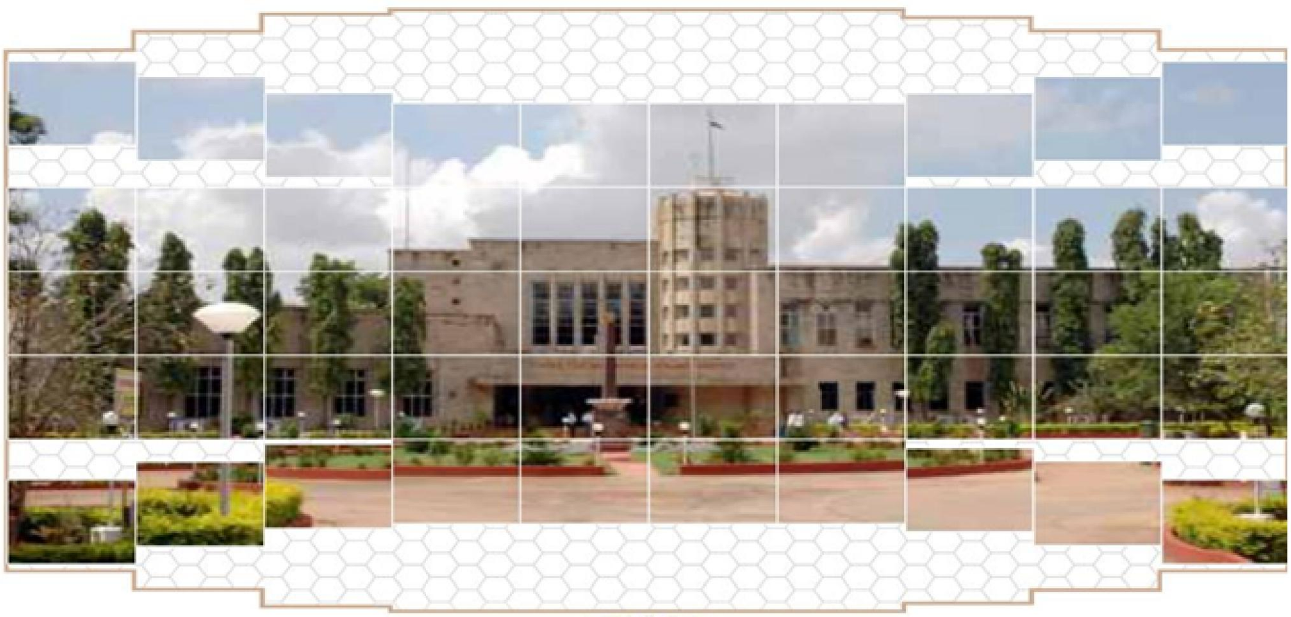
INDUSTRY/ ACADEMIC ORIENTED TECHNOLOGY/ REFRESHER COURSES

उद्योग/ शिक्षा उन्मुख प्रौद्योगिकी / पुनश्चर्या पाठ्यक्रम

TRAINING PROGRAMME 2017

प्रशिक्षण कार्यक्रम 2017



CSIR-CENTRAL ELECTROCHEMICAL RESEARCH INSTITUTE
(Council of Scientific & Industrial Research)
KARAIKUDI – 630 003, TAMILNADU, INDIA

सीएसआईआर - केन्द्रीय विद्युत अनुसंधान संस्थान
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
कारैकुडी - 630 003, तमिलनाडु, भारत

www.cecri.res.in

INDUSTRY/ ACADEMIC ORIENTED TECHNOLOGY/REFRESHER COURSES - 2017

CSIR-Central Electrochemical Research Institute (CECRI), a unique transdisciplinary institute devoted to all aspects of Electrochemical Science and Technology, ***is conducting refresher courses/ training program useful for academicians, entrepreneurs, practitioners etc.*** in (1) Corrosion and Materials Protection (2) Electroplating and Metal Finishing (3) Electrochemcial Power systems, (4) Electrochemcial Pollution Control, (5) Electrochemcial Materials Science etc., as per the following schedule:

