



EnVision

School of Engineering Newsletter (January 2018)



Dean's Message...

A New year ! A New Edition of Envision !.

Globally Engineering Education and Research is in a period of extraordinary transition with exclusive focus on research for societal applications. The research news shared in this edition is promising and emphasizes the fact that our University is on the right path. The gamut of research projects and related happenings assures optimism this new year. We, Faculty, Students and Alumni are all brimmed with confidence about the bright future. Let the new year be the Best - touching lives, improving communities, and shaping our world for the better.



Amrita Vishwa Vidyapeetham Secures **#1 RANK** INDIA'S CLEANEST TECHNICAL INSTITUTION

SWACHHTA Rankings 2017 for Higher Education Institutes



Ministry of Human Resource Development Government of India

'SWACHHTA' Ranking 2017 of Higher Educational Institutions

The Amrita Vishwa Vidyapeetham, Coimbatore, TN has been ranked First among the cleanest Higher Educational Institutions in the Country in the category Technical Institutions and was Awarded on 14th September, 2017 at The Ashok Hotel, New Delhi



hindustan times **PAGE ONE PLUS** EDITOR'S PICK

CLEANEST COLLEGES Private players dominate 'swachhta' ranks of educational institutions launched by the HRD ministry. A snapshot

AMRITA VISHWA VIDYAPEETHAM Technical College Coimbatore **100.00**

RANK	TECHNICAL COLLEGES	SCORE
1	Amrita Vishwa Vidyapeetham, Coimbatore	100.00
2	Konkny Education Education Foundation, Coimbatore	99.00
3	St. Basil's Medical College and Research Institute, Chennai	99.00
4	Vivekananda College of Engineering for Women, Tuticorin	99.00
5	RAM Engineering College, Chennai	99.00
6	RAM Engineering College, Chennai	99.00
7	Alam Institute of Technology, Ghazipur	99.00

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CONTENTS

RESEARCH @ GLOBAL	02
RESEARCH @ NATIONAL	03
CONFERENCES AND WORKSHOPS	08
FACULTY ACHIEVEMENTS	13
INNOVATIVE YOUNG MINDS	14
ALUMNI	17
SOCIETAL OUTREACH	18
PUBLICATIONS	20

Top 500 in Clinical and Health, 2018

Top 500 in International Outlook, Industry income 2018

NO.1 Private University in India, 2018

Considering there are approximately 11,900 universities regionally, this makes Amrita in the top 1.4% of all universities in Asia.

Top 200 in BRICS & Emerging Economies, 2017

Top 200 in BRICS NO.1 Private University in India, 2018

Research @ Global-

Collaborative Research with Universities/ Industry

MG-BASED HYDROGEN STORAGE MATERIALS FOR NIMH BATTERY APPLICATIONS

Funding agency: AUZ, Australia

Faculty: Dr. Thirugnasambandam,
Center of Excellence in Advanced
Materials & Green Technologies

Hydrogen, as an energy carrier, is a promising candidate which can potentially substitute the rapidly depleting and polluting fossil fuels. Hydrogen production and storage are the major challenges for developing a mature hydrogen-based economy. Hydrogen can be stored in different ways, such as compressed gas, cryogenic liquid, and solid metal (hydrides). Of these storage methods, solid-state storage method can store hydrogen efficiently with higher volumetric storage capacities. Worldwide, many materials classes are investigated concerning their potential to store hydrogen; each materials class exhibiting specific advantages along with disadvantages. Despite the search for a suitable high-storage capacity materials that conforms to the



standards set by the US-DOE for on-board mobile applications, there seems to be no significant breakthrough in that direction. An ideal storage material should have (i) high gravimetric and volumetric capacity, (ii) easily rechargeable, (iii) cost-effective, (iv) no capacity degradation over thousands of cycles, (v) made from materials that are earth-abundant and eco-friendly, (vi) fast kinetics for charge and discharge requiring temperatures no more than 100 °C and ambient pressures. Nearly sixty different classes of materials have been investigated so far with no acceptable performance primarily in all the six criteria outlined above. This research project focuses on systematic investigation on synthesis and characterization of binary, ternary alloys and hybrid materials through inert atmosphere arc melting and ball milling technique. The ternary alloying element will be selected based on the Miedema model. Moreover, addition of ternary elements possessing more negative enthalpy of mixing with that of binary elements would eventually stabilize the alloy to reduce the stability of the hydrides.

Research @National

DEVELOPMENT OF A PULSED FLOW PACKED BED ELECTROCHEMICAL REACTOR FOR HEAVY METALS REMOVAL FROM GROUND WATER AND WASTE WATER

