RAMAKRISHNA MISSION VIVEKANANDA EDUCATIONAL & RESEARCH INSTITUTE · BELUR, WEST BENGAL

Advanced Design & Fabrication Lab

Department of Physics · On the banks of the Ganga, Belur · Make in India Initiative

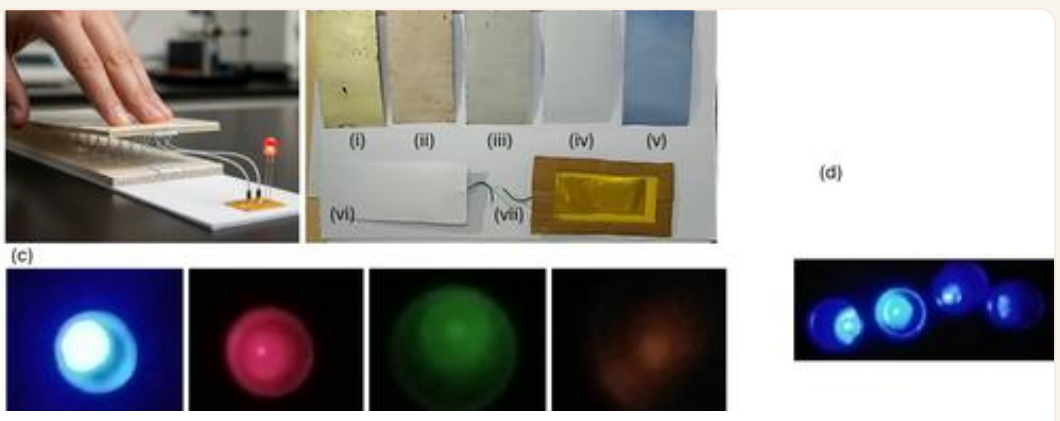
"A small lab. Targeting major challenges in society."

18+	3+	1	∞
Active research domains	Patents in process	Startup incubated	Indigenous device ambition

"True Science is that which helps the masses to rise... We want that education by which character is formed, strength of mind is increased, the intellect is expanded, and by which one can stand on one's own feet."

— Swami Vivekananda

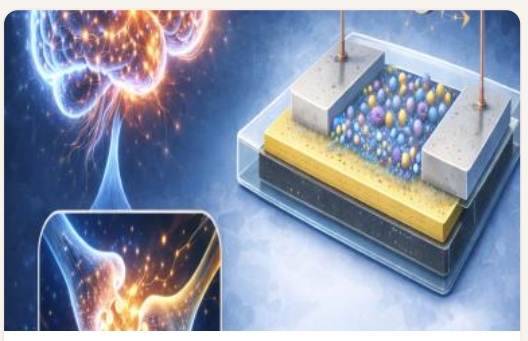
FEATURED RESEARCH PROJECTS



NANOENERGY

Triboelectric Nanogenerator (TENG) for Sustainable Energy

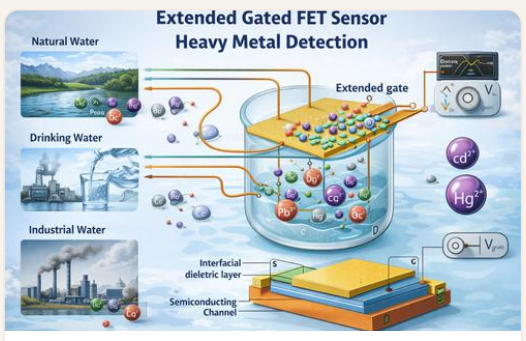
Self-powered flexible devices harvesting ambient mechanical energy. Multiple TENG architectures fabricated and tested in-lab.



NEUROMORPHICS

Neuromorphic Devices & Memristors

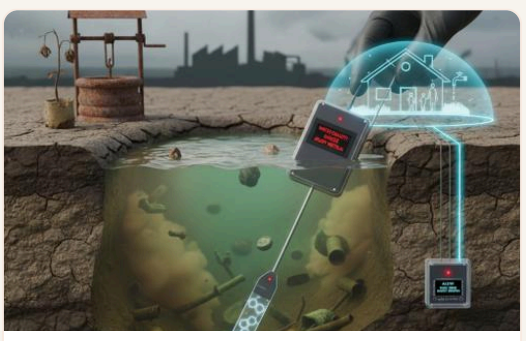
Brain-inspired computing using memristive switching for low-power cognitive hardware.