Sl. No	*Course code*	*Title of the course*	*Duration (5 Days)*	*Course Co-ordinators*
1	*CSE-1*	*Cathodic protection and pipeline corrosion*	*28 August - 01 September 2017*	*Dr.M. Selvaraj* *Mr. SP. Manoharan* *Dr. Rakesh Barik*
2	*CSE-2*	*Paints for corrosion protection*	*18-22 September 2017*	*Dr.S. Sathiyanarayanan* *Dr. S. Muralidharan* *Er. R. Jeyaram*
3	*ECPS -1*	*Electrochemical Power Systems - Lead Acid Battery*	*09-13 October 2017*	*Dr. Sundar Mayavan* *Er. V. Muthumani*
4	*ECPS -2*	*Electrochemical Power Systems - Lithium ion Battery*	*13-17 November 2017*	*Dr. S. Gopukumar* *Dr. K. Ramesha*
5	*EMFT -1*	*Electroplating and anodizing – principles and practices*	*27 November - 01 December 2017*	*Dr.S.Mohan* *Dr. R. Sekar*
6	*EPC-1*	*Waste Water Treatment Technologies*	*04-08 December 2017*	*Dr. S. Maruthamuthu* *Dr. S. Udayabhanu*
7	*ECMS-1*	*Nano structured Coatings by Physicochemical Methods for Value Added Products*	*18-22 December 2017*	*Dr. B. Subramanian* *Dr. Subrata Kundu*

GENERAL INSTRUCTIONS

- Medium of instruction is English.
- Registration / enrolment will be closed 10 days prior to the commencement of the particular course.
- Particular course will be conducted only if the number of participations is 15 and above. Otherwise CECRI may drop the execution of that programme. In view of this, before proceeding to the course, the prospective participants are advised to confirm with the Head, Skill Development Group (S&T) or the concerned Technical coordinator about its date of execution.
- For technical queries about a training course, the prospective participants may contact the concerned Technical Co-ordinator(s).
- Fees once paid will not be refunded (except in cases of cancellation of the training by CECRI) at any circumstances.
- The special tailor made training program to suit the needs of the industries also being conducted
- Decision of the Director, CSIR-CECRI is final and binding in all respect.

Course Fee :

Fee per Participant is Rs. 17,700/- per course (Course Fee Rs. 15,000 + Rs. 2700 -GST 18%)
For overseas participant fee is 750 US dollars. The training fee includes Course Material, Training Kit, Lunch, Snacks, Tea / Coffee, Course Certificate & Visit to CSIR – CECRI Unit / Corrosion testing Centre – Mandapam (Near Rameswaram).

The course fee should be sent at least 15 days prior to the commencement of the training, through wire transfer or by Demand Draft drawn in favour of Director, CSIR-CECRI payable at Karaikudi.

Details for electronic transfer	
Name of the bank	**INDIAN BANK** **A.C. Campus, (KARAIKUDI)**
Branch code	00245
Name of the Account	IRF-CECRI
Account No.	**737253625**
IFSC code	**IDIB000A008**
PAN No.	AAATC2716R
GST Reg. No.	**33AAATC2716R2ZL**

Boarding & Lodging

Accommodation will be provided on twin sharing AC room – charges to be borne by the Trainees – as per the prevailing rates (R. 100/- per head per day) in the CECRI Guest House on prior request basis (Subject to availability). Bed tea/coffee, break-fast, dinner will be arranged by Guest House on payment basis.

Address for sending application forms and further enquiries:

In-charge
Skill Development Group (S&T)
CSIR-CECRI, Karaikudi – 630 003 (TN)
Phone : (04565) 241471, 241470
Fax: 04565 – 227713 / 227779
email : st@cecri.res.in
For details pl. contact
R. Rajasekar, Sr. Principal Scientist
email: rrajasekar@cecri.res.in, Cell: +91-94431 46893
Dr.S.Angappan, Sr. Scientist,
email: angappan@cecri.res.in, Cell: +91-9994614582

सीएसआईआर–केंद्रीय
विद्युतरसायन अनुसंधान संस्थान
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद्)
कारैकुडी – 630006
तमिलनाडु, भारत

CSIR- CENTRAL
ELECTROCHEMICAL RESEARCH
INSTITUTE
(Council of Scientific & Industrial Research)
KARAIKUDI – 630 006
Tamilnadu, INDIA

