CECRI News

July - August 2009

Central Electrochemical Research Institute
Karaikudi 630006
Tamilnadu, India
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website: www.cecri.res.in

CECRI Foundation Day

61st CECRI Foundation Day was celebrated at CECRI, Karaikudi on July 27, 2009. Dr.Nagesh R.Iyer, Director, SERC, Chennai graced the occasion as Chief Guest and delivered a lecture on "*Grand Structural Engineering Challenges & their Solutions - A few illustrative cases*".

In his lecture, he highlighted the quality policy of SERC (ISO 9001 certified by RINA) followed by the vision, organizational structure, major facilities and R&D thrust areas. He also mentioned that SERC's Tower Testing Research Station is one among the top five similar facilities in the world.

He narrated about the great invention of FINite element Engineering analysis using Adaptive Refinement Technique (FINEART) A multiphysics computational analysis package. This software package was developed with international collaboration for R&D purposes for static, natural frequency and dynamic types of analysis. This is meant for testing and analysis of new materials of construction using powerful mathematical modeling.

He has explained a few case histories of successful utility of FINEART to

- Cooling towers design proof check
- Damage tolerant evaluation of wing bottom skin panel of SARAS aircraft
- Dynamic crash simulation showing impact of car into a post in order to educate people how air bags and seat belts reduce injury
- Analysis and design of superstructure of navigational span of Pamban railway bride where the existing bridge is successfully converted for broad gauge based on the recommendations of SERC.

While emphasizing the highlights of FINEART application, he also mentioned that the package was given to all engineering colleges/research centers in Tamil Nadu and a few others in Karnataka, Kerala and Andhra Pradesh for its evaluation and validity. The feedback from those colleges and research centers in Tamil Nadu and a few others in Karnataka, Kerala and Andhra Pradesh for its evaluation and validity. The feedback from those colleges and research centers are continuously received for further upgradation of the package.

When he elaborated about the bridge evaluation for railways in order to estimate the residual life of bridges under various test conditions, he said that SERC had taken up an extensive study of two old bridges one at Nagari in Andhra Pradesh and another the bridge across Kusasthalai near Arokkonam in Tamilnadu. Both were constructed many years ago. The study would cover all aspects viz.,

present drastic increase of traffic, load and weightage of the trains and in future too, including whether the overloading would affect the design. SERC would also undertake a similar study on three more old bridges with the main objective to devise a methodology for using railway bridges without compromising the safety aspects. He said the condition of the Pamban Bridge, which was converted into broad gauge without altering the basic structure with the active participation of SERC, was good. It would be monitored continuously.

Further he informed about the successful continuous remote monitoring of a bridge located at Visakhapatnam for a period of 5 years from SERC. He also posed some of the corrosion problems encountered during their structural evaluation and requested CECRI to come up with suitable remedial measures.

Finally he has mentioned about the blast resistant test evaluation of IGLOO structures meant for ammunition storage for defence applications. He concluded his talk by describing the goals of SERC for the forthcoming 5 years.

Paying tributes to Dr.RM.Alagappa Chettiar, who donated 300 acres of land and cash of Rs.15 lakh in 1948 to establish CECRI at Karaikudi, Dr.V.Yegnaraman, Acting Director, CECRI, in his welcome address, said CECRI activities were directed towards the development of new and improved products and processes as well as novel innovations in electrochemical science and technology. CECRI is also offering Anna University B.Tech. course in Chemical and Electrochemical Engineering. It has been undertaking several projects in collaboration with laboratories in and outside India. Dr.S.Syed Azim, Scientist and Head, ICP Section proposed the vote of thanks.

Grant-in-aid/ Sponsored Projects taken up

Title	Organization	Value in Rs.
Feasibility study on the preparation of L-cysteine from cystine.	M/s. Vijayam Biocytes Private Limited, Chennai	234277/-

Consultancy Projects taken up

Title	Organization	Value in Rs.
Suggesting the suitable protective coating system for pipes, pumps, structures and marine unloading arms on sea coast at South Asia LPG Company	M/s. South Asia LPG Co. Private Limited, Vishakapatnam	165450/-
Advisory consultancy on suitable protective coating system for concrete bridge structures.	M/s. NABARD & Rural Roads, Chidambaram	336900/-

Technical Services Undertaken

Title	Organization	Value in Rs.
Testing of CPCC coated reinforcement rods and chemicals covered by Patent No. 481/Del/93 and 259/Del/92 as per CECRI code of practice.	Mr. KN Madhusoodanan Kerala	83834/-
To supply four coated Titanium anodes of size 60cm x 60cm and two uncoated perforated Ti cathodes of 60cm x 60cm suitable for the electrolytic production Tetra Alkyl Ammonium Hydroxide from the respective Bromides.	M/s. Tatva Chintan Pharma Chem Private Ltd., Ankleswar	132360/-
Processing 6 number tubular Titanium mesh anodes of diameter 150mm and length 750mm for electrochemical treatment of effluent from yeast manufacturing unit.	M/s. G E T Water Solution (P) Limited., Chennai	56253/-

