

Mechanical Aspire

Achievements in Sports, Projects, Industry, Research and Education

External Recognition



D.Sameera kumar (1 yr MECH) played the Inter FCI institution Table tennis tournament held at Guwahathi and secured gold medal in the team championship.

In appreciation, he has been awarded contract by Food corporation of India (FCI), South zone for the next three years (2013-2015).



Dr.K.S.Vijaysekar's Research proposal -“Experimental and Finite element investigations of the machining process with composite materials” has been approved by AICTE with a fund sanction of Rs.18.65 lakhs, to be completed during 2013-16.

Dr. M.S Alphin Invited to Chair a session in International Conference on Human Machine Interaction (HMI) in collaboration with University of SFAX, Tunisia and ASDF, Pondicherry on 25, 26 and 27th of March 2013. 27th March 2013 FN.

Dr. M.S.Alphin, Recognised as an Reviewer board member in IJERT (International Journal of Engineering Research and Technology), 25th March 2013.



Prof.N.Nallusamy was invited to judge a technical session in International Conference on Green Technology in Engineering and Applied Sciences (ICGTEAS'13) conducted on 30th March, 2013 at ADHIPARASAKTHI ENGINEERING COLLEGE, Melmaruvathur.



Dr. A.K. Lakshminarayanan, Reviewed three research papers International Journal of Advanced Manufacturing Technology, Springer and one paper for Materials Science and Engineering A, Elsevier, 4, 20 March 2013



Dr. N. Lakshmi Narasimhan, Reviewed a Research Paper submitted for publication in the Energy Conversion and Management Journal, Elsevier Publications, 20 March, 2013



Dr. K. Babu, Reviewed a technical paper titled "Computation solution for multi-objective optimization problem in CNC milling operation using Particle Swarm Optimization technique" for the International Journal Neural Computing and Applications, 22 March 2013.

Professor Ve. Annamalai invited to review one paper each for International Journal of Quality Reliability and Management (IJQRM) and Machining Science and Technology (MST).

Campus Update

1st semester results show top colleges retain foothold

M Ramya | TNN

Chennai: The first semester results of students in more than 500 engineering colleges affiliated to Anna University show the position of the top colleges remain unchanged.

SSN College of Engineering topped the charts with a pass percentage of 93, followed by Meenakshi Sundararajan Engineering College with 91. Mepco Schlenk Engineering College, Sri Sairam Institute of Technology and RMD Engineering College with 89% each feature among the top colleges in the state. The Loyola-ICAM College of Engineering and Technology is one of the new entrants in the list 11th place, with a pass rate of 85%.

Only 10 in the list have secured a pass percentage of more than 85 in the first semester of the current academic year. The results of the December 2012 exams for first year students shows that no college was able to secure a 100% pass in all subjects.

Those that made it to the top of the list credit their faculty for the success. President of SSN Institutions Kala Vijaykumar said, "We give the students a lot of freedom, so they don't study under pressure, but willingly."

R M Kishore, vice-chairman of the RMK Group of Institutions, with three of the

Times of India, 26-03-2013

LEAGUE TOPPERS

▶ SSN College of Engg - 92.85%
▶ Meenakshi Sundararajan College of Engg - 91.24%
▶ Mepco Schlenk Engg College - 89.24%
▶ Sri Sairam Institute of Technology - 89.11%
▶ RMD Engg College - 89.08%

top 10 colleges with the highest pass rate, said the key to helping students pass the exams lies in grouping students according to their abilities, providing round-the-year counselling and keeping track of their academic progress. Principal of Meenakshi Sundararajan Engineering College M S Babai said: "I make it a point to interact with students. They are under a lot of stress and they need encouragement and counselling."

Academics from these colleges admit that they get the best students. However, the results also show that not a single student has passed all the papers in the first semester in around 20 colleges in the state. "Colleges must find ways to motivate students from different backgrounds to work hard and do well in academics," said a senior academic.

Info to Alumni



SSN Tops the list in First year results.
Message from our Principal

I am pleased to attach the Times of India (26.03.2013) paper cutting with a news that SSN is ranked No.1 in Anna University Nov./Dec. 2012 examinations of first semester B.E./B.Tech. On behalf of SSN family, I convey my hearty congratulations to all the faculty members for this wonderful State level achievement by our students. With regards,
Dr. S. Salivahanan

Biomedical dept conducted an International Conference on Bio-Signals, Images and Instrumentation
March 14-16, 2013

SSN Research Day was conducted on March 29th.

