



SRI SIVASUBRAMANIYA NADAR COLLEGE OF ENGINEERING

(An Autonomous Institution)
Kalavakkam – 603 110

ACADEMICS

7.1 Organized sustainability research center, institute, or unit

Submitted to

**The Sustainability Tracking, Assessment & Rating
System (STARS)**

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- List and description of the institution's sustainability research Centre/unit

1. SSNCE's CEWAR

Centre of Excellence in Water Research (CEWAR) is established in the year June 2021 at SSN Institutions. CEWAR is an inter disciplinary initiative that involves experts from different disciplines working in water research area from various universities that are located all over the world. The main aim of CEWAR is to generate interdisciplinary knowledge in collaboration with top universities globally about water ways and system that include resource management, sustainable use of existing water resource, treating wastewater that are generated from domestic appliance through simple and cost-effective techniques and train the next generation students, academicians, scholars and industrial personalities. The agenda of CEWAR is to generate long dimensional view about water research as its need for conserving the society and preserving the nation from water depletion.

CEWAR will engage itself in promoting research, short term training, organising workshop, conference, faculty development program (FDP), publications and many other outreach. CEWAR activities are carried out with internal scholars, faculties along with students and external collaborators. Research at CEWAR will look at treating water and wastewater streams that are heavily polluted with contaminants through various technologies like adsorption, adsorptive and dissolved air flotation, microbial degradation, membrane filtration, electrochemical oxidation and sensing of pollutants. All the above technologies are evolved for its best performance through use of materials that are fabricated using various processes like heat treatment, chemical activation, solvothermal, co-precipitation and many more. It should be highlighted that all the research works that are carried out at CEWAR will show its output in the form of peer reviewed journal publications, dissertation or through popular articles. CEWAR also conducts occasional Training Programs/Seminars/Workshops in the areas of Instrumentation, Calibration, Analysis, Quality Management etc.

<https://www.ssn.edu.in/about-ssnces-cewar/>

2. SSNRC

SSN Research Centre is an extension of the vision and commitment of Shri Shiv Nadar, founder of HCL and the SSN Institutions, for scripting a unique chapter of excellence in education and research in fields vital to India's progress. It is a multi-disciplinary scientific research institution. Its laboratories are devoted to solving problems in cutting edge research topics of promise to future applications. To begin with, the domains of research focus are

Solar Photovoltaics

- Multi crystalline silicon growth and characterisation
- Silicon thin film based planar and radial junction solar cells
- Dye Sensitised Solar Cells
- Perovskite based solar cells
- Quantum dot solar cells

Energy Storage

- Silicon based anode materials for Lithium-Ion battery
- 2D materials for Energy storage applications

Modelling and Simulation:

- Optimization of heat transfer properties of the Directional Solidification process
- Optimization of Oxygen, Carbon and Nitrogen impurities in mc-Si ingot
- Numerical modelling on industrial scale mc-Si growth process for PV application
- Thermal investigation on organic sensitizer for DSSC applications

Materials

Growth of single crystals

- Growth of single crystals by solution and melt growth techniques
- Organic and Inorganic single crystals for nonlinear optical (NLO) applications
- Ternary Chalcogenide materials for thermoelectric applications
- Organic single crystals for radiation and scintillation detector applications

Energy Harvester/piezoelectric Accelerometer

- Development of Lead-free piezoelectric materials
- Development of vertically aligned nanostructures
- Composite materials

Materials for white light emitting diode, Dosimetry and thermoelectric applications

Growth and Characterization of Graphene for Optoelectronic and energy applications

Development of Alternate Transparent Conducting Electrode materials for optoelectronic applications.

Growth of Metal oxide nanostructures by Hydrothermal method for radial junction solar cell applications

PECVD grown Silicon nanowires using Vapour-Liquid-Solid (VLS) mechanism for energy conversion and storage applications

TMD based electrode materials for Battery applications

Values:

- Cutting edge research.
- National relevance
- Uncharted peaks in research
- Symbiosis of research and education
- Global Integration and network
- Inspirational centre for youth

<https://www.ssn.edu.in/research-centre-ssn-institutions/about-ssnrc/>