TRANSISTONICS

Extended-Gate FET Heavy Metal Sensor

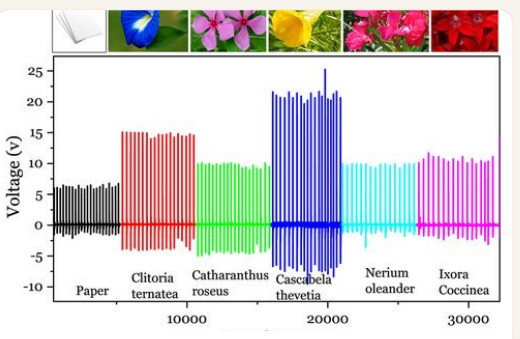
Detecting Pb^{2+}, Hg^{2+}, Cd^{2+} in natural, drinking & industrial water using semiconductor sensors.



AQUAMETRICS

Indigenous Heavy Metal Water Sensor Device

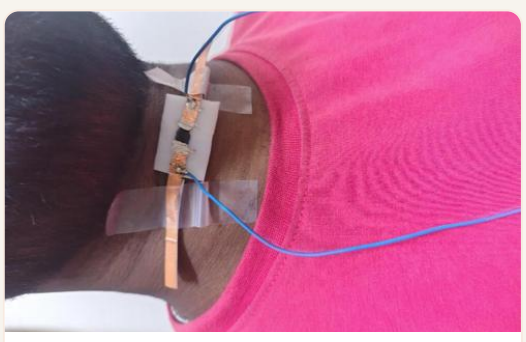
Portable, field-deployable sensor reading Lead, Arsenic & Mercury directly from tap water.



BIOPHYSICS

Plant Electrophysiology & Communication

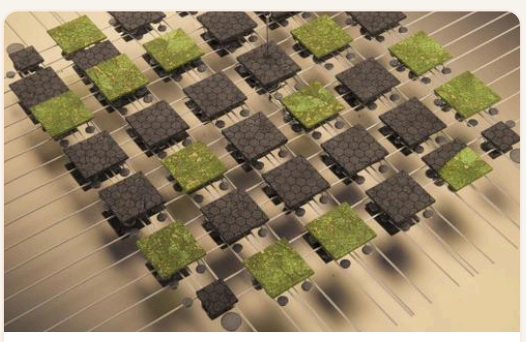
Electrical signal monitoring across Clitoria, Catharanthus, Cascabela & other species under stress.



MEDTRONICS

Flexible Biomedical Wearable Sensor

Body-conformal sensor prototype for pulse, motion, and rehabilitation monitoring.



FLATRONICS

2D Materials & Printed Electronics

Graphene, MoS_2 & hBN-based arrays for inkjet-printed flexible substrates.

HYDROIONICS · STARTUP SANGHA

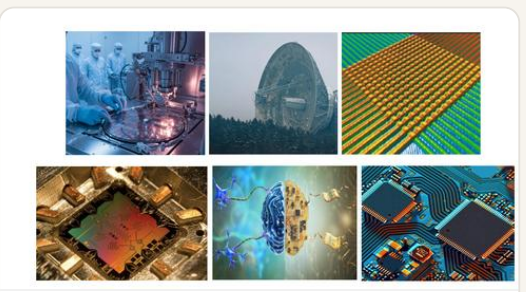
Large-Scale Water Remediation Reactor

Electronic reactor for large-scale heavy metal removal from rivers — from lab bench to industrial scale, addressing India's most critical water safety challenge.

LAB IN ACTION

TENG signal analysis at lab workstation

Wearable sensor experiment in progress



Advanced Electronics & Radio Physics Lab

STARTUP — SANGHA

INDIGENOUS INNOVATION · MAKE IN INDIA

Sangha — Incubated

Designing an electronic reactor for large-scale heavy metal removal from water — addressing one of India's most critical public health and environmental challenges using physics-led, indigenous engineering. Built from the lab bench to industrial scale.

- Indigenous device design — no foreign black-box dependency
- Make in India — lab bench to field deployment
- Startup incubation and industrial partnerships
- Physics-first approach to real-world problems
- Societal impact: water, health, environment, food safety
- Ganga riverbank as both context and motivation

MATERIALS PLATFORM

2D materials (graphene, MoS_2, hBN) · 2D printed electronics · Thin films · Organic semiconductors · Sustainable organic materials · Memristors · Flexible substrates · Nanomaterials · Carbon nanostructures

Atmano mokshartham jagat hitaya cha

For one's own liberation and for the welfare of the world

Department of Physics
RKMVERI, Belur, West Bengal