

PROGRAM CONTENT

In this two day workshop, the participants will be demonstrated with:

(a) The process of deposition of metal/ metal oxide thin film on a substrate using DC/RF Magnetron sputtering system. The effect of important operating parameters on thickness, uniformity, porosity and physical features of the coating will be discussed.

(b) Surface characterization of the deposited thin layer through contact angle measurement.

(c) Application of thermodynamic models and numerical simulation to predict static and dynamic contact angle.

REGISTRATION FEE DETAILS

The Registration is Rs. 500/- per participant. The Demand Draft must be drawn in favor of "The Principal", SVCE, Sriperumbudur payable at Indian Bank, Sriperumbudur. Filled in registration form along with DD should be sent to the address given below on or before 26th April, 2019. *The number of participants is limited to 50.*

ADDRESS FOR COMMUNICATION

Organizing Secretary

Dr. Nalinkanth V. Ghone

Professor, Department of Chemical Engineering
Joint Co-ordinator, Interdisciplinary Centre for Nanotechnology

Sri Venkateswara College of Engineering
Pennalur, Sriperumbudur Tk - 602 117

Tel: 044 – 27152000, Extn: 553

Mob: 8122603376

Fax: 044 - 27162462 / 27162494

Email: nalinkanth@svce.ac.in

*National Level Workshop
on
Thin Film Deposition, Characterization and their
Advanced Applications*

9th & 10th May, 2019

REGISTRATION FORM

1. Name :
2. Designation :
3. Age :
4. Participant Category :
(Research Scholars / Faculty member)
5. Name of the Institution with postal address:
6. E-mail ID:
7. Mobile number:
8. Specialization:
9. Registration fee:
Demand Draft No. & Date:

Declaration

I agree to abide by the rules and regulations of the workshop.

Place:

Date:

Signature of the Candidate

Signature of the Head
of the Institution

(Copy of this form can be used for registration)

SRI VENKATESWARA COLLEGE OF ENGINEERING

Autonomous - Affiliated to Anna University, Chennai

An ISO 9001:2008 certified Institution

Accredited by NBA, New Delhi



**National Level Workshop
on
Thin Film Deposition,
Characterization and their Advanced
Applications
9th & 10th May, 2019**

Convener

Prof. N. Meyyappan

Organising Secretary

Dr. Nalinkanth V. Ghone

Coordinators

Dr. Yogesh Kumar M.

Mr. S. Rajasekar

Organized by

Department of Chemical Engineering

&

Interdisciplinary Centre for Nanotechnology

Sri Venkateswara College of Engineering

Pennalur, Sriperumbudur Tk - 602117

<http://www.svce.ac.in>

ABOUT THE INSTITUTION

Sri Venkateswara College of Engineering (SVCE), autonomous institute affiliated to Anna University, Chennai, is one of the premier technical institutions in Tamilnadu, which was established in 1985. The College is situated on the Chennai – Bangalore National Highway (NH4) about 37 km south-west of Chennai. The college offers 10 UG programmes, 10 PG programme and has 11 Research Centres to offer MS/PhD programme under Anna University, Chennai. The National Board of Accreditation accredited many of the eligible programmes, and SVCE is an ISO 9001:2008 certified institution.

DEPARTMENT OF CHEMICAL ENGINEERING

Department of Chemical Engineering came into existence in the year 1994. The department was accredited by NBA and offers B. Tech and M.Tech programme in Chemical Engineering. It is the only affiliated college in Chennai region to offer PG program in Chemical Engineering. The Department has highly qualified and experienced faculty and staff and has modern facilities to conduct advanced research in the field of Chemical Engineering. The department has been recognized as a research centre by Anna University for MS/PhD programmes since 2011. The funded research projects being conducted at the Department include synthesis and characterization of nanomaterials for tissue engineering application, water and effluent treatment.

ABOUT THE WORKSHOP

Thin films of precisely-controlled thickness, composition and surface pattern are of interest from both a theoretical and practical perspective. The focus of this workshop is to demonstrate the deposition of metal and/or metal oxide films using the DC/RF Magnetron Sputtering system and their potential applications.

Dielectric materials such as SiO₂, TiO₂, ZnO, Al₂O₃ and metal films such as Au, Ag, Pt and Zn have been deposited to form uniform, large-area, high-quality films of monolayer thickness using sputtering technique. These films find a wide range of applications both in industry and research. From an industrial perspective, these films have been used as coatings to improve wear- and corrosion- resistance, reduce surface roughness, and modify surface energy, electrical and optical properties of a substrate. Application of metal oxide thin films in pH sensing and metal oxide-metal thin films as catalyst in hydrogen fuel cells have already been demonstrated. From a fundamental science perspective, deposition of films of controlled thickness, porosity, physical features (nano- and micro-patterning) and tailored functionality is in itself a field of immense scientific interest that could lead to materials for building our future energy harvesters, catalytic membranes, artificial tissues, photonic electro-optic devices and multifunctional surface coatings.