TRAINING PROGRAMME - 2017

प्रशिक्षण कार्यक्रम -2017

Enrollment Form

Course code (please ✓) : ☐ CSE-1 ☐ CSE-2 ☐ ECPS-1 ☐ ECPS -2 ☐ EMFT-1

☐ ECMS -1 ☐ EPC-1

Course Title : ____

____

Course Duration: From__________________________To________________________

Name of the candidate: ____

Date of birth & Age : ____ Male / Female

Qualification (Photocopies of Certificates have to be attached):

Educational: _______________________________ Technical: _____________________________________

Designation: ____

Address: ____

____

____

____

____ Pincode : ☐☐☐☐☐☐

Contact Details :

STDCode : ☐☐☐☐☐☐ Phone No: ☐☐☐☐☐☐☐☐☐☐

Mobile : ☐☐☐☐☐☐☐☐☐☐

e-mail id : ____

(P.T.O)

.... **PAYMENT DETAILS** ....

Mode ofPayment : ☐ Demand Draft ☐ Wire (e-) transfer

Name of the Bank: ____ Date :________________

DD No: _________________ (or) e-transfer ID / UTR No: ____________________________________

Amount Rs.

Signature of the Candidate

CERTIFICATE OF SPONSORING AUTHORITY

Certified that Sri/Ms/Dr. ____

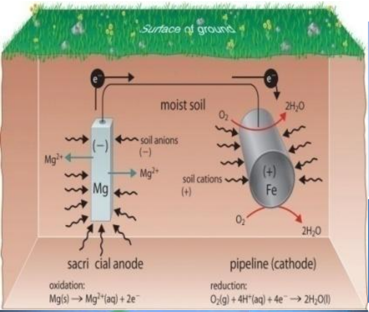
Is employed as ____ in our company / Institute.

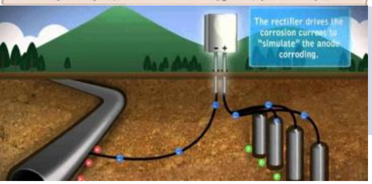
Place :
Date :

(Signature of the sponsoring authority)

Designation :
Address :

CSIR-CECRI – OFFICE USE





TRAINING SCHEDULE 2017

CORROSION SCIENCE AND ENGINEERING

Code No.	Title of the course	Date & Duration
CSE-1	Cathodic protection & Pipeline corrosion	28 Aug. – 01 Sep. 2017

Theory: Corrosion: basic aspects, types & monitoring – Underground corrosion – Fundamental of cathodic protection(CP) – Galvanic Anodes – Impressed current– Field data and design aspects – Instruments for CP Systems – Stray current electrolysis and interference– CP case Studies – Operation and Maintenance of CP Systems- Cathodic protection of above ground storage tanks – Metallurgical aspects of Corrosion – Corrosion in Concrete Structures - Internal corrosion of pipelines –Bio/ Microbial corrosion in oil pipelines – Outlines of protective coatings –methods of application of paints – Protective coatings for underground pipelines – Recent trends in pipeline coatings – Coating condition survey of buried pipelines – Testing and evaluation of paints & coatings.
Practical: Polarization studies – Soil resistivity – Cathodic Protection – Testing of Organic Coatings– P-S-P (pipe-to –soil-potential) measurements – C P and Bio corrosion.

Technical co-ordinator (s):

Dr. M. Selvaraj
Sr.Principal Scientist
mselvaraj@cecri.res.in,
selvaraj58@gmail.com
094871 12277, 04565-241386 /403

Mr. SP. Manoharan
Sr.Principal Scientist
spmanoharan@cecri.res.in
09442233765, 04565-241365

Dr.Rakesh Barik
Sr.Scientist,
rakesh@cecri.res.in
09487749809, 04565-241397

TRAINING SCHEDULE 2017

CORROSION SCIENCE AND ENGINEERING

Code No.	Title of the course	Date & Duration
CSE-2	Paints for corrosion protection	18 -22 Sep. 2017

Theory: Basic aspects of corrosion – Classification of raw materials – Fundamentals of pigments and resins – Surface preparation – Conversion Coatings – Methods of paint applications – Electrocoating – Powder coatings – Testing liquid paints – Chemical and corrosion resistance coatings.

Practical: Preparation of paints - Conversion coatings - Powder coatings – Electropainting - Testing of liquid paints & coatings by physical, accelerated and electrochemical techniques.