New Technologies Licensed

Electrosynthesis of Potassium Permanganate
by Cation Exchange Membrane Process to
M/s Libox Chem (India) Private Limited, Mumbai
Lumpsum Premium: Rs. 2 lakh
Recurring Royalty: Nil
Nature of License: Non-exclusive
Period of License: 7 years

Electrochemical method for
Hydrogen compressor to
M/s Eastern Electrolyser Limited, New Delhi
Lumpsum Premium: Rs. 8 lakh
Recurring Royalty: Nil
Nature of License: Non-exclusive
Period of License: 7 years

3-Day Workshop on Electron Microscopy

3-Day Workshop on Electron Microscopy (3DWEM-2009) was held during July 30- August 1, 2009 at CECRI, Karaikudi organized by the Federation of Science Clubs of Tamilnadu (FSCT), Chennai in collaboration with CECRI. First day of the workshop was devoted to impart knowledge to the higher secondary students on the fundamental aspects of electron microscopy, important components of the instrument, specimen preparation techniques and applications.162 students in and around Karaikudi attended the awareness program. Advanced program on electron microscopy was conducted on 31st July and 1st August 2009. About 62 young research scholars and scientists participated in the advanced program.

Dr. N. Palaniswamy, Scientists-G, CECRI and Chairman, Advisory committee of the Workshop welcomed the dignitaries and participants.

Mr. K. Varatharajan of IGCAR, Kalpakkam and Convener of the Workshop spoke about the workshop and the origin of FSCT, Chennai. Dr. V. Yegnaraman, Acting Director, CECRI, Karaikudi in his presidential address mentioned about the important research activities in CECRI and pointed out the importance of microscopy in the current research activities.

Professor T.R. Ramachandran, Visiting Scientist, Non Ferrous Technology Development Centre, Hyderabad delivered the inaugural address on "Introduction to Electron Beam Instruments". He explained the basic components and its functioning of different microscopes viz. LM, TEM and SEM with schematics. Images from different microscopes were explained with resolving power and depth of field. He also explained the application of microscopes for microstructure, crystallography and chemical composition analysis. He pointed out the recent development of TEM, which can give an image of 0.5A resolution. He concluded his speech by encouraging the young students to learn basic science tries to understand the happenings and invited them to become future scientists. To motivate the higher secondary students, a Quiz program was conducted during the awareness program. Prizes were distributed to first three places who secured highest marks in the quiz program.

The following topics were discussed on the second and third day of the workshop: Scanning Electron Microcopy, Transmission Electron Microcopy, Diffraction Patterns construction and indexing, parameters `g' and `s' in imaging, patterns from multiphase materials, Study of defects in crystals in the EM based on diffraction contrast, high resolution electron microscopy and applications, Atomic Force Microscopy and convergent beam electron diffraction. Lectures were delivered by Professor T.R. Ramachandran, eminent scientists from IGCAR and CECRI. Tamilnadu State Council of Science and Technology lent partial financial support to the Workshop. At the end, Dr. R. H. Suresh Bapu, Scientist and Organizing Secretary of the Workshop proposed the vote of thanks.

Foreign deputation

Mr.K.Firoz Babu, Project Assistant, Electro Organic Division was deputed to UK from 9th July to 29th September 2009 under joint collaborative project between CSIR and Royal Society.

Dr.Bosco Emmanuel, Scientist was deputed to Australia on sabbatical leave as Distinguished Visiting Scientist at Division of Materials Science and Engineering, CSIRO, Australia from 27th July 2009 to 26th January 2010.

Dr.M.Paramasivam, Scientist was deputed to Germany under INSA- DFG Exchange Programme to pursue research on conducting polymer electrodes with Professor Ulrich Guth, Kurt-Schwabe Institute for Measuring and Sensor Technology, Meinsberg for three months from 1st August 2009.

Dr.B.Subramanian, Scientist was deputed to Germany for oral presentation of his paper at the 7th International Symposium on Applied Plasma Science held from 31st August to 4th September 2009 with 100% under CSIR PFA scheme.

Industry oriented technology courses

Name of the course	Duration	Number of participants	Amount Rs.
Corrosion Control in Boilers and Heat Exchanges (CSE-1)	24.8.09 to 28.8.09	09	59,562/-

Special training programme conducted

Name of the Special Course and name of the sponsor	Duration	Number of participants	Amount Rs.
Corrosion and its control in Petroleum production for M/s Cairn Energy India Private Limited, Gurgaon	11.8.09 to 13.8.09	10	2,18,834/-
Corrosion and its control for M/s Indian Oil Corporation Limited, Mumbai	31.8.09 to 4.9.09	15	3,06,634/-

Retirement on Superannuation on 31.08.2009

Mr. S. Ramachandran, Gr.II(4)

Mr. D. Solaiyan, Assistant G, Gr.I