

SCHOOL OF INFRASTRUCTURE

DEPARTMENT OF CIVIL ENGINEERING

Ref. : 766/Dean(Sol)/0424

Date: 04.04.2024

Electrochemical Corrosion Techniques: Theory and Hands on Training

Date: 08.03.2024 - 09.03.2024

Time: 9.30 am to 4.00 pm

I. Preamble:

A two-day workshop on “Electrochemical Corrosion Techniques: Theory and Hands-on Training” was organized by the Department of Civil Engineering, and Department of Chemistry, B.S. Abdur Rahman Crescent Institute of Science & Technology in association with AMPP India section (SZ) & NIS (SZ) on 08.03.2024 and 09.03.2024.

<p style="text-align: center;">Important Dates</p> <p>Submission of Application: 29th February 2024 Intimation of Acceptance : 04th March 2024 Workshop : 08th and 09th March 2024</p> <p style="text-align: center;">Venue</p> <p>Seminar Hall, Crescent School of Business, 6th Floor, Architecture Block</p> <p style="text-align: center;">Registration Fees</p> <p>Students/Research Scholars : Rs. 750 Faculty from Institutions : Rs. 1,500 Delegates from Industries : Rs. 2,500</p> <p style="text-align: center;">Registration link</p> <p>https://forms.gle/gX8bu7izLHwqPV7x7 OR</p> <div style="text-align: center;"> </div> <p style="font-size: 8px; color: white;">(Crossed Demand Draft in favour of "Dept of Civil Engineering, B.S. Abdur Rahman Crescent Institute of Science & Technology" payable at Chennai-48)</p> <p style="text-align: center;">For NEFT Transfer:</p> <p>Name of a/c Holder : Dept of Civil Engineering, B.S. Abdur Rahman Crescent Institute of Science & Technology Account No. : 165701000019251 Nature of Account : Savings Account Bank Name & Branch : Indian Overseas Bank, Vandalur IFSC Code : IOB0001657 MICR Code : 600020102</p>	<div style="text-align: center;"> </div> <p style="text-align: center;">PATRONS</p> <p>Dr. T. Murugesan Vice Chancellor Dr. N. Thajuddin Pro-Vice Chancellor Dr. N. Raja Hussain Registrar</p> <p style="text-align: center;">CONVENERS</p> <p>Dr. M.S. Haji Sheik Mohammed Dean, School of Infrastructure Dr. I. Raja Mohamed Dean, SPCS</p> <p style="text-align: center;">CO-CONVENER</p> <p>Dr. N. Hajara Beevi Head, Department of Chemistry</p> <p style="text-align: center;">ADVISORY COMMITTEE</p> <p>Dr. U. Kamachi Mudali Vice Chancellor, Homi Bhabha National Institute, Mumbai & Advisor, NIS-SZ</p> <p>Dr. Radhakrishna G. Pillai Professor Department of Civil Engineering, IT Madras Dr. N. Rajendran Professor & Head, Department of Chemistry, Anna University</p> <p style="text-align: center;">Address for Correspondence:</p> <p style="text-align: center;">COORDINATORS</p> <p>Dr. Roopa V Assistant Professor (Sr. Gr.) Department of Civil Engineering Dr. N. Vasimalai Assistant Professor (SeI. Gr.) Department of Chemistry</p> <p style="text-align: center;">B.S. Abdur Rahman Crescent Institute of Science and Technology, Vandalur, Chennai-600048.</p> <p style="text-align: center;">Contact Details:</p> <p>vasimalai@crescent.education / 9884871402 roopa@crescent.education / 9840167891</p>	<div style="text-align: center;"> </div> <p style="text-align: center;">3rd Two Day Workshop on Electrochemical Corrosion Techniques: Theory and Hands on Training (08th & 09th March, 2024)</p> <div style="text-align: center;"> </div> <p style="text-align: center;">Jointly Organised by Department of Civil Engineering & Department of Chemistry B.S. Abdur Rahman Crescent Institute of Science and Technology, Chennai - 48</p> <p style="text-align: center;"> </p> <p style="text-align: center;">Supported by</p> <p style="text-align: center;"> </p>
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II. ABOUT THE SPEAKERS AND TOPICS

