

July – December 2021

Research Newsletter



Volume 03 | Issue 01



BANNARI AMMAN
INSTITUTE OF TECHNOLOGY

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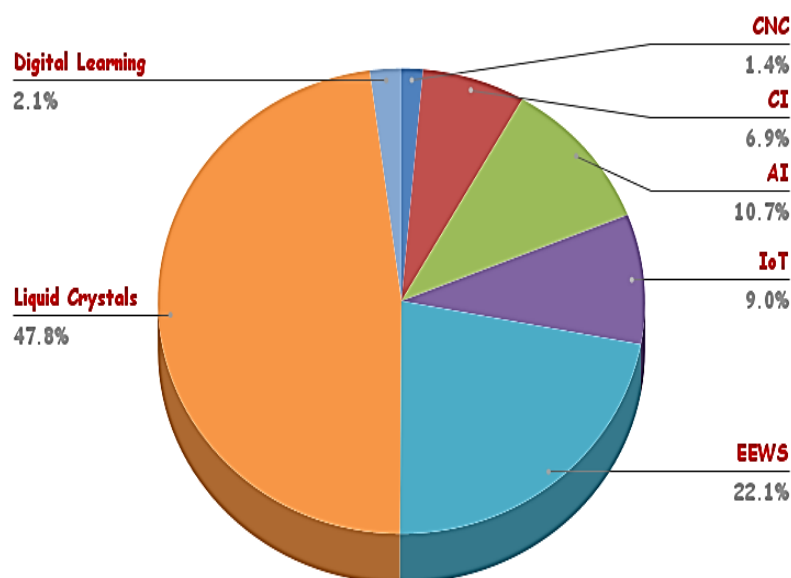
Dr M Thirumoorthy

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INTERNATIONAL COLLABORATIONS

Institute Name	Publication Count	Country
King Saud University	48	Saudi Arabia
National University of Singapore	13	Singapore
Pusan National University	10	South Korea
Sunway University	10	Malaysia
Korea University	9	South Korea
Wuhan University	8	China
Universiti Malaysia Pahang	8	Malaysia

COMPLETED FUNDED PROJECTS (FY 21-22)



TOTAL FUND UTILIZED : Rs. 44,47,601/-

Top researchers of BIT



Dr M L N Madhu Mohan

Liquid Crystals

h-index : **23** | Total no. of Citations : **1470** (Citations by **431** documents)



Dr S Sudheer Khan

Microbial Technology

h-index : **20** | Total no. of Citations : **1705** (Citations by **1453** documents)



Dr K Sivakumar

Optimization

h-index : **16** | Total no. of Citations : **695** (Citations by **585** documents)



Dr V N Vijayakumar

Condensed Matter Physics

h-index : **16** | Total no. of Citations : **735** (Citations by **238** documents)



Dr R Harikumar

Medical Image Processing

h-index : **14** | Total no. of Citations : **1017** (Citations by **622** documents)



Dr V Sathish

Inorganic & Physical Chemistry

h-index : **13** | Total no. of Citations : **495** (Citations by **380** documents)



Dr S Jegadheeswaran

Renewable Energy

h-index : **12** | Total no. of Citations : **933** (Citations by **880** documents)



Dr P Pachamuthu

Catalysis

h-index : **12** | Total no. of Citations : **526** (Citations by **432** documents)



Dr V Chelladurai

Food Process Engineering

h-index : **11** | Total no. of Citations : **418** (Citations by **342** documents)

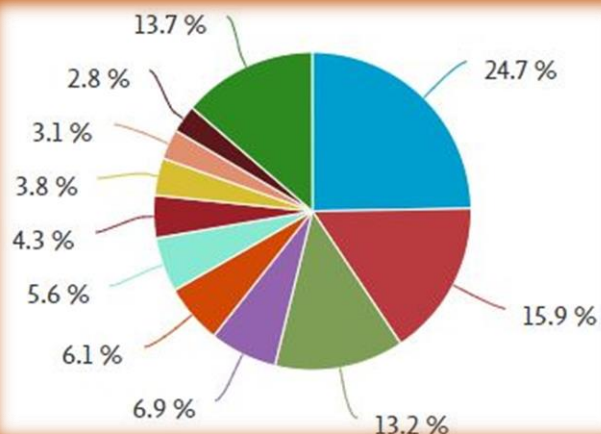
RESEARCH METRICS

Subject area(s)

Publication(s)