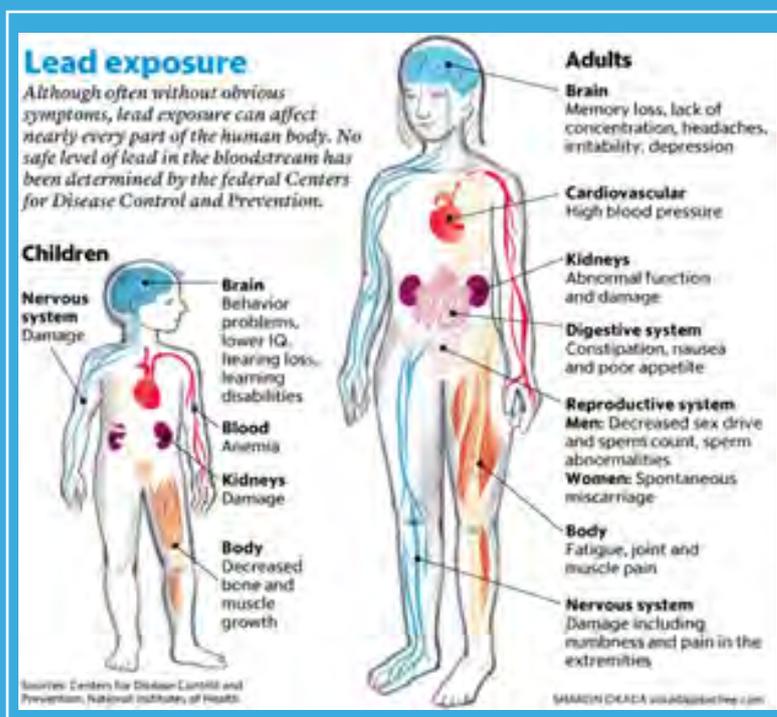
Funding Agency: Science and Engineering Board(SERB), Department of Science and Technology.

Faculty: Dr. Murali Rangarajan, Dr. Thirugnasambandam and Dr. Mahendra Nandanwar , Center of Excellence in Advanced Materials & Green Technologies.

Pollution of heavy metals such as lead, cadmium, and copper has caused severe and long-term damages to the environment and life forms, including humans. Heavy metals such as lead and cadmium have biological half-lives of over 20 years. Their acceptable limits

in potable water as per WHO standards are in tens of ppb (parts per billion). Removing them from industrial effluents and groundwater to the very low concentrations of parts per billion is a major challenge. A team of investigators have been awarded a grant for developing

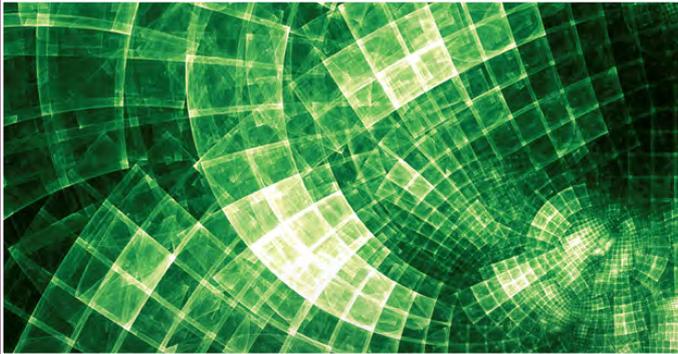
a novel electrochemical packed bed reactor technology for removing heavy metals from water. With its very large area and potential for high throughputs, this technology is expected to perform at very high efficiencies needed to achieve the desired removal of heavy metals.



BEST PROXIMITY POINT ITERATION FOR VARIOUS TYPES OF NON SELF MAPPING

Funding Agency : Department of Atomic Energy, National Board For Higher Mathematics

Faculty: Dr. V. Pragadeeswarar, Department of Mathematics



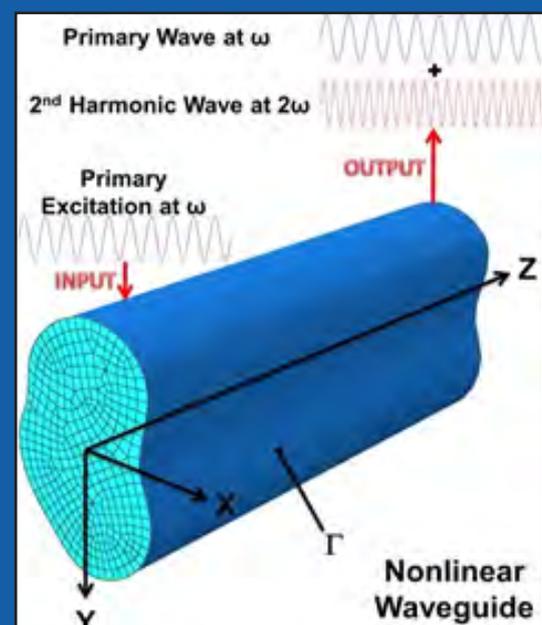
Many problems of practical interest are formulated as an operator equation. This operator equation is often solved by recasting it as a fixed-point equation such that the solution to the latter will yield a solution to the corresponding operator equation. On the other side of the spectrum, if the fixed-point equation does not possess a solution, then the next question that arises naturally is, whether it is possible to find the best proximity point for the corresponding operator. Actually, the best proximity point problem is a problem of achieving the minimum distance between sets through a function. In other words, best proximity point theorem analyzes the condition under which the optimization problem has a solution. The main idea of this proposal is to construct the iterative methods for various types of non self-map to compute the best proximity point.

texts often emphasize the rigorous mathematical basis of various FEM formulations. Some also provide programme code. In the past 20 years there has been a great interest in application of this method to microwave components such as waveguides and antennas. But for many years, its use has been restricted because of the so-called spurious solutions in vector finite elements. Very recently the “edge elements” have been employed successfully for vector formulations without resulting in “spurious solutions”. In the recent past, use of these edge elements in FEM has reviewed an interest in applying FEM to microwave engineering applications. This in combination with the advances in computer hardware and software helped to make FEM an attractive tool for electromagnetics.