Under the captaincy of Anaka Alankamony (II CSE), The Indian team has won the Asian Junior Squash Championship, after 10 years.

Department Update

One day workshop on Research Trends in Finite element Analysis



There were 41 registered participants including 17 external delegates. The aim of this workshop was to create a platform in which the different Finite Element Analysis application was brought to the fore by the experts. The workshop strived at bringing forth the research transformation for the latest trend in Finite Element Analysis research.



Dr.S.Sureshkumar & Dr.M.S.Alphin
co-ordinated the workshop



The lecture sessions started with a key note address by Prof. Dr. N.Siva Prasad, Professor, IIT Madras. He has completed a good number of Design Projects, helping the industry and has three patents to his credit. His lecture gave a clear picture in Research Techniques through his professional experience

The second lecture was by Dr Manoj Pandey, Assistant Professor, IIT Madras who has completed B.Tech from IIT Madras and MS/PhD from Cornell University, USA. His achievement includes Post Doctoral Research in the area of MEMS. He explained on Computational mechanics based studies of MEMS through Finite Element Analysis.



The afternoon session was enlightened by Mr. Sudhakar Rao Peram, Simulia India, Dassault Systems Ltd. He is a Post Graduate from University of Stuttgart, Germany. His lecture focused on latest trend in applications of Finite Element Analysis in Biomechanics.

Faculty Research Activity



Dr. K.Rajkumar, presented a Research paper titled, Comparative studies on machining characteristics of Al-B4C and Al-B4C-Graphite, in the International Conference on Design, Analysis, simulation and manufacturing- March 21-22, 2013. →



← Mr.K.Subbaiah's paper titled " Microstructure and Tensile properties in Tungsten Inert Gas Welded AA5083-H321" was presented at the National Conference on Emerging Trends in Manufacturing Science and Mechanical Engineering held at Government College of Engineering, Kannur,KERALA, 22 and 23 March-2013.

Dr.S.Suresh Kumar, presented a technical paper on a national conference titled "*Emerging trends in Manufacturing science and Mechanical Engineering*" held at Kannur Govt College, Kannur. Co- authors: B. Sairam, M. Arvind Raj. **The paper has won the best paper award.** 22 - 23 March 2013.



Dr. N. Gnanasekaran's paper titled "Parameter Estimation Using Gauss Newton Algorithm for a Lumped System" has been presented by Kandati Sai Saran II year Mechanical student for NCAAAE'13 conference held at Noorul Islam University, 1-3 March, 2013.

Dr. N. Gnansekar's paper titled "ANN Surrogated Approach for Solving 2D Inverse Heat-Conduction Problem" has been presented by D. Nikkin III year Mechanical student for NCAAAE'13 donference held at Noorul Islam University., 1-3 March, 2013.

Dr. N. Gnanasekaran's paper titled "A lumped parameter analysis using Levenberg-Marquardt Algorithm" has been presented by Kandati Sai Saran II year Mechanical in the National Conference on Emerging Trends in Manufacturing Science and Mechanical Engineering (ETMSME-2013) held at Government College of Engineering, Kannur, Kerala, 22-23 March, 2013.

Dr. N. Lakshmi Narasimhan, presented a Technical paper titled, Studies on the melting/freezing of an inorganic PCM - graphite mix around a horizontal tube in the International Conference on Global Scenario in Energy & Environment, organized by NIT Bhopal during March 14-16, 2013.

Publications

- Dr M.S.Alphin's paper titled "Reconstruction of Osteoporotic Femur bone from CT Images", has been published in the Proceedings of International Conference on pattern Recognition Applications and Technique, ISBN: 978-1-25-905849-3, Co- authors: Akshaya C, D. Saranya Priyadharshini, S.Sowdhami, A.Kavitha, 1-2 March 2013.
- Dr M.S.Alphin's paper titled "Analytical study on pipe material during fluid flow" has been published in the Proceedings of International Conference on Advancements in polymeric Materials, Organised by Advanced Research school of Technology and Product Development,CIPET, Co Authors: Karthick S .(March 01-03, 2013)
- Dr. A.K.Lakshminarayanan's research article titled "Use of EPR test to assess sensitization resistance of AISI ferritic stainless steel weldments" was published online in International Journal of Materials Engineering Performance, Springer publication, 18 March 2013.
- Mr.K.Subbaiah's paper, " Effect of Welding Speed on CO2 Laser Beam Welded Aluminum-Magnesium Alloy 5083 in H321 Condition" has been published in Advanced Manufacturing Research, Vol.685 (2013) pp. 259-263.
- Mr.K.Subbaiah's paper,"Comparison of Tungsten inert gas and friction stir welding of AA5083-H321 aluminium alloy plates" has been published in Trends in Welding Research, Proceedings of the 9th International Conference, June 4-8, 2012, Chicago, Illinios, USA. pp. 598-603.

Workshop on Aeromodeling

Student Enthusiasts join hands with faculty to train their juniors.....

A two day Aero modeling workshop was held in our Department on 15th and 16th March 2013. It was jointly organized by 'SSN Aero Modellers', Department of Mechanical Engineering, SSN in partnership with *Barola Aero Sports* and *SAE India*. The event was aimed at bringing together Aero modelling enthusiasts from SSN and training them on the construction of their own Radio controlled (RC) plane. Seven teams turned up for the engaging workshop, cutting across departments with participation from ECE and EEE as well.

The originators of this flying passion-our Alumni
Vivekanand (mech who is now in Ford) and
D.Samayaraj (who is now in IGCAR)
took the time to join us
For their dream coming true for their juniors



The "flying passionate" team



The teams were taught the fundamentals of aerodynamics and were given an insight into various forms of Aero modelling capabilities and contests. The trainers - *Barola Aero Sports* have rich experience in conducting similar workshops across the state and were able to keep the teams engaged and engrossed throughout.

The hands on training apart, the teams took their RC planes to the college ground and flew them with buoyant enthusiasm, priding at their creations. *Barola Aero Sports* have agreed to take the students on a one day visit to their facility during the summer vacation.

The event was ably coordinated by a Faculty team comprising of Dr.K.S.Vijay Sekar and Dr.N.Lakshmi Narasimhan and an upbeat Student's team comprising of R.Seshadri (Final Year), D.Radheesh (III Yr), V.Srinath, M.Thamilmani and K. Adityan (All in II Yr) from Mechanical Engineering. The workshop culminated in the formation of *SSN Aero Modellers*, which will be a platform for nurturing Aero modelling activities of the Department.

Guest Lectures



← Dr. K. S. Jayakumar, Delivered Guest Lecture for the FDP on Robots and Robot Programming, Sethu Institute of Technology, Kariappatti, 13 & 14 March 2013

Dr. N. Gnanasekaran, Delivered guest lecture at National Conference on Frontiers in Aeronautical, Aerospace and Automotive Engineering, Noorul Islam University, 1-3 March, 2013.



Student Activities

The Nitro Rc buggy team from SSN CE - Team 'Differentials' comprising of Praveen Ramanujam.B, Veeraraghavan.V, Vimallesh.M, SrikanthPrabhu and VaibhavPrakash of second year participated in the RC CAR RACING event at MechFlarez 2013, conducted by Jeppiar Engineering College and competed in the third place in a closely fought race. They were given a cash prize of Rs.2500 and gift coupons from Marrybrown restaurant.



Alumni Special Report

Vigneswaran Govindarajan, Research Analyst
Department Scale Bridging Thermodynamic and Kinetic Simulations,
Interdisciplinary Centre for Advanced Materials Simulation (ICAMS)
Ruhr-Universität Bochum, Universitätstr. 90 a, 44789 Bochum
Germany. Working with Prof. Dr. Steinbach, has sent this information on his research work for sharing with all our friends.

Vigneswaran will be doing his Master thesis in Numerical Simulation Research Department at JFE STEELS, JAPAN for period of 6 months. He will be in Tokyo, Japan till November 2013.

Study of Phase Transformations on Microstructure during Solidification using Open Phase Field Method

Introduction

In modern steels and engineering materials multiple phases often coexist. The mechanical properties strongly depend on the volume fractions and size distribution of the coexisting phases. The modeling of the mechanical behaviour of these heterogeneous materials requires solving phase and grain boundary motion, diffusion and fluid dynamics problems at the same time.

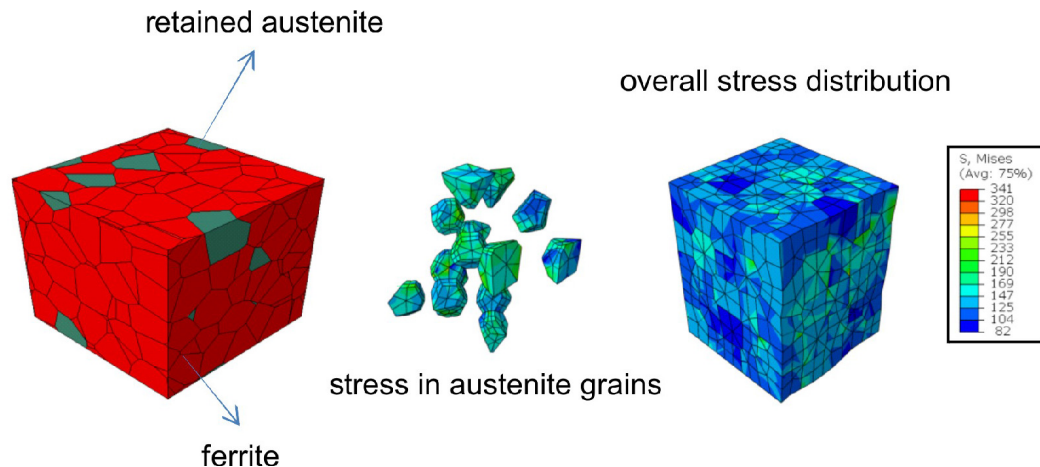


Illustration 1: Representative volume element and its application for TRIP steel.

Future Potential

Inside the simulation platform, the crystal plasticity finite element can model the crystallographic texture, the grain shape evolution and is able to calculate the local stresses, the statistically stored dislocation and geometrically necessary dislocation densities at different material points. The phase field can model the grain subdivision recrystallization and phase transformation. The direct application of the simulation platform will be metal forming process modelling and heat treatment modelling to reduce durations and costs of material development.

Structure

Phase transformations are phenomena of general importance and play a significant role in all areas of materials processing. They determine the microstructure of materials and control their macroscopic properties. The research activities in my project focus on the mesoscopic scale of heterogeneous multiphase microstructures.

We apply different theoretical methods to investigate the constitutive laws controlling microstructure evolution during various stages of materials processing, ranging from solidification to solid-state transformations during thermal processing.

The research activity of my project includes deformation-transformation coupling simulation platforms development, plastic deformation and phase transformation mechanism. These all are carried out under unique technique named as Phase-Field Simulations of Microstructures

Methods

- Crystal plasticity finite element methods
- Phase field methods- My project is done with this method of approach**
- Lattice Boltzmann methods

These methods are coupled in order to bridge time and length scales in the simulation of mechanical properties.

Internship at Interdisciplinary Centre for Advanced Materials Simulation, Bochum, Germany.

Topic:solid phase transformation simulation of steel using OpenPhase code

Brief:To Study the Martensitic Phase Transformation on Steel (Shape Memory Alloys) under Elastic Conditions with Non-Diffusional Transformation which intensively helped in formation of new phase requiring Short range of diffusion(Very small range) driving with less external driven force.Study is done with Multi grain growth under Elastic Condition.Simulation is done using OpenPhase Codes and viewed in Paraview animation software.

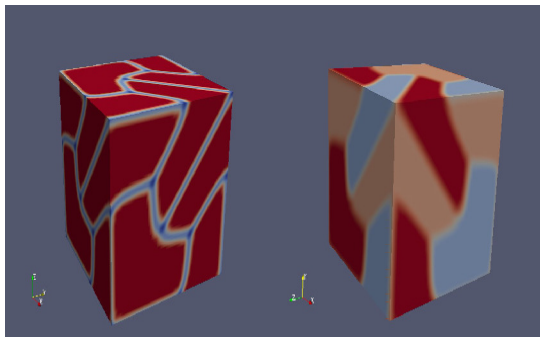


Illustration 2: Complete growth of Martensite Grains

a,b and c are developed twinned martensite Invariants which are parallel to one over the

Other. d- It is an interface between different Phases of Martensite Invariants

Forthcoming Event

INTERNATIONAL CONFERENCE ON SUSTAINABLE INNOVATION AND SUCCESSFUL PRODUCT DEVELOPMENT FOR A TURBULENT GLOBAL MARKET

December 16-18, 2013, Chennai, India

PDMA India (www.pdmaindia.org)

[An affiliate of Product Development & Management Association, the Global Body
Headquartered in the USA (www.pdma.org)]