Technical Co-ordinator (s)

Dr. S. Sathyanarayanan
Sr.Principal Scientist
sathya@cecri.res.in
09442215802, 04565-241390

Dr. S. Muralidharan
Principal Tech. officer
corrmurali@yahoo.com
09443609537, 04565-241382

Er.R. Jeyaram
Sr. Technical Officer
jeyaram@cecri.res.in
09443609537, 04565-241382


TRAINING SCHEDULE 2017

ELECTROCHEMICAL POWER SOURCES

Code No.	Title of the course	Date & Duration
ECPS-1	Electrochemical Power Sources: Lead Acid Battery	09 -13 Oct. 2017

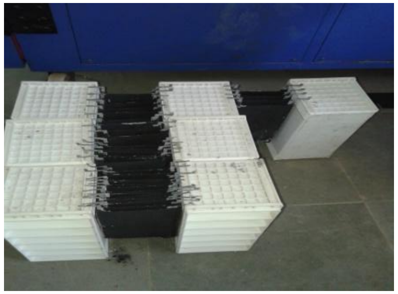

Lead-Acid Battery

Theory: Fundamentals of Electrochemical Cells, Electrochemical power sources, Batteries (Primary & secondary Batteries), Raw materials for the manufacture of Lead acid batteries- Lead Alloys, Separators and Electrolyte. Unit operations in lead acid batteries - Grid casting, mixing, pasting and curing. Formation and Assembly. Testing of batteries, battery charging method. Factors affecting the battery performance. Dry charged batteries- VRLA battery, principle, merits and demerits. Failure mode of Lead acid batteries, Defect, causes and remedy. Different charging methods. Light weight Lead Acid Battery.

Practical :

- Density determination of lead oxide / wet paste
- Separator impact test / Vibration and load test
- Formation procedure current calculation-Finished Battery determination , Capacity test at 20 h rate & 3 C HRD





Technical Co-ordinator(s)

Dr. Sundar Mayavan
Sr. Scientist
sundarmayavan@cecri.res.in
07598446281, 04565 241423

Er. V. Muthumani
Sr. Technical Officer
muthumani@cecri.res.in
09442250228, 04565-241408


TRAINING SCHEDULE 2017

ELECTROCHEMICAL POWER SOURCES


Code No.	Title of the course	Date & Duration
ECPS-2	Electrochemical Power Sources: Lithium – ion Battery	13-17 Nov. 2017

Theory: Evaluation of Lithium-ion Batteries Materials and Chemistry (Anode, Cathode, Electrolyte and Separator), Tailoring the electrode materials for high energy density, Potential Applications of Li-ion Batteries, Electrode fabrication, Assembling the lithium ion cell and full battery, Battery Packs and Module, Battery Test Methods, Factor affecting the battery performance, safety aspect of Lithium ion battery, Future Lithium Batteries.

Practical :

Fabrication of Lithium-ion coin cells - Testing & Safety for lithium ion cells







Technical Co-ordinator(s)

Dr. S. Gopukumar
Sr.Principal Scientist
deepika_41@rediffmail.com ,
smbtapsun@gmail.com
094431335901, 04565-241424

Dr. K. Ramesha
Principal Scientist
ramesha@cecri.res.in
08148024108, 09442932912,
044-22544560

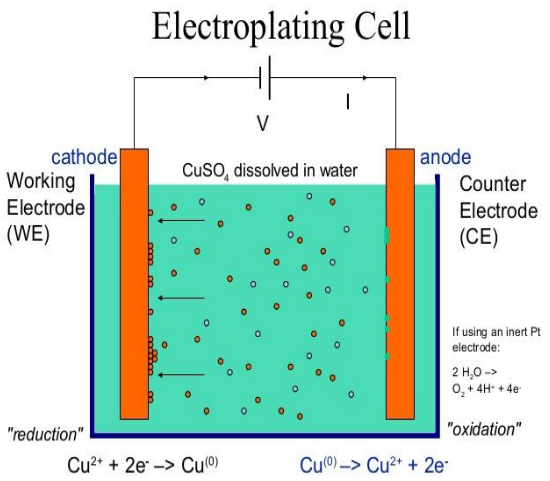
TRAINING SCHEDULE 2017

ELECTROPLATING AND METAL FINISHING TECHNOLOGY

Code No.	Title of the course	Date & Duration
EMFT-1	**Electroplating and anodizing – principles and practices**	**27 Nov. – 01 Dec. 2017**

Theory: Fundamentals of electroplating-Pretreatments for electroplating-Electroplating of copper, nickel, chromium, zinc, cadmium, silver and gold-Uses of Hull cell and Haring-Blum cell-Testing of electrodeposits-Other plating methods- Anodizing, Hard anodizing and colouring.