APPLICATION OF SUBPARAMETRIC FINITE ELEMENTS FOR EIGEN ANALYSIS OF WAVE-GUIDES IN ELECTROMAGNETICS

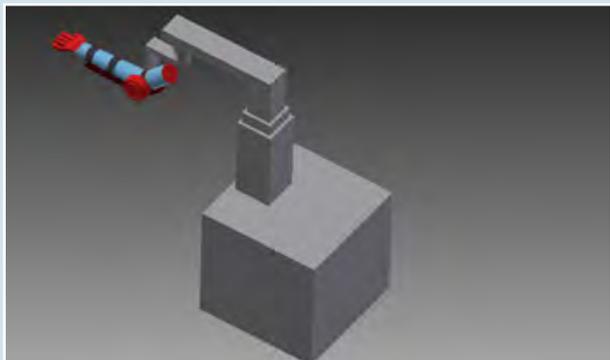
Funding Agency: Department of Atomic Energy, National Board For Higher Mathematics

Faculty : Dr. K.V. Nagaraja, Dept. of Mathematics



The FEM is a well-established technique in electromagnetics and still generates considerable research. FEM has been a very powerful tool to solve many research complex problems in electromagnetics. Several excellent texts and monographs are available in the literature. Moreover, these

A LOW – COST HAND AND ARM REHABILITATION SYSTEM



Funding Agency: Technology Interventions For Disabled & Elderly (TIDE) Programme ,
Department of Science and Technology
Faculty: Dr. Binoy B Nair,
Department of Electronics and Communication
Engineering and Dr.N.R.Sakthivel, Department of
Mechanical Engineering.

Stroke is one of the leading causes of death and disability across the world. Recovering from stroke is a long -drawn and expensive process and requires active participation from healthcare professionals. This project aims to address these two issues and aims to develop a low-cost, exoskeleton based hand

and arm rehabilitation system for patients recovering from stroke. Patients will be able to perform rehabilitation exercises with minimal intervention from a physiotherapist/healthcare professional. Interactive activity-based exercises developed along with the hardware, will encourage patient participation. The system will

be able to generate automated reports based on the patient's performance in the exercises allowing the healthcare provider to track the patient's progress. The healthcare provider's role changes from an active participant and motivator to that of a supervisor allowing him/her to monitor and help multiple patients at a time.

DEVELOPMENT OF BRAZE JOINT BETWEEN CARBON-CARBON (C-C) COMPOSITES AND TITANIUM ALLOY TI6A/4V)



Funding Agency : ISRO,
RESPOND PROJECT
Faculty : Mr. Govindaraj .M
Dr. Venkata Ravikumar Derbha.
Dr. Padmanaban. R

This project involves development of suitable Brazing Technology for joining advanced aerospace carbon-carbon composite and titanium alloy, which comes under ceramic to metal sealing domain of material science. (Braze joint is a type of welding, in which two vastly different difficult to weld materials are joined with carefully carved process). Ceramic to metal sealing technology, though more than 1000 years old, is still a technological wonder for researchers and manufacturers. Among many types of ceramic to metal seals, high temperature seals between carbon -carbon (ceramic) composite to titanium alloy required for space application is one of the most critical parts to achieve. The project proposes to solve any

technical issues arising during brazing, conduct artificially simulated field trials so as to use the developed materials ready for space application. This is the first attempt by an academic institute.

The sample level process is demonstrated in figure 1, which shows the samples placed on each other with the jig. Figure 2 shows the brazed joint.

CAPACITY, BIT ERROR RATE AND PERFORMANCE EVALUATION OF MIMO BASED COMMUNICATION SYSTEM ON MINIMIZED MULTIPATH ENVIRONMENT

Funding Agency: Indian Space Research Organisation - RESPOND Project

Faculty: Dr. S.Kirthiga, Dr.M.Jayakumar, Dr.M.Nirmala Devi, Dr.R.Gandhiraj, Department of Electronics and Communication Engineering.



technology explores the wireless channel conditions through the use of multi antenna rather than increasing the transmission power and bandwidth for performance improvement. Thus this technology has triggered the idea to be used in satellite system to overcome performance degradation in adverse weather conditions. With MIMO in place in both space segment and ground station, it opens up new challenges like payload modification, integration with terrestrial system, adverse atmospheric effects etc. By addressing these challenges, the performance of the land mobile satellite system can be improved leading to power and spectrally efficient system.

Multi input multi output (MIMO) a successful multi antenna technology in terrestrial wireless communication systems has proved to offer link reliability and increase in system capacity. This

NON-METALLIC HETERO JUNCTION PHOTOCATALYST IMMOBILIZED MICROCAPILLARIES AS OPTOFLUIDIC REACTORS FOR THE EFFECTIVE CONTINUOUS FLOW SOLAR WATER DISINFECTION

Funding Agency: Science and Engineering Board(SERB), DST

Faculty: Dr. Venkata Ravikumar Dharba, Department of Sciences



Environmental remediation is one of the major challenges of 21st century world; Rapid industrial evolution in last century led to contamination of several water sources. Hence, providing safe drinking water for low price remains as challenge for developing countries. In this scenario, WHO, UNICEF recommended Solar water disinfection method to developing countries to carryout effective disinfection of pathogens in water at low cost. In this method, the contaminated water will be taken in PET bottles and exposed to sunlight. UV component of sunlight causes the disinfection of pathogenic bacteria in the water and water becomes safe to drink. This process simply called as SODIS. But, the above mentioned process takes longer time for complete disinfection. Disinfection process can also be carried out by opting photocatalytic process.

