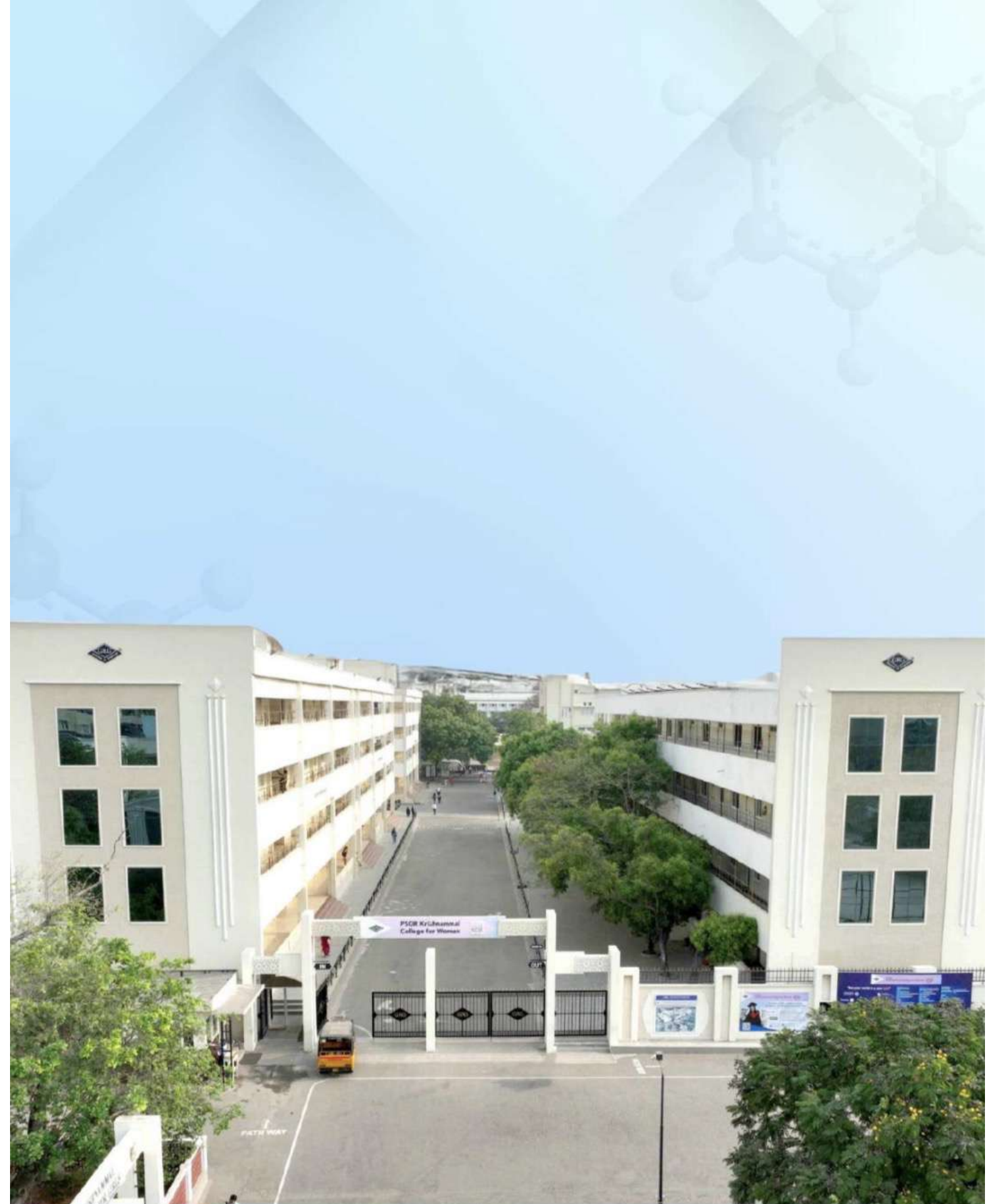
*Jeya Priya C V, Gowthami V**

Department of Physics, School of Basic Science, Vels Institute of Science, Technology and Advanced Studies, Pallavaram, Chennai, Tamil Nadu.

*gowthamivijayakumar@gmail.com

The increasing demand for efficient energy storage systems has accelerated research into advanced electrode materials that can balance high energy and power densities. In contrast, supercapacitors offer ultrafast charge–discharge cycles, high power density, and excellent cycle life, but their low energy density hinders large-scale applications. To address this challenge, La,Sr-doped NiO₃ Perovskite was synthesized via a controlled co-precipitation route, followed by thermal treatment to achieve optimized crystallinity and morphology. The co-doping strategy improves electrical conductivity, redox activity, and structural stability, thereby enhancing electrochemical performance. Structural analysis XRD, FTIR, SEM- EDAX, BET and XPS is underway to validate functional groups, morphology, and elemental states. Electrochemical performance was assessed in alkaline electrolyte using cyclic voltammetry (CV), galvanostatic charge–discharge (GCD), electrochemical impedance spectroscopy (EIS). The optimized La, Sr-doped NiO₃ electrode demonstrated high specific capacitance, excellent rate capability, and superior cycling stability, retaining over 90% of capacitance after 10,000 cycles. Reduced charge-transfer resistance and enhanced ion transport highlight the synergistic role of La–Sr substitution in improving conductivity and electrochemical kinetics.

Keywords: Nanomaterial, Metal oxide, Structural studies, Electrochemical Analysis, Energy storage.



IOR INTERNATIONAL PRESS
5/11, Perumal Kovil Street
Naickenpalayam
Coimbatore-641020 Tamil Nadu, India.

Book Barcode: 978-81-987992-9-6