Engineering	1721
Decision Sciences	107
Computer Science	1106
Medicine	98
Materials Science	917
Toxicology and Pharmaceutics	86
Physics and Astronomy	478
Social Sciences	77
Chemistry	422
Multidisciplinary	48
Mathematics	387
Immunology and Microbiology	43
Environmental Science	301
Econometrics and Finance	12
Chemical Engineering	264
Neuroscience	10
Management and Accounting	214
Health Professions	7
Genetics and Molecular Biology	195
Arts and Humanities	6
Energy	173
Dentistry	3
Agricultural and Biological Sciences	151
Psychology	1

Pie representation of research domains



Top 15 Funding Sponsors

Name of the Funding Sponsor	Publication Count
Department of Science and Technology	76
King Saud University	47
Science and Engineering Research Board	42
AICTE	38
Department of Atomic Energy	27
Board of Research in Nuclear Sciences	24
DRDO	18
University Grants Committee	15

Autonomous robotic manipulator for order picking task integrated with visula servoing, impedance control schemes and ASRS



Investigator : Dr K L Senthil Kumar, Professor, Dept. of MTRS and Head - Academics
Grant : Rs.8,51,769/-
Funding agency : AICTE

This project integrates different sensors like vision, force to automate the order picking or retrieving task appropriately based on the order, for packaging or dispatching in a warehouse.

Modernisation of electrical machines



Investigator : Dr P Sivaraman, Associate Professor, Department of EEE
Grant : Rs.13,88,000/-
Funding agency : AICTE

This project aims to upgrade the existing facilities thereby establishing CDAQ based automation of motor testing bundle, automation of induction motor testing bundle, eddy current dynamometer motor testing unit, variable frequency drive system, switched reluctance motor drive with eddy current loading and permanent magnet synchronous motor drive.

DBT-CTEP Sponsored Two-day Workshop

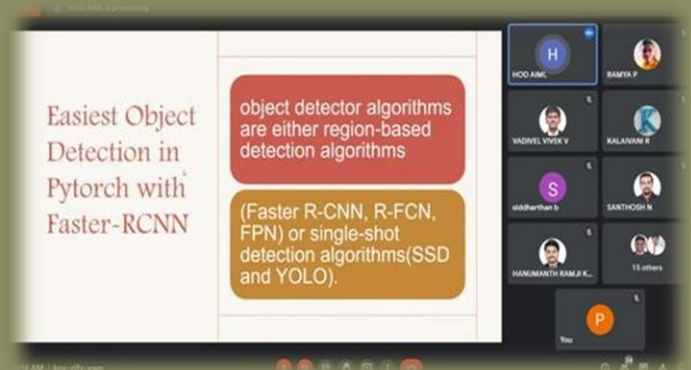
COVID-19 & Cardiac Arrest: Preventative and therapeutic solutions using Artificial Intelligence (AI)



Grantee : Dr Megalingam @ Murugan A, Associate Professor, Dept. of Mechatronics
Funding agency : DBT - CTEP
Grant : Rs. 1,60,000/-

Ambulatory monitoring is increasingly important for cardiovascular care but is often limited by the unpredictability of cardio-vascular events.

Researchers and practicing physicians trying to learn more about the coronavirus and how to treat the resultant COVID-19 disease are now inundated with information. Pre-existing cardiovascular disease seems to be linked with worse outcomes and increased risk of death in patients with COVID-19. AI can help them sift through that information in order to find the most pertinent information to help them make better and faster decisions.



PhD Awardees

Name of the PhD awardee	Dept.	Supervisor	Title of the Thesis
Dr Vinoth Saravanan R	IT	Dr Palanisamy C	Investigations on predicting patterns and anti-patterns in SQL query log using clustering and ensemble learning methods
Dr Asokan J	ECE	Dr Sanjoy Deb	QOS aware energy efficient and light weight security mechanism for enhancing the lifetime of wireless sensor networks
Dr Dhandayuthabani M	Mech	Dr Jegadheeswaran S	Experimental investigation on enhancement of heat transfer in a latent heat thermal energy storage system using phase change material (PCM) containing nano-particles
Dr Saranya K	CSE	Dr Premalatha K	Certain investigations on privacy preserving data mining using perturbation for pharmaceutical drugs
Dr Kodieswari A	IT	Dr Deepa D	Certain investigations and performance analysis on detection of metastasis lung cancer
Dr Saravanan V	EEE	Dr Bharani Kumar R	Certain investigations on performance improvement of process control in sugar industries
Dr Kulanthaivel P	Civil	Dr Soundara B	Performance evaluation of microbial stabilized soils
Dr Anitha N	EEE	Dr Bharani Kumar R	Certain investigations on axial flux permanent magnet generator for low-speed direct drive wind turbine applications

