



Kerala State Young Scientist Award (KSYSA)-2023

Kerala State Council for Science, Technology & Environment has announced the Kerala State Young Scientist Awards (KSYSA) to two talented Young Scientists in recognition of their outstanding contribution in Science & Technology.

1		Dr Murali S Scientist & In-charge Engineering Section ICAR-Central Institute of Fisheries Technology, Kochi
2		Dr Harsha Bajaj Scientist Microbial Process and Technology Division CSIR- NIIST, Thiruvananthapuram

Dr Murali S

Scientist & In-charge
Engineering Section
ICAR-Central Institute of Fisheries Technology, Kochi

Dr. Murali has significantly impacted the field of post-harvest fisheries with notable achievements, including the design of a groundbreaking solar hybrid fish dryer. This innovative system integrates a thermal energy storage medium with sensible heat storage material, optimizing solar energy utilization even during off-sunshine hours. Having secured a patent for this innovation, he has successfully commercialized it, and it is currently in use by various stakeholders across India. Among his diverse innovations is sustainable technology for a hybrid photovoltaic-thermal (PVT)

module. Seamlessly combining solar thermal and photovoltaic (PV) technology, this development enhances both thermal and electrical performance. His proficiency extends to smart technology, as demonstrated by the creation of an IoT-based mobile/SMS alert system for fish dryer users, enabling remote real-time monitoring of fish drying processes. He also introduced a portable non-destructive fish freshness assessment sensor, leveraging image processing and machine learning techniques for real-time evaluation of fish quality.

Dr Harsha Bajaj

Scientist

Microbial Process and Technology Division

CSIR- NIIIST, Thiruvananthapuram

Dr. Harsha has engineered a universal membrane platform with cell-like features employed for quantification of antimicrobial transport, binding and to decipher biomolecular condensate formation in an out-of-equilibrium manner. The membrane model developed may potentially act as universal platform for screening and deciphering assembly mechanism of antimicrobials for effective designing. Importantly, the study opens avenues to comprehend fundamental processes like membrane bending influenced by individual lipids. Tailor-made membrane platforms with defined lipid and protein composition will allow detailed understanding of interaction between anti-cancer peptides and membranes. This will allow for rational design of drugs that can target membranes of drug-resistant bacterium.

Membrane-less organelle dysregulation and its membrane association are involved in many neurodegenerative diseases. Our work enables probing of condensate assembly in a cell-like confinement with a prospect to understand their assembly, nucleation, growth, dissolution and associated chemical reactions with membranes. Our platform will pave way for unravelling the biophysical process of condensate formation in membrane-confined environments with spatio-temporal control and target dysfunctional condensates in cells.