



Name of the Key note Speaker: Prof C D Lokhande

Affiliation: D Y Patil Education Society (Deemed to be University), Kolhapur, India

Prof. C D Lokhande received his M. Sc (1980) and Ph D (1984) in Physics from Shivaji University, Kolhapur , India. After first postdoctoral stay at the Weizmann Institute of Science, Israel, he joined Shivaji University as an assistant professor and became Prof and Head of Physics Department. Presently, he is working as a Research Director and Professor at the D. Y. Education Society, Kolhapur.

Prof. Lokhande's research has made a profound impact on several areas of thin film technology, ranging from chemical synthesis of thin films to their applications in solar cells, gas sensors, and supercapacitors. Moreover, he made a great contribution in designing several prototype devices such as supercapacitors and heterojunction-based room temperature gas sensors.

Prof Lokhande was visiting scientist in the Indo-Polish CEP scheme in 1991; was INSA Visiting Fellow; recipient of Alexander von Humboldt Fellowship, Germany, and Brain Pool fellowship of South Korea; was participant in Noble Laureates Meeting, Lindau, Germany; was visiting Professor at Hanyang University, South Korea.

Prof Lokhande worked as an editorial board member of "Electrochemical Energy Technology," De Gruyter; The Fellow, Maharashtra Academy of Sciences; distinguished visiting professor in polymer chemistry, Institute of Chemical Technology, Mumbai. Prof. Lokhande is the author of more than 650 papers in international journals with "h" index 104 and more than 40,000 citations, edited 25 books, filed more than 85 patents, and directed more than 65 Ph.D. theses.

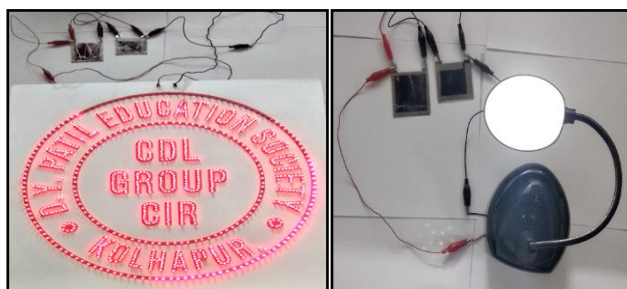
Title of the Talk; Flexible asymmetric all solid-state supercapacitor device.

C. D. Lokhande

Centre for Interdisciplinary Research, D.Y. Patil Education society (Deemed to be University),
Kolhapur 416 006, India.

Abstract:

Portable, flexible and wearable electronics are greatly attracted attention of the world. Among the all-energy storage systems, supercapacitors are widely recognized due to rapid charge –discharge activity, large lifespan, minimum weight, low cost and less toxic electrode materials. In the present work, rGO-CuS and rGO-MnO₂ thin films supported by flexible stainless-steel substrate are used as cathode and anode, respectively. Electrochemical performance of, rGO- MnO₂ electrode measured in 1 M Na₂SO₄ show maximum specific capacitance 363 Fg⁻¹ at scan rate 5 mVS⁻¹. Electrochemical performance of, rGO-CuS electrode measured in 1 M Na₂SO₄ show maximum specific capacitance 408 Fg⁻¹ at scan rate 5 mVS⁻¹. Flexible asymmetric rGO-MnO₂/PVA-LiClO₄/rGO-CuS supercapacitor device is constructed having area 25 cm². Applicability of device is demonstrated from lighting of 1000 red light emitting diodes for 200 S. Other studies such as Stability, shelf life, temperature and humidity are also carried out. A proto-type device charger with solar photovoltaic cell panel is fabricated to show the application of the device.



Keywords: CuS, Energy density, Flexible Supercapacitor, MnO₂.

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