- Advanced Electrochemical Techniques: Dr. S. Ningshen, Head, CSTD & CEPS, IGCAR, Kalpakkam
- Advanced Techniques of Monitoring - Electrochemical Impedance Spectroscopy: Dr. S. Ramanathan, Professor, Department of Chemical Engineering, IIT Madras
- Corrosion Testing of Steel in Concrete: Dr. Radhakrishna G. Pillai, Professor, Department of Civil Engineering, IIT Madras
- Basics of Electrochemistry, Testing and Monitoring: Dr. S. Rangarajan, Former Head, Water & Steam Chemistry Division, BARCF, Kalpakkam
- Basics of Corrosion and its Forms: Dr. S. C. Vanithakumari, SO/F, Corrosion Science & Technology Division, IGCAR, Kalpakkam
- Electrochemical Behaviour of Coated Steel Rebars in Concrete: Dr. M.S. Haji Sheik Mohammed, Dean, School of Infrastructure, BSACIST
- Inhibitors for Corrosion Protection: Dr. T.M. Sridhar, Assistant Professor & Head (i/c), Department of Analytical Chemistry, Madras University
- Applications of Nanomaterials for Corrosion Control: Dr. N. Vasimalai, Asst. Prof. (Sel. Gr.), Department of Chemistry, BSACIST
- Galvanic Anode Cathodic Protection: Dr. Roopa V, Asst. Prof. (Sr. Gr.), Department of Civil Engg., BSACIST

ABOUT THE SESSION:

The purpose of the two-day workshop is to train postgraduate students, research scholars, faculty members of arts & science and engineering colleges, and industry personnel in electrochemical analytical equipments and related theory. The workshop aims to provide knowledge on the latest advancements in electrochemical corrosion and its control techniques in the fields of science and technology. It is intended to serve as an introduction to the use of electrochemical techniques in corrosion applications, with an emphasis on the use of modern instruments to acquire pertinent data. The workshop also aims to provide practical insight into corrosion aspects and to train participants in the proper interpretation of data for use in corrosion prediction, prevention, and monitoring.

The session details and programme schedule are given below:

DAY 1 – March 8, 2024 (Friday)		
Time	Topic	Speaker / Resource Person
8.30 - 9.30 a.m.	Registration	
9.30 - 9.35 a.m.	About the Workshop	Dr. M.S. Haji Sheik Mohammed Dean, School of Infrastructure, BSACIST
9.35 - 9.45 a.m.	Felicitation & Inauguration of Workshop	Dr.S.Ningshen Head, CSTD & CEPS, IGCAR, Kalpakkam
9.45 - 10.30 a.m.	Basics of Corrosion and its Forms	Dr. S.C. Vanithakumari, SO/F, Corrosion Science & Technology Division, IGCAR, Kalpakkam
10.30 - 11.15 a.m.	Basics of Electrochemistry, Testing and Monitoring	Dr.S.Rangarajan, Former Head, Water & Steam Chemistry Division, BARCF, Kalpakkam
11.15 - 11.30 a.m.	Tea Break	
11.30 - 12.30 noon	Advanced Electrochemical Techniques	Dr.S.Ningshen Head, CSTD & CEPS, IGCAR, Kalpakkam
12.45 - 2.00 p.m.	Lunch Break	
2.00 - 3.00 p.m.	Corrosion Testing of Steel in Concrete	Dr. Radhakrishna G Pillai, Professor, Department of Civil Engineering, IIT Madras
3.00 - 4.00 p.m.	Hands-on Training on Basic Electrochemical Testing Techniques	Faculty members of BSACIST & Research Scholars of IIT Madras and BSACIST
4.00 p.m.	High Tea	
DAY 2 – March, 9, 2024 (Saturday)		
Time	Topic	Speaker / Resource Person
9.00 - 9.30 a.m.	Galvanic Anode Cathodic Protection	Dr. Roopa V, Asst Professor (Sr. Gr.), Department of Civil Engineering, BSACIST
9.30 - 10.00 a.m.	Electrochemical Behaviour of Coated Steel Rebars in Concrete	Dr. M.S. Haji Sheik Mohammed Dean, School of Infrastructure, BSACIST
10.30 - 11.00 a.m.	Applications of Nanomaterials for Corrosion Control	Dr. N. Vasimalai, Asst. Professor (Sel. Gr.) Department of Chemistry, BSACIST
11.00 - 11.15 a.m.	Tea break	
11.15 - 12.00 a.m.	Inhibitors for Corrosion Protection	Dr. T.M. Sridhar, Assistant Professor, Head (i/c), Department of Analytical Chemistry, University of Madras.
12.00 - 01.00 p.m.	Advanced Techniques of Monitoring - Electrochemical Impedance Spectroscopy	Dr. S. Ramanathan, Professor, Department of Chemical Engineering, IIT Madras
12.45 - 2.00 p.m.	Lunch Break	
2.00 - 3.30 p.m.	Hands - on Training on Advanced Electrochemical Testing Techniques	Dr. S. Ramanathan, Professor, Department of Chemical Engineering, IIT Madras Research Scholars of IIT Madras and BSACIST
3.30 to 3.45 p.m.	MCQ on Topics of Day 1 and 2	Research Scholars of BSACIST
4.00 to 4.30 p.m.	Valediction, Certificate Distribution & High Tea	