PhD Awardees

Name of the PhD awardee	Dept.	Supervisor	Title of the Thesis
Dr Santha Kumar N	CSE	Dr Logeswari S	Certain investigations on feature selection techniques for leukaemia prediction using microarray gene data
Dr Saranya R	ECE	Dr Poongodi C	Investigations on human emotion recognition via facial expressions using feature extraction techniques and deep learning models
Dr Arulanandham D	IT	Dr Palanisamy C	Trust adapted internet of things based cognitive wireless sensor networks built with dynamic dual route selection
Dr Nirmalakumari K	ECE	Dr Harikumar R	Investigation on performance analysis of multiple classifiers for classification of colon cancer and SRBCT from microarray genes
Dr Vinu Kumar S M	Mech	Dr Senthil Kumar K L	Processing and characterization studies on silane treated woven flax fabric reinforced polymer composites
Dr Muchenedihari Kishor	ECE	Dr Madhu Mohan M L N	Design and characterization of hydrogen bond ferroelectric liquid crystals for device applications
Dr Madhankumar D	Biotech	Dr Kannan K P	Biodiversity of endophytic fungi from selected medicinal plants from the western ghats of India and screening of biomolecules with reference to camptothecin – production, optimization and characterization

AICTE-ISTE Sponsored One-week Virtual Induction / Refresher Programme

Pedagogy and Assessment through Digital Learning Platform (PA-DLP'21)



Grantee : Dr S Jegadheeswaran, Professor & Head – R&D

Funding agency : AICTE-ISTE

Grant : Rs. 93,000/- | **Period :** 7-13 Dec 2021

Overview

The better understanding on online teaching and learning processes is inculcated through the discussion on best practices followed across the globe. The ways to carry out effective machine correctable question paper correction have been shared using randomization approach. The possibilities to conduct an effective online lecture / assessment were focused. The expectations of new-age companies by reimagining the role of educational institutions were explored.



DST-SEED Sponsored Research Project

Technological interventions for enhancing productivity, scalability and value addition to obtain fiber from a local plant (Urtica dioica) for tribals in Nagaland



Investigator : Dr R Deepa, Assistant Professor (Level III), Department of EIE

Funding agency : DST - SEED

Grant : Rs. 68,82,120/-

Nature of Work

Design and development of textile machine, value addition and training to Naga Tribals