Semiconductor photocatalysts, used in these processes generate necessary radicals that can cause disinfection of water under UV/visible light, that depends on the band gap of the semiconductor photocatalysts. In general, the photocatalyst like TiO₂ is used in suspended form in water. After the disinfection process, the catalyst has to be removed from the

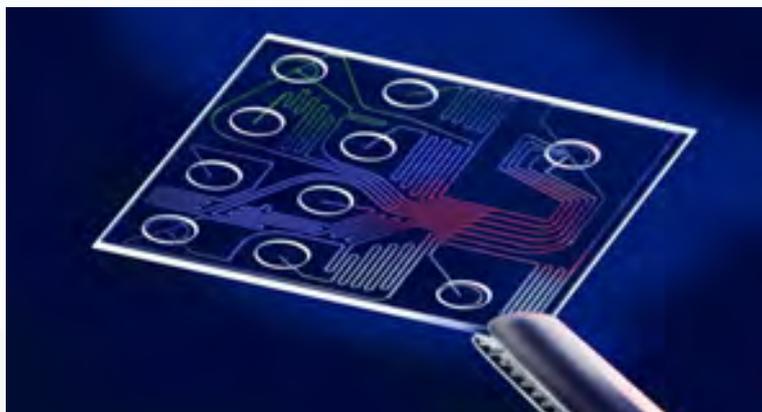
water. Hence, the cost of post purification processes increases. In this context, we propose a non-metallic heterojunction visible/solar light photocatalyst for the disinfection process under visible/solar light. The photocatalyst will be immobilized in microcapillaries and used as optofluidic reactors for photocatalytic disinfection of water. Moreover, catalyst

immobilized capillaries offer effective disinfection process as they have high surface to volume ratio. Proposed catalyst is not containing any metal and it is immobilized in capillary, post purification such as removal of the catalyst from water is not required. Hence the cost of disinfection process will be significantly reduced.

MICROFLUIDIC CHIP FOR THE MONITORING OF WOMEN HEALTH AFTER 40

Funded by: Department of Biotechnology, Government of India

Faculty: Dr. T. G. Satheesh Babu, Dr. Suneesh P. V. and Dr. John Stanley, Department of Sciences, Dr. Bipin G. Nair, The Dean, School of Biotechnology.



Menopause is not a disease condition or illness; it is a major biological change similar to puberty. The onset of menopause can invite many life threatening diseases such as cardiovascular and skeletal diseases. Statistics shows one in three women over age 50 will experience osteoporotic fractures. Health care at the menopause and postmenopausal stage is the most effective preventive care to avoid these diseases. Biomarkers can be used as a measure to predict the risk or to monitor these diseases. By Regular monitoring of a panel of biomarkers health of women can be monitored and morbidity levels associated with skeletal diseases can be reduced by prevention/early diagnosis/maintenance.

The proposed work envisages the fabrication of a paper based microfluidic module for optical detection of bone turnover markers (bone specific alkaline phosphatase, osteocalcin and collagen I C-telopeptides) and bone health indicators (calcium and vitamin D). The paper platform helps in keeping the required sample volume very low. With the help of this module simultaneous detection of bone turnover markers and bone health indicators can be performed using same sample. These analyte exists in trace quantities, and hence will be detected through reactions which yield chemiluminescence. The resulting emissions will be detected with a light sensor, and the intensity will be converted as concentration with the help of electronic module.

Conferences & Workshops



EUROPEAN UNION DELEGATION VISITS AMRITA VISHWA VIDYAPEETHAM

A 15 member Delegation of the European Union (EU) to India and constituent nations of EU visited the University. The aim of the visit was to deepen cooperation with the Indian Research and Academic community, explore opportunities for collaboration and exchange with European Nations and to promote Indian participation in the EU's Research Framework Programmes, such as Horizon 2020, Marie Curie Actions, etc.,.

The EU delegation team was headed by Ms. Tania Friederichs, First Counsellor and Head of Research & Innovation, Delegation of the European Union to India and comprised of Science, Technology and Innovation Counsellors, Directors of institutes from ten European countries, including France, Italy, Denmark, Germany, Hungary, Belgium, Switzerland, Spain, Sweden and also the British High Commission.

Some of the focus areas of the delegation under the aegis of

EU's Research Framework Programme were: Information and Communication Technologies (ICT); Nanotechnologies, Advanced materials, Advanced manufacturing and processing and Biotechnology, Health, demographic change and wellbeing; food security, sustainable agriculture and forestry; marine, maritime and inland water research and the bio-economy, secure, clean and efficient energy, smart, green and integrated transport, climate action, environment, resource efficiency and raw materials.

AMRITA VISHWA VIDYAPEETHAM HOSTS SWADESHI SCIENCE CONGRESS



The University hosted the 27th Swadeshi Science Congress with the focal theme of “Science and Technology are the Key Drivers to Development”, at Amritapuri Campus, The Swadeshi Science Movement- Kerala, is a popular science movement dedicated for the overall development of our country through the intervention of science and technology. It has been functioning in the state of Kerala since 1989, focusing on science popularization for social development. Swadeshi Science Movement aims at fostering a multidisciplinary approach to local problems and the promotion of India’s scientific heritage. The dignitaries who attended the event included Dr. M. D. Nair, Chairman, Swadeshi Science Congress; Dr. Dallis Teresa Miranda, President, Swadeshi Science Movement (SSM) and Sri. Suresh Gopi Member of Parliament (Rajya Sabha). The conference provided a platform for 180 research institutes to present around 303 treatises, which also included 14 technical sessions and discussions.

AMRITA SCHOOL OF ENGINEERING, COIMBATORE CONDUCTS WORKSHOP ON ‘DESIGN THINKING’



A four day workshop on ‘Design Thinking’ was held at School of Engineering, Coimbatore with Prof. Eric Blanco, the Deputy Director, School of Industrial Engineering and the Associate Professor, Product Design & Development at the University of Grenoble Alpes as the resource person. The objective of the workshop was to impart hands-on experience with creativity and knowledge based system design approach to solve need based problems. The workshop was organized by collaborating with industries Larsen & Toubro and Roots Industries Pvt. Ltd., Coimbatore. Participating industries offered three real time industrial problems and the students were expected find solutions to the problems using a structured methodology.

The prototyping session had each group working in various laboratories such as carpentry laboratory, dynamics laboratory, and fabrication shop. The students presented their project concepts to the panel comprising of faculty and executives from industries and the finalization of the prototype of the different groups were done. The concepts developed by the students were impressive and were appreciated by the industry.

AMRITA UNIVERSITY CONDUCTS INTERNATIONAL CONFERENCE ON “INTERROGATING CULTURAL TRANSLATION: LITERATURE AND FINE ARTS IN TRANSLATION”



The Department of English and Humanities, Amrita School of Engineering, Coimbatore, conducted a three day International Conference on “Interrogating Cultural Translation: Literature and Fine Arts in Translation”, organized jointly with Caesurae Collective Society. The keynote speakers of the event were Dr. G. J. V. Prasad, Centre for English Studies, Jawaharlal Nehru University (JNU), New Delhi; Dr. Swarnavel Eswaran, Film Studies & Creative Writing, Michigan State University, US; Dr. Fakrul Alam, Department of English, University of Dhaka; Dr. Murali Sivaramakrishnan, Renowned academic, critic,

sculptor, painter, and poet; Dr. Ashok K. Mohapatra, Department of English, Sambalpur University, Odisha; Maestro Kala Ramnath, internationally acclaimed violinist & teacher.

The conference set the stage for deliberations on this topic of study, providing valuable insights into practices of cultural transference. The conference aimed at far reaching impacts on some of the fundamental findings and assumptions of Translation Studies. The three day conference brought together a wide representation from the academia and people interested in other art/media also. The chief objective of the endeavour was to create a research ambience and explore areas of collaboration leading to student exchange programmes in inter disciplinary studies under liberal arts and humanities.

ISRO SPONSORED NATIONAL SEMINAR



Department of Electronics and Communication Engineering, Amrita School of Engineering, Coimbatore, conducted an ISRO sponsored national seminar on “Techniques and Applications of Hyper spectral Image Analysis”. The speakers at the event were: Dr. Rama Rao Nidamanuri, Associate Professor, Department of Earth and Space Sciences, Indian Institute of Space Science and Technology, Thiruvananthapuram; Ms. A.M. Ramiya, Reader, Department of Earth and Space Sciences Indian Institute of Space Science and Technology, Thiruvananthapuram; Dr. B. S Daya Sagar, Professor, Systems Science and Information Unit Indian Statistical Institute Bangalore Centre; Dr. Saroj Kumar Meher, Assistant Professor, Systems Science and Information Unit Indian Statistical Institute, Bangalore Centre. Dr. Rama Rao, gave an introduction to hyper spectral imaging and talked about material/target identification by remote sensing, algorithms for hyper spectral image classification and advanced methods for hyperspectral image classification. Major applications areas for HSI using mathematical morphology and granular neural networks were discussed in the seminar, through which current research problems were identified for further research. HSI in remote sensing is developing field, especially LiDAR image processing, which will be very useful for developing smart cities in India, The seminar gave a good introduction to the field of hyper spectral image analysis, along with an insight into rich applications.

INTERNATIONAL CONFERENCE ON UBIUNET



The Department of Electronics and Communication (ECE) and Computer Science and Engineering (CSE), Bangalore, conducted a three day international conference on Ubiquitous Communications and Network Computing (UBICNET). The conference included delegates from different parts of the country as well as national and international speakers. The UBIUNET Conference commenced with three tutorial sessions. The tutorials were on “The Complexity of IoT World, Security Challenges and Building Secure Wired and Wireless Networks” delivered by Mr. Nishant Krishna, Software Architect, Extreme Networks, “Hands-On Training Program on Data Analytics & Machine Learning Using R” by Dr. Mahesh Anand, Scientific Computing Solution, India, and by Mr. Anand M., CDoT, Bengaluru, in which he expounded on “MQTT Protocol”, including a demo. The conference on had key note speakers such as Prof. V. R. Singh, Director-Advisor, PDM University, Bahadurgarh who emphasized discussion on “U-Care Health Devices”, Dr. Venkatesh Prasad (Assistant Professor, Delft University of Technology) on “Murphy loves Constructive Interference”, Dr Vishwas Lakkundi, IncedoInc, India on “Secure Device Management in IoT: Practical Scenarios”, Dr. Pamela Kumar, Founder Chair & Vice President, Cloud Computing Innovation Council of India, on “Cloud Computing and Internet of Things- Key enablers for Digital India and Smart Cities”, Prof. Manimaran, Iowa State University, USA, and Mr. Suresh Chitturi, Head of Technology

Standards at Samsung R&D, Bangalore, on “IoT Challenges and Opportunities for Smart Cities” and “Mission Critical Communications”, Mr. Jagadish Kumar Chandrasekar, Director-Test Engineering, Tessolve Semiconductor Pvt Ltd, on “Consideration from IoT from Test Industry Perspective”.

A panel discussion on “The impact of 5G-IoT and Wearables and India’s Efforts towards Standardization/ Development”, was moderated by Mr. Kishore A. T., UTL Training Ltd, and the speakers included Dr. Dilip K, Senior Scientist, IBM Inc. India, Dr. Shivaram , Curl Analytics, Dr. V. R. Singh Director-Advisor,

PDM University, Bahadurgarh, Delhi NCR, and Dr. Vijaya Kumar, Professor and Head, in Information Science and Engineering, Department, MS Ramaiah Institute of Technology, who brought four different perspectives on India leaping towards 5G standardization and efforts on IoT.

ISTE STTP ON ELECTRIC POWER SYSTEM



Amrita School of Engineering, Bangalore campus conducted, ISTE (Indian Society for Technical Education) Short Term Training Program on “Electric Power System”. The workshop was an initiative started by IIT Kharagpur under National Mission on Education through ICT supported by Ministry of Human Resource Development for the faculty members of various engineering institutes via distant education mode. This workshop is a part of ISTE Short Term Training Programmes (STTPs) under

Train Ten Thousand Teachers (T10KT) project using 353 established remote centres across India. The main focus of the workshop was to enhance the teaching effectiveness in core engineering subjects. The lectures were spearheaded by three professors: Professor N. K. Kishore, Department of Electrical Engineering, IIT Kharagpur; Professor Shreevardhan A. Soman, Department of Electrical Engineering, IIT Bombay; and Professor Gautam Bandyopadhyay, Department of Electrical Engineering, IIST

Kolkata. The topics covered included: components of power system and introduction and significance of power system; brief review of steady state and dynamic operations of power system; overview of a laboratory course on power systems and importance of renewables and reliable operation of power system. The training programme was attended by around 10,000 teachers through various remote centers with Amrita School of Engineering, Bangalore being one of them.

Faculty Achievements



Title :
A Novel Underactuated Multi-fingered Soft Robotic Hand for Prosthetic Application



Amrita Paper Published
in Elsevier's Journal - **Robotics and Autonomous Systems**
(Impact Factor:1.950)

RESEARCH PAPER ON AMRITA PROSTHETIC HAND IN ELSEVIER JOURNAL

The paper titled, "A Novel Underactuated Multi-fingered Soft Robotic Hand for Prosthetic Application", authored by the Chancellor of Amrita Vishwa Vidyapeetham, Sri Mata Amritanandamayi Devi (Amma), Dr. Ganesha Udupa, Professor, Department of Mechanical Engineering, Amritapuri; and Pramod Sreedharan, Assistant Professor, Department of Mechanical Engineering, Amritapuri, was published in the Elsevier's Journal, Robotics and Autonomous Systems (impact factor:1.950), affiliated with the Intelligent Autonomous Systems (IAS) Society. The hand is a novel under-actuated multi-jointed, multi-fingered, soft robotic hand for prosthetic application which is made using asymmetric rubber actuators. This world class research work on asymmetric flexible actuators is first of its kind in the fabrication of a prosthetic hand and gives bending performance better than the symmetric actuators.

Robotic hand plays a very important role as it is required to hold and place the object at the desired location. There has been a lot of research on the flexible pneumatic rubber or polymer based actuators for soft gripper applications. This paper is investigating asymmetric bellow flexible pneumatic actuator (ABFPA) as a bending joint made of suitable rubber material in the construction of a novel

under actuated multi-jointed, multi-fingered soft robotic hand for prosthetic application. The proposed asymmetric actuator has a single internal chamber and is simple, compact and easy to manufacture. Several actuator designs are analyzed and validated experimentally. It is found that the effect of shape and eccentricity of the ABFPA plays an important role in the bending of the actuator. By proper selection of materials and manufacturing of the ABFPA with reinforcement, a versatile dexterous hand can be fabricated. The present work has paved the way for extensive research on this innovative technique as it holds out the true potential for innumerable and very interesting application in various areas.

AMRITA FACULTY MEMBER AWARDED ACHARYA PRAFULLA CHANDRA RAY AWARD

Amrita faculty member, Dr. Shantanu Bhowmik, Head of the Research and Projects at Amrita School of Engineering, Coimbatore campus, received the 8th Acharya Prafulla Chandra Ray Award from the Institute of Pulmocare and Research, Kolkata, on 26th August, 2017. Dr. Bhowmik also



delivered a lecture, "Igniting Innovation in Young Minds", on 27th August, 2017, to the attendees of the conference. In the lecture, he discussed his own innovative idea of a lightweight thermoplastic bullet-proof vest designed for the Indian Army and also discussed the emerging technology in the field of nuclear technology

Innovative Young Minds

AMRITA IEEE STUDENT BRANCH CHAPTER AMRITAPURI WINS THE DARREL CHONG STUDENT ACTIVITY AWARD

The IEEE Student Branch Chapter, Amritapuri Campus, won the "The Darrel Chong Student Activity Award" for the year 2017 under gold category, for the International Symposium on Education, Technology and Entrepreneurship (ISEE) 2016. The ISEE 2016 is the flagship symposium by the IEEE Student Branch, Amrita University. It



aims at bringing various academic disciplines under a single forum. Consisting of various science and technology based lectures and workshops, the symposium is held over one day in the month of August. ISEE attracts participation from all over India, and seeks to provide collegiate students with a platform to excel in their talents. Embracing uniqueness in appearance and management, ISEE is entirely student managed. The gold medal winners were from the Department of Electronics and Communication Engineering , M.S Sarath Kumar, Amritanand Sebastian, Vinu S, N.Vignesh, Yadu Krishnan K, Aparna P.T.A, Rachana, G. Sriharsha, S. Vignesh, Rajesh .G, B. Likhith, Arsha V.V, Pallavi Praful, P. Sai Surya Teja, K. Sai Kumar, Lakshmi Sree .D, Guru Prasadh J.P, Vishnu Rajith, Parvathy Gopal, Meghna Prakash, Nirmal Elamon, Keerthana I.K, C. Sagin Manoj, Nithin Asok, Harsha Hari and Aparna Ram S.S, G Vamsy Vivek, N Ashwin Kashyap, K G S Apuroop, G Sri Teja, B Sricharan, Ch. Ravi Teja, Sarath Sreekanth, Akhil Raj, Md Juned Rahi, Shiva Bandyopadhyay Abhijeet Prem and Aniketh Das and were guided by Dr. Rajesh Kannan Megalingam, Assistant Professor, Department of Electronics and Communication Engineering. The purpose of this recognition system serves to change the mindset of the student groups, from being number-driven, to becoming value-driven and to acknowledge exemplary student activities around the world. The goal is to improve the quality of activities, and to foster knowledge sharing among students. Ultimately, the initiative is targeted at improving student-membership growth. This will encourage and motivate students to continue to innovate and implement meaningful ideas.

TEAM AMRITA BAGS 1ST PRIZE IN G E DIGITAL INDUSTRIAL IOT HACKATHON'17



The Hackathon is conducted to encourage and recognize ideas that can revolutionize the Industrial Internet of things. Conducted over a span of 60 days, the team from Amrita bagged the 1st Prize amongst 900 registrations that included finalists from IITs. Amrita was the only participant with two teams in the finals. The winning team developed a Quality Tracking system for perishables on the go. The system is aimed at identifying the basket and delivering based on order of freshness/ perishability. The Team which was multidisciplinary comprised, Mr. Ikram Shah (Electronics and Communication Engineering III Year), Ms. Aswini Shilpa (Computer Science and Engineering III Year) and Mr. Sriharsha P (Computer Science and Engineering III YEAR) and was mentored by Dr. Shiram KV, Assistant Prof, Computer Science and Engineering.

AMRITA STUDENTS WIN 3RD PRIZE IN 1ST AICTE-ECI CHAATRA VISHWAKARMA AWARD



The Final Year B.Tech students of Department of Electrical and Electronics Engineering (EEE), Amritapuri Campus, won the third position in the 1st AICTE-ECI Chaatra Vishwakarma Award held at AICTE Headquarters, New Delhi, on 17th September, 2017. The winners were decided based on the projects submitted by the students in the competition organised by AICTE (All India Council for Technical Education) in collaboration with ECI (Engineering Council of India). The theme for the competition was 'How to make your institution a Smart Institution?'

The winners of team Mavericks, from Amrita, Mr. Arjun Krishna,

4th year, Department of EEE, Mr. P. Dilip Kumar, 4th year, Department of EEE, Mr. Anirudh Chithrabhanu, 4th year, Department of EEE, and Mr. C. V. S. Gireesh, 4th year, Department of EEE, was guided by Mr. Bharath K. R., Assistant Professor, Department of EEE. They proposed the project 'Smart plug for monitoring and control of electrical appliances'. A total of 965 teams, comprising of 3-4 members participated in the event. All nominations were shortlisted based on Innovation, Implimentability, Cost benefit, Eco friendly, and its Social impact. Later 55 teams were shortlisted by a Jury comprising experts from Industry and Academia led by

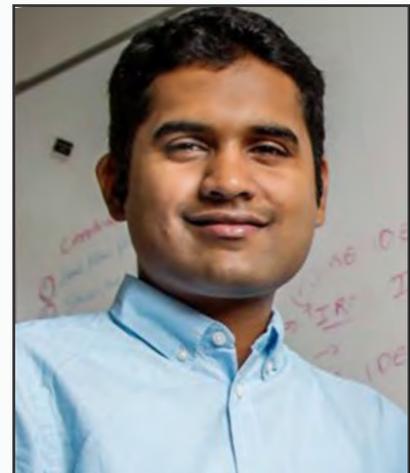
eminent industrialist Dr. B. D. Mundhra, Chairman, Simplex Infrastructure out of which 50 ideas are from teams of Degree Level Engineering Colleges and 5 from the teams of Diploma Level Institutes. These teams participated in the final hardware presentation after abstract submission and video presentation rounds. 8 teams were selected from electrical engineering section for final hardware presentation held at AICTE Headquarters, New Delhi, in which Mavericks bagged 3rd position. Dr. Satyapal Singh, Honourable Minister for Human Resource Development distributed the awards to the winners in the presence of Prof. Anil D. Sahsrabudhe, Chairman AICTE.

Alumni



AMRITA ALUMNI PRESENTS AN AWARD WINNING CONCEPTUAL MODEL OF MATERIALS

The Alumni of Department of Mechanical Engineering, Amritapuri Campus , Patiballa Sreekalyan, 2009-2013 batch, has come up with a new award winning conceptual model of materials. He, with his team, is working on a project to turn a complex materials design problem into an intuitive concept, understandable to engineers from novice to advanced experience levels. Sreekalyan is currently pursuing his Doctorate at the University of Illinois, on this project. He, along with his team, presented the research at the American Society of Mechanical Engineers International Design Engineering Technical Conferences and Computers and Information in Engineering Conference in Cleveland, Ohio, where they received the Freudenstein Young Investigator Award for their paper. The paper deals with mathematical equations and conceptual diagrams, which quantitatively analyze auxetic materials by emphasizing their macro- and microscale geometry. This research marks the first time that this type of conceptual model has been used to describe auxetic materials. Pure geometric methods were used because they can be easily



understood by many, from high school students to designers and the manufacturing professionals who produce the materials."Many engineers shy away from working with auxetic materials because of the perceived difficulty. Our goal is to have a part in reversing that trend", shared Sreekalyan.

AMRITA ALUMNI AT IISC, AS SERB-NATIONAL POSTDOCTORAL STUDENT



Dr Keerthy Dhara, a PhD Alumni from Amrita is now a Post Doctoral fellow at Indian Institute of Science (IISc), India). She is a recipient of SERB-National Postdoctoral Fellowship from Department of Science and Technology, Government of India. During her tenure at Amrita, with the guidance of Dr.T.Satheesh Babu from the Department of Sciences she had received Junior and Senior Research Fellowship from DST through

INSPIRE Program. Her PhD work was on the fabrication of Disposable glucose sensor strips using Graphene-metal-metal oxide hybrid materials. The Tenure had her publish papers with High Impact Factor. At IISC, her Postdoctoral work focus is on electrochemical based detection of bio-molecules for applications in lab-on-chip diagnostic devices.

Societal Outreach



Arts & Humanities
Research Council

COLLABORATIVE PROJECT TO IMPROVE HEALTHCARE SUPPORT IN RURAL AREAS

Amrita Vishwa Vidyapeetham is involved in a collaborative project funded by Arts and Humanities Research Council (AHRC), UK . The project is "Improving Healthcare Support for rural communities in India". Dr.Santhosh Kumar from Department of Electronics and Communication Engineering department in collaboration with Dr. Gareth Loudon, Cardiff Metropolitan University and Dr. Santiago Martin and Martin Wulf Gerdes from University of Agder, Norway as partners. Dr.A. Anandkumar, Head of Neurology and Dr.K.V.Beena ,

Senior Medical Administrator from Amrita Institute of Medical Sciences and Dr.Sajeev Vasudevan and Dr. Ajitha Sajeev, from Amrita Kriya Charitable Hospital, Wynad, Kerala are contributing towards the study.

SKILL DEVELOPMENT PROJECTS IN TRIBAL HAMLETS TO ENHANCE LIVELIHOOD

Project entitled "PROMOTING A MODEL FOR SKILL DEVELOPMENT, CAPACITY BUILDING AND FOOD PROCESSING AMONG IRULAR TRIBES OF MADUKKARAI BLOCK" is funded by Department of Science and Technology (DST) under DST-NRDMs SC/ST scheme. Major aim of the

project is to impart training skills to the tribes under seven heads namely Food processing, Millet based bakery products, Repair of electrical appliances, Computer designing, Jewellery and Craft Making, Promoting kitchen garden and Organic seed bank. Expected target beneficiaries for the training throughout the project period will be around 300 individuals. Creation of marketing avenues and employment opportunities to improve their livelihood

based on the acquired skills is another objective of the project. The project has initiated trainings on Food processing and Millet based bakery products, Jewellery & Craft Making, Promoting kitchen garden and Organic seed bank. Food processing incubator has been established in the University to provide training on fruit and vegetable (Tomato, Amla, Moringa, Tamarind) based Food processing and Millet based bakery products.



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