Dr. Mohd. Umar recited the Qirath and the workshop began with the blessings of almighty. Dr. M.S. Haji Sheik Mohammed, Dean, School of Infrastructure, briefed about the workshop and the workshop was inaugurated by Dr. S. Ningshen, Head, CSTD & CEPS, IGCAR, Kalpakkam.



Inaugural Address by Dr. S. Ningshen, Head, CSTD & CEPS, IGCAR, Kalpakkam

Following the inaugural ceremony, the speakers delivered the thematic lectures on the various topics as per the schedule. All the lectures were very informative and interesting to the participants.

During the Hands-on training session, the participants were exposed to various electrochemical testing techniques / experiments such as Electrochemical impedance spectroscopy, impressed voltage test, half cell potential test, macrocell corrosion test, carbonation test and the determination of chloride threshold etc. The participants were also facilitated to perform the experiments under the mentoring of expertise faculty and research scholars.



Dr. S.C. Vanithakumari delivering lecture on Basics of Corrosion and its Forms



Dr.S.Ningshen honouring Dr.S.Rangarajan, Former Head, Water & Steam Chemistry Division, BARCF, Kalpakkam for delivering lecture on Basics of Electrochemistry, Testing and Monitoring



Prof. Radhakrishna G Pillai honouring the Speaker Dr.S.Ningshen, Head, CSTD & CEPS, IGCAR, Kalpakkam, for delivering lecture on Advanced Electrochemical Techniques



Dr. Radhakrishna G Pillai, Professor, Department of Civil Engineering, IIT Madras, delivering lecture on Corrosion Testing of Steel in Concrete



Dr. M.S. Haji Sheik Mohammed, Dean, School of Infrastructure, BSACIST delivering lecture on the Electrochemical Behaviour of Coated Steel Rebars in Concrete



Dr.T.M. Sridhar, Assistant Professor, Head (i/c), Department of Analytical Chemistry, University of Madras delivering lecture on Inhibitors for Corrosion Protection



Dr.T.M. Sridhar honouring Dr. N. Vasimalai, Asst. Prof. (Sel. Gr.), Department of Chemistry, BSACIST for delivering lecture on Applications of Nanomaterials for Corrosion Control



Dr. Roopa V, Asst. Prof. (Sr. Gr.), Department of Civil Engg., BSACIST delivering lecture on Galvanic Anode Cathodic Protection