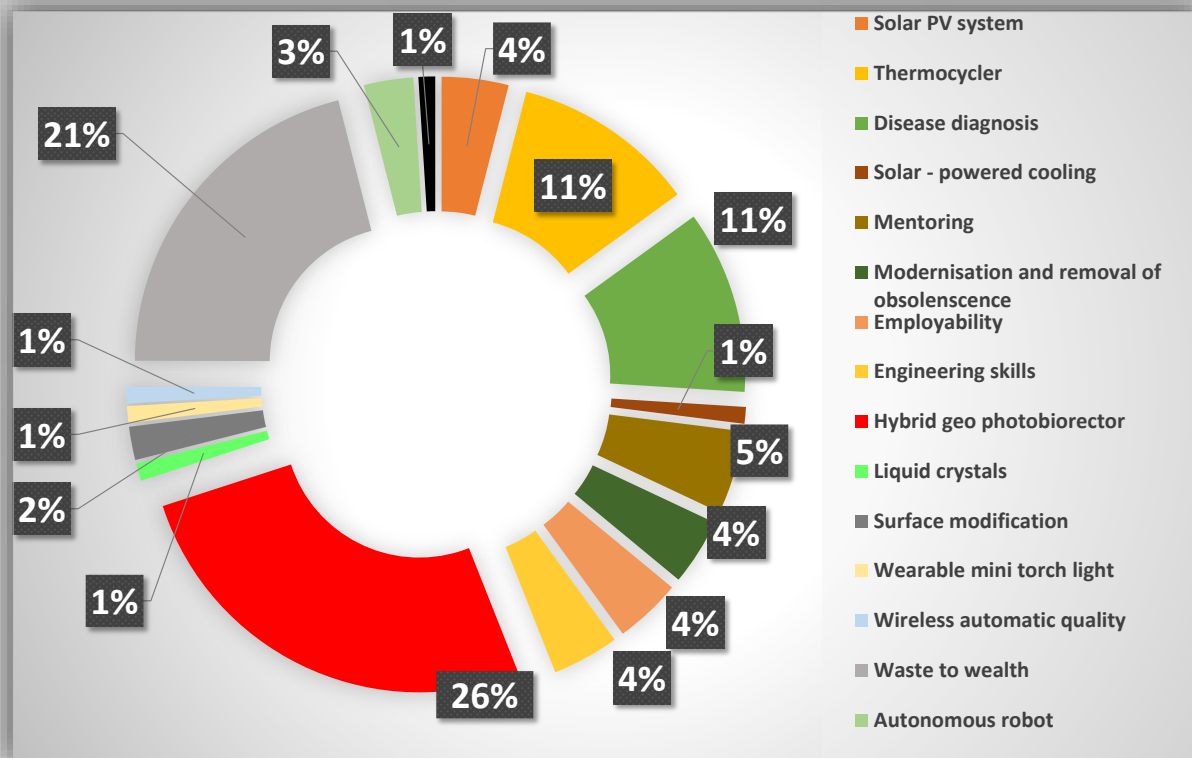
Notable Accomplishments

- Portable size of nettle fibre equipments like crushing setup, carding unit and roving machine are developed.
- The treated nettle samples are tested on developed machines in order to produce the nettle yarn.
- To save the energy, solar panels are used to run the newly developed machines.

Highlight

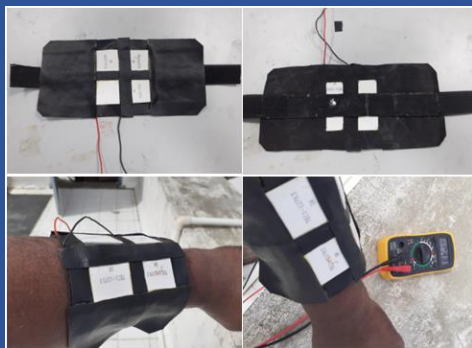
- The Hill Innovation Lead Organisation (HILO) is an NGO at Nagaland, provided training on value addition of the nettle fiber to the tribal peoples in Nagaland.

PIE REPRESENTATION OF ONGOING FUNDED PROJECTS



TNSCST SPONSORED RESEARCH PROJECT

Body heat operated wearable mini torch light for rural areas



Investigator : Dr Sanjoy Deb, Associate Professor, Department of ECE

Funding agency : TNSCST – S&T

Grant : Rs.4,15,000/-

Theme

To glow mini torchlight by resourcing power from human body heat

Project Description

The testing of wearable thermoelectric generator module designed under TNSCST project entitled “Prototype Development and Field Trial of body heat operated wearable mini torchlight for rural area” is mainly to glow mini torchlight by resourcing power from human body heat. Four mini TEG modules are embedded over an especially designed lather armband, in a series configuration and together they generate 0.1V from human body heat.

DST-IDP Sponsored Research Project

Design, Development and Validation of Thermocycler and Real-Time Cycler



Investigator : Dr K S Vairavel, Assistant Professor (Level III), Department of EIE

Funding agency : DST - Instrumentation Development Programme (IDP)

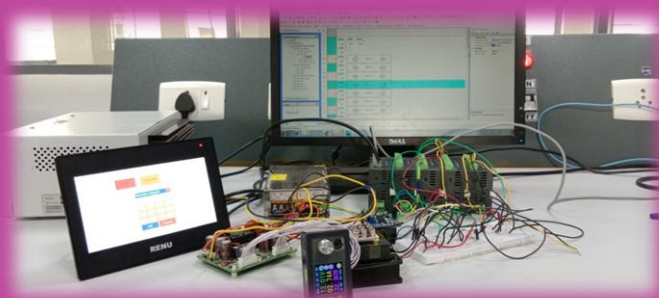
Grant : Rs.34,46,000/-

Objective

To design, develop and validate an indigenous, low-cost thermo-cycler & real-time cycler

Project Description

DNA amplification requires a rapid change in temperature and temperature reversal and it can achieve through the Peltier element. The power supply to the Peltier element is a 24V constant current power supply at 5A. The temperature doesn't depend on the voltage it depends on the current rating.



UGC-CSR Sponsored Research Project

Surface modification of one dimensional metal oxide nanostructures by ion implementation for spintronics



Investigator : Dr K Senthil, Associate Professor, Department of Physics

Funding agency : UGC-CSR

Grant : Rs.7,05,240/-

Works Completed

- Synthesized Tin Oxide, Copper Oxide and Nickel Oxide Nanomaterials by Chemical Methods
- Characterized the synthesized nanomaterials by using structural, surface morphology, elemental, optical and magnetic analysis
- Investigated the Photocatalytic, Antibacterial and Humidity Sensing properties of Metal Oxide Nanomaterials

Outcomes Achieved

- Publication : 03 nos. (Scopus Indexed)
- Patent Filed : 02 nos. (Based on the concept of green synthesis of nickel oxide nano-materials)

1. Akshayya, C., Okla, M.R., Al-ghamdi, A.A., Abdel-Maksoud, M.A., Abdelgawad, H., Das, A. & Khan, S.S. 2021, "Construction of S-scheme heterojunction $\text{CuFe}_2\text{O}_4/\alpha\text{-MnO}_2$ with tuned bandgap for enhanced white light harvesting: Insights of photoluminescence, Raman scattering and photocatalysis", *Surfaces and Interfaces*, vol. 27.
2. Balasurya, S., Syed, A., Swedha, M., Harini, G., Elgorban, A.M., Zaghloul, N.S.S., Das, A. & Khan, S.S. 2021, "A novel SPR based Fe@Ag core-shell nanosphere entrapped on starch matrix an optical probe for sensing of mercury(II) ion: A nanomolar detection, wide pH range and real water sample application", *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, vol. 263.
3. Jegadheeswaran, S., Sundaramahalingam, A. & Poharkar, S.D. 2021, "Alternative Heat Transfer Enhancement Techniques for Latent Heat Thermal Energy Storage System: A Review", *International Journal of Thermophysics*, vol. 42, no. 12.
4. Kalpana, R., Ashokan, S., Subbaramanian, P., Shanmugasundaram, P., Sudha, D., Thennarasu, S. & Jesbin, J. 2021, "Preparation and Characterization of Graphene Doped Molybdenum Trioxide/Manganese Oxide Ternary Nanocomposite for Supercapacitor Performance", *Brazilian Journal of Physics*, vol. 51, no. 6, pp. 1597-1602.
5. Kumar, B.H., Okla, M.R., Abdel-maksoud, M.A., Al-Qahtani, W.H., Abdelgawad, H., Altukhayfi, M.S., Thomas, A.M., Raju, L.L. & Khan, S.S. 2021, "Chitosan capped Ag/NiS nanocomposites: A novel colorimetric probe for detection of L-cysteine at nanomolar level and its anti-microbial activity", *International journal of biological macromolecules*, vol. 193, pp. 2054-2061.

6. Loganathan, U., Jain, M., Thiagarajan, S., Shanmuganathan, S., Mariappan, S.K., Kizhakedathil, M.P.J. & Saravanakumar, T. 2021, "An Insilico evaluation of phytochemicals from Albizia amara and Phylla nodiflora as cyclooxygenase-2 enzyme inhibitors", DARU, Journal of Pharmaceutical Sciences, vol. 29, no. 2, pp. 311-320.
7. Nirmalan, R. & Gokulakrishnan, K. 2021, "An intelligent surveillance video analytics framework using Hadoop/MapReduce on cloud services", Distributed and Parallel Databases, vol. 39, no. 4, pp. 873-889.
8. Patel, G., Patra, C., Srinivas, S.P., Kumawat, M., Navya, P.N. & Daima, H.K. 2021, "Methods to evaluate the toxicity of engineered nanomaterials for biomedical applications: a review", Environmental Chemistry Letters, vol. 19, no. 6, pp. 4253-4274.
9. Sannasi Chakravarthy, S.R. & Rajaguru, H. 2021, "Deep-features with Bayesian optimized classifiers for the breast cancer diagnosis", International Journal of Imaging Systems and Technology, vol. 31, no. 4, pp. 1861-1881.
10. Soundara, B., Selvakumar, S. & Bhuvaneshwari, S. 2021, "Laboratory study on natural fibre amended fly ash as an expansive soil stabilizer", Geotechnical Engineering, vol. 51, no. 4, pp. 156-160.
11. Sruthi, L., Janani, B. & Sudheer Khan, S. 2021, "Ibuprofen removal from aqueous solution via light-harvesting photocatalysis by nano-heterojunctions: A review", Separation and Purification Technology, vol. 279.
12. Tamilselvi, S., Saravana Kumar, N.M., Lavanya, S., Bindhu, J. & Kavigavarshini, N. 2021, "Artificial intelligence for a bio-sensored detection of tuberculosis", Network Modeling Analysis in Health Informatics and Bioinformatics, vol. 10, no. 1

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