Practical: Determination of current efficiency and throwing power- Bath optimization- Testing equipments-Analysis of plating bath and testing of deposits.



Dr. S. Mohan
Sr.Principal Scientist
mohan40159@cecri.res.in, mohan40159@gmail.com
09442126765, 04565-241261

Technical Co-ordinator(s)

Dr. R. Sekar
Sr. Technical Officer
rsekar@cecri.res.in
09940874641, 04565-241572

TRAINING SCHEDULE 2017

POLLUTION CONTROL

Code No.	Title of the course	Date & Duration
EPC-1	Waste water treatment technologies	04 – 08 Dec. 2017

Theory : Industrial activity and toxicity of industrial pollutants – waste water treatment methods– Analysis of waste water – Electrochemical (EC) methods of treatment – Advanced EC oxidation – Bioremediation – Waste minimization & recovery of value added products – Fluoride management – Salt management and recovery – Microbial fuel cell – Design and fabrication of EC reactors – Membrane technologies - Solid and hazardous waste management – Biological conversion – Principles and applications of Advanced analytical instruments – Soil Chemistry and Bio-electro kinetics for soil remediation – Case studies – Role of pollution control boards (State and Central).

Practical: Electro-oxidation – Electro flotation – EC membrane technology – Electro coagulation

Visit to: Textile and tannery common effluent treatment plants - Tiruppur & Perundurai

Technical Co-ordinator(s)

Dr. S. Maruthamuthu
Sr.Principal Scientist
maruthamuthu@cecri.res.in,
biocorrcecri@gmail.com
09597555360, 04565-241388

Dr. S. Udaya Bhanu
Principal Scientist
subhanu@cecri.res.in,
udayscientist@gmail.com
09443619557, 04565-241438

Ion Assisted Co-Sputtering Facility

TRAINING SCHEDULE 2017

ELECTROCHEMICAL MATERIALS SCIENCE

Code No.	Title of the course	Date & Duration
ECMS-1	**Nano structured coatings by physicochemical methods by value added products**	**18 – 22 Dec. 2017**

KrF based Pulsed Laser Deposition facility

Theory: Basics of vacuum-Physical Vapor Deposition (PVD)-Thermal Evaporation-Electron Beam Evaporation-Sputtering Techniques-Diode Sputtering-Radio Frequency Sputtering- Magnetron sputtering-Ion Plating-Pulsed Laser Deposition-Nitriding -boriding-Chemical Vapor Deposition (CVD)- Electrodeposition-Brush Plating-Sol-Gel Synthesis- Spin Coating-Surface analysis by X-ray Diffraction (XRD)- Scanning Electron Microscopy (SEM)- Atomic Force Microscopy (AFM)- X-ray Photoelectron Spectroscopy (XPS)-Transmission Electron Microscopy (TEM)-Laser Raman Spectroscopy-Potentiodynamic Studies-Electrochemical Impedance Spectroscopy (EIS).

Practical: Demonstration of Thermal and Electron Beam Evaporation, DC/RF/Pulsed/Ion Assisted Magnetron Sputtering, Pulsed Laser Deposition, Chemical Vapor Deposition, Electrodeposition, Sol-Gel Technique, Spin Coating, XRD, SEM, EDAX, AFM, TEM and XPS are included in the practical sessions with few hands on training to the participants on coating processes.

Sputtering facility

Thermal Evaporation Facility

Technical Co-ordinator(s)

Dr. B. Subramanian
Principal Scientist
bsmaniancecri@gmail.com
09443465544, 04565-241538

Dr. Subrata Kundu
Scientist
Subrata_kundu2004@yahoo.co.in
07708474984, 04565-241487

E-Beam Evaporation Facility