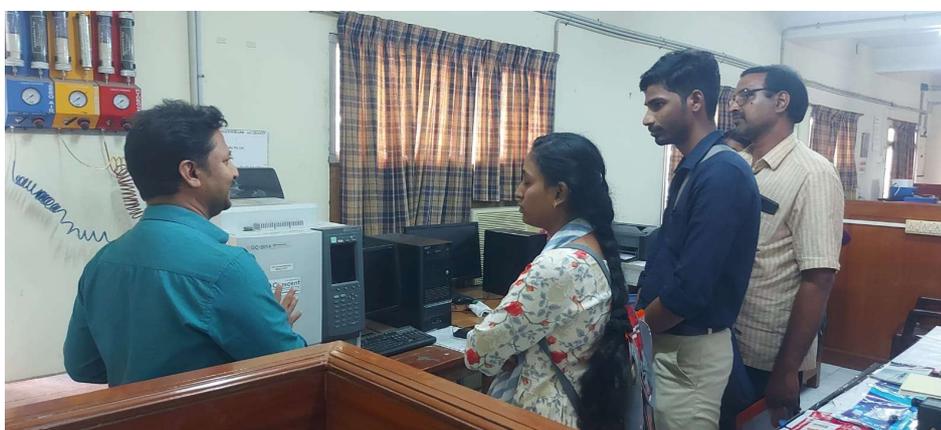
Dr. S. Ramanathan, Professor, Department of Chemical Engineering, IIT Madras delivering lecture on Advanced Techniques of Monitoring - Electrochemical Impedance Spectroscopy



Dr. M.S Haji Sheik Mohamed honouring the Speaker Dr. S. Ramanathan



Participants of 2- day workshop on Electrochemical Corrosion Techniques: Theory and Hands on Training



Hands on training session on 8th March 2023 (Afternoon) at Chemistry Laboratory

The following are the details of participants of ECT 2024:

S.No	Name	Designation	Institution
1	Ms. Benisha P.V	Research Scholar	University of Madras
2	Ms. Dharshini A	Research Scholar	Anna University
3	Mr. Dilrabin K	Research Scholar	National Institute of Technology, Calicut
4	Ms. Hemalatha C	Research Scholar	B.S. Abdur Rahman Crescent Institute of Science and Technology
5	Ms. Immaculate Mercy J	Research Scholar	B.S. Abdur Rahman Crescent Institute of Science and Technology

6	Mr. Jabastin S	Research Scholar	University of Madras
7	Mr. Prem Kumar S	II Year, Msc., Chemistry	Vivekananda College, Madurai
8	Mr. Ranjith Kumar R	II Year, Msc., Chemistry	Vivekananda College, Madurai
9	Ms. Siani Michel	Research Scholar	National Institute of Technology, Calicut
10	Ms. Srividya T	Research Scholar	SRM Institute of Science and Technology
11	Mr. Suriyapandi M	II Year, Msc., Chemistry	Vivekananda College, Madurai
12	Mr. Symonds Fradrick J	Research Scholar	B.S. Abdur Rahman Crescent Institute of Science and Technology
13	Ms. Cheranmadevi P	Research Scholar	Anna University
14	Mr. Muniyan P	Research Scholar	Anna University
15	Ms. Veera Muthammal V	Research Scholar	B.S. Abdur Rahman Crescent Institute of Science and Technology
16	Mr. Ashar Eqbal	II Year, M.Tech., Structural Engineering	B.S. Abdur Rahman Crescent Institute of Science and Technology
17	Ms. Charumathi M	I Year, M.Tech., Structural Engineering	B.S. Abdur Rahman Crescent Institute of Science and Technology
18	Ms. Divyalakshmi M	II Year, M.Sc Chemistry	B.S. Abdur Rahman Crescent Institute of Science and Technology
19	Mr. Hirthik Ramkumar A	I Year, M.Tech., Structural Engineering	B.S. Abdur Rahman Crescent Institute of Science and Technology
20	Mr. Inzamam Ul Haq A	I Year, M.Sc., Chemistry	B.S. Abdur Rahman Crescent Institute of Science and Technology
21	Mr. Mohammed Yasin A M	II Year, M.Tech., Structural Engineering	B.S. Abdur Rahman Crescent Institute of Science and Technology
22	Mr. Muhammed Ibrahim L	I Year, M.Tech., Structural Engineering	B.S. Abdur Rahman Crescent Institute of Science and Technology
23	Mr. Narendran P	II Year, M.Sc Chemistry	B.S. Abdur Rahman Crescent Institute of Science and Technology
24	Mr. Naveen E	I Year, M.Tech., Structural Engineering	B.S. Abdur Rahman Crescent Institute of Science and Technology