PROGRAMME HIGHLIGHTS

The program aims to create a platform for experts from academia and research institutes to share their knowledge and recent findings in the field of thin film coating and their applications with faculty members, research scholars and their peers.

This interdisciplinary workshop aims to demonstrate undergraduates and research scholars in various fields of Engineering, on deposition of thin films using DC/RF Magnetron Sputtering and demonstrate with experiments and numerical simulations on application of thin films to modify surface properties to minimize corrosion. The techniques and the methodology demonstrated are of potential interest to chemical,

mechanical, marine, biotechnologists and biomedical engineers.

PARTICIPANTS

Faculty members, Research scholars and students from AICTE affiliated institutions can attend. Total number of participants is limited to 50. Therefore, early registration is highly recommended.

VENUE AND DURATION

This workshop is organized at Department of Chemical Engineering, Sri Venkateswara College of Engineering (SVCE), Sriperumbudur, Tamilnadu, India, on 9th and 10th May, 2019.

TRAVEL ALLOWANCE & ACCOMODATION

No Travel allowance or accommodation will be provided for the workshop. However, the participants can avail the SVCE bus facility to attend this workshop. For route details, please refer <http://www.svce.ac.in>.

IMPORTANT DATES

Last date for registration	: 26/04/2019
Intimation of selected Candidates through email	: 03/05/2019
Maximum number of participants	50

For any further clarifications kindly e-mail to nalinkanth@svce.ac.in

Workshop Reflection Report

Title: Thin Film Deposition, Characterization and their Advanced Applications.

Event Date: May 9th& 10th, 2019.

No of Participants: 43 (19 External, 24 Internal)

Reflection Report:

The Department of Chemical Engineering and Interdisciplinary Centre for Nanotechnology, Sri Venkateswara College of Engineering (SVCE), organized this two days national level workshop on 'Thin Film Deposition, Characterization and their Advanced Applications' in association with IChE –SVCE STUDENT CHAPTER.

Thin films of precisely-controlled thickness, composition and surface pattern are of interest from both a theoretical and practical perspective. The focus of this workshop is to demonstrate the deposition of metal and/or metal oxide films using the DC/RF Magnetron Sputtering system and their potential applications. The techniques and the methodology demonstrated are of potential interest to chemical, mechanical, marine, biotechnologists and biomedical engineers.

A total of 43 members had registered and participated in this two days National level workshop, Inclusive of both students and faculty members (19 External, 24 Internal). The External participants includes students from other states such as Manipal Institute of Technology, Karnataka and from nearby colleges in Chennai which include St. Joseph's College of Engineering, Rajalakshmi Engineering College, Chennai Institute of Technology, Vels University etc., In addition to these, students and faculty members of SVCE had registered and participated in this two days national level workshop.

In this two day workshop, the participants were demonstrated with:

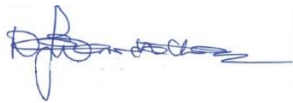
- (a) The process of deposition of metal/ metal oxide thin film on a substrate using DC/RF Magnetron sputtering system. The effect of important operating parameters on thickness, uniformity, porosity and physical features of the coating will be discussed.
- (b) Surface characterization of the deposited thin layer through contact angle measurement.
- (c) Application of thermodynamic models and numerical simulation to predict static and dynamic contact angle.

The workshop was inaugurated by Prof. R. Jayavel, Professor - Crystal Growth Centre, Coordinator, Centre for Nanoscience and Technology, Anna University, Chennai and delivered the inaugural address. He

stimulated the interest of participants by elaborating the potential of thin film technology for fabricating various nanoscale devices. The workshop included Five Technical lectures and Two Practical Sessions by senior academicians and industrial experts in the area of Thin Film Deposition. The workshop concluded with valedictory address by Dr. K. Subramanian, Executive Director (R&D), Powergear Limited, Chennai. He spoke on MEMS for chemical engineers and encouraged the participants to explore the MEMS world for finding innovative solutions. At the end he distributed the certificates to the participants. The detailed technical program schedule and the workshop photos are attached herewith the report.

Based on the analysis of the feedback received from the participants, the event received an average overall assessment feedback rating of 4.4 out of 5, indicating that the workshop was more than satisfactory for their needs. The complete feedback analysis report is attached herewith the report.

PREPARED BY:



Dr. D. Swaminathan
Associate Professor
Department of Chemical Engineering
Sri Venkateswara College of Engineering



Dr.N.MEYYAPPAN, M.E, Ph.D.,
Professor & HOD
Department of Chemical Engineering
Sri Venkateswