

CECRI NEWS

May - June 2009

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Central Electrochemical Research Institute
Karaikudi 630006



New Technologies Developed and Released

Tetra Alkyl Ammonium hydroxides are currently used industrially as stabilizers or solubilisers for organic compounds in aqueous solutions, as micro biocides or template agents in the synthesis of numerous zeolites, washing and etching of the surface of semiconductor substrates, lubricant oil fuel mixture in combustion engine and as organic base for making pharmaceuticals.

Hitherto, they are being prepared by chemical [ion exchange] method where concentration beyond 100 gpl can not be achieved; impurities levels are exceptionally high and the rate of production is extremely low. M/s Tatva Chintan Pharma Chem Private Limited, Ankleshwar, Gujarat had sponsored a project in August 2008 for the development of electrochemical technology for the production of Tetra Ethyl Ammonium Hydroxide [TEAH] Tetra Propyl Ammonium Hydroxide [TPAH] and Tetra Butyl Ammonium



Hydroxide [TBAH] for Rs. 6.75 lakh and supplied all the raw materials.

Chlor Alkali Division of CECRI has developed an electrolyser with noble metal oxide coated titanium anode, perforated titanium cathode and Nafion cation exchange membrane to produce tetra

alkyl ammonium hydroxides of very high concentration [250-550 gpl] with exceptionally high production rates and ultra pure levels.

The TEAH and TPAH technologies were released to M/s Tatva Chintan Pharma Chem Private Limited on the following terms:

Lump sum Premium : Rs. 2 lakh for each technology
Recurring Royalty : Nil
Nature of License : Exclusive
Period of License : 5 years

They have plans to set up production facility at Ankleshwar for a capacity of one ton per day of each these quaternary ammonium hydroxides.

Extension of MOU

CECRI has successfully developed the process for gold plating of momentum wheel and reaction wheel assembly casings and other components made of aluminium alloy for use in



satellites. ISRO Inertial Systems Unit [IISU], Thiruvananthapuram is in need of Space quality Gold plating for the real satellite components and an MOU was signed between CECRI and IISU in 2002. The requirements of IISU are being satisfied since then by CECRI in the R&D plating facility set up exclusively for this purpose at Electroplating and

Metal Finishing Technology division of CECRI.

The components plated at CECRI are used in INSAT and IRS series of satellites and in Chandrayaan. Now we have extended the MOU on "Gold plating of minor components of RWA and MWA used in Satellites" for a six month period to cater to the present requirements of IISU and offered to transfer the developed technology.

New Facilities added

X-Ray Diffractometer with Provision for In-Situ Studies on Electrochemical Cells

Model :X-ray Diffractometer D8 Advance
Make :BRUKER AXS GmbH, Germany
Source :Ceramic X-ray tube with Copper-Cobalt anode
Gonimeter :Theta-Theta Geometry, 0.0001° resolution
Detector :NaI(Tl) scintillation detector and high speed solid state LynxEye Detector
Software :DIFFRACPlus Baix and Evaluation package
DIFFRACplus SEARCH, DIFFRACplus TOPAS
ICDD PDF-2 database

Computer Controlled Scanning Electrochemical Microscope (SECM)

Model :Chi900b
Make :CH Instruments, USA
Specifications :Computer controlled Nano positioner, Bi-potentiostat (12V, 10mA) Galvanostat (10mA), Multi-channel potentiostat, Micro-positioner, Three translation stage and Jetting device
Support :Scanning probe, sweep, step, pulse, galvanostatic and other techniques like Amperometric i-t curve, Differential Pulse amperometry, Double differential pulse amperometry, triple pulse amperometry, Bulk electrolysis with Coulometry, LSV and CV etc.

Technical Services undertaken

Title : 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
Organization : M/s. KRV Infrastructures, Dindigul, for Rs. 83833/-
Title : Supplying suitable corrosion resistant thermal coating for Hydroclave in VSSC
Organization : VSSC, Thiruvananthapuram, for Rs.110300/-

Grant-in aid/Sponsored Projects taken up

Title : Development of Nano particles dispersed Nickel composite materials by electro-co deposition technique using DC and pulse current
Organization : DST, New Delhi, for Rs. 14,98,266/-

Patent Applied

An electrochemical coagulation process for the removal of Nitrate from drinking water and electrolytic cell therefore

Vasudevan S; Epron Florence; Ravichandran S; Sozhan G; Mohan S. and Lakshmi J.

Visit of Foreign Students

Under the joint collaborative project of the CSIR-Royal Society, UK, Mr.Donnie K Carmichael and Ms Nuria Tapa Ruiz, PG Research students of the Chemistry Department, Glasgow University, UK visited from 7th to 14th May 2009 to pursue research in Lithium Batteries Division, CECRI.

Foreign Deputation



Dr. S. Gopukumar and Dr. A. Sivashanmugam, Scientists were deputed to UK from 21st to 27th May 2009 to carry out preliminary work and to discuss on the project planning and targets under CSIR / Royal Society joint project on New electrode materials for high energy density, lithium, rechargeable batteries at the Department of Chemistry, Glasgow University.



Mr. Akhila Kumar Sahu, Scientist, CECRI Madras unit was deputed to Canada from 31st May to 3rd June 2009 to participate in the International Conference on Hydrogen + Fuel Cells 2009 held at Vancouver.



Dr. N. Kalaiselvi, Scientist was deputed to USA for four months from June 1, 2009 as CSIR Raman Research Fellow to pursue research on the possibility of identifying novel category Lithium metal1 and metal2 phosphate solid solution / surface modified lithium metal phosphate cathodes for rechargeable lithium batteries at Materials Engineering Division of the Texas Materials Institute of the University Texas.



Dr. S. Vasudevan, Scientist and Ms J. Lakshmi, SRF [Project] were deputed to France from 3rd June to 2nd July 2009 to pursue research under Indo French Centre for the Promotion of Advanced Research [IFCPAR] project on Enhanced process for the removal of nitrate from water at the Laboratory for Catalysis and Organic Chemistry, University of Poitiers.



Dr. Sheela Berchmans, Scientist was deputed to Korea during 10-12 June 2009 to make oral presentation of her paper entitled "Biodegradation of azo dyes of Hansenula anomala for current generation" at the 2nd Microbial Fuel Conference, held at Gwangju Institute of Science and Technology. Her visit is sponsored under Project NWP0035.

Retirements on Superannuation on 31.05.2009



Dr. N.G. Renganathan,
Scientist Gr. IV(5)



Mr. C. Muthurajan,
Security Guard

Retirements on Superannuation on 30.06.2009



Mr. P.S. Mohan,
TO Gr. III(7)



Mr. K. Karunanidhi,
Gr. II(3)