25	Mr. Praveen J	I Year, M.Tech., Structural Engineering	B.S. Abdur Rahman Crescent Institute of Science and Technology
26	Ms. Priya M	II Year, M.Sc., Chemistry	B.S. Abdur Rahman Crescent Institute of Science and Technology
27	Mr. Saran T	I Year, M.Tech., Structural Engineering	B.S. Abdur Rahman Crescent Institute of Science and Technology
28	Mr. Nabeel Abdullah	Final Year, B.Tech., Civil Engineering	B.S. Abdur Rahman Crescent Institute of Science and Technology
29	Mr. Ramesh Kumar R	Assitant Professor	Ramakrishna Mission Vivekananda College , Chennai
30	Mr. Sahik Davood	I Year, M.Tech., Structural Engineering	B.S. Abdur Rahman Crescent Institute of Science and Technology
31	Dr. Sivaramakrishnan S	Associate Professor	Sairam Institute of Technology, Chennai
32	Ms. Mary Rebekah Sharmila S	Research Scholar	B.S. Abdur Rahman Crescent Institute of Science and Technology
33	Ms. Abirami R	Research Scholar	University of Madras
34	Ms. Bidisha Panda	Internship Student	B.S. Abdur Rahman Crescent Institute of Science and Technology
35	Dr. Purnima	Post Doctrate	Indian Institute of Technology, Madras
36	Dr. Krishna Unni A S	Post Doctrate	Indian Institute of Technology, Madras
37	Mr. Umesh Hule	Research Scholar	Indian Institute of Technology, Madras
38	Ms. Shefali Aggarwal	Research Scholar	Indian Institute of Technology, Madras
39	Ms. Swapna S	II Year, M.Sc., Chemistry	B.S. Abdur Rahman Crescent Institute of Science and Technology

A Quiz was conducted at the end of 2 days workshop. The first three winners were Mr. Umesh Hule, Ms. Shefali Aggarwal and Dr. Purnima. They were awarded with cash prizes of Rs. 1000 , Rs.750 and Rs. 500 respectively. The certificate for participation was distributed to the participants by Dr. S. Ramanathan, Professor, Department of Chemical Engineering, IIT Madras. Vote of thanks was proposed by Dr. N.Hajara Beevi, Head, Department of Chemistry. The organizers heartly thank and acknowledge the support

from sponsors M/s. Sri Easwari Scientific Solution Pvt Ltd, Chennai and M/s. Leading Edge Lab Equipments limited, Coimbatore for the smooth conducte of ECT 2024.



Distribution of certificates to the participants

III. OUTCOME

The outcomes of the two-day workshop on electrochemical corrosion and its control techniques include:

- Providing an introduction to the use of electrochemical techniques in corrosion applications.
- Emphasizing the use of advanced electrochemical instruments and techniques to acquire pertinent data.
- Offering insight knowledge on practical aspects of corrosion.
- Providing an opportunity for participants to acquire knowledge on state-of-the-art instruments in laboratory sessions designed to complement the lecture sessions.
- Emphasizing techniques for proper interpretation of data for use in corrosion prediction, prevention, and monitoring.

Dr. Roopa V.
Asst. Prof. (SG)

Dr. M.S. Haji Sheik Mohammed
Dean, School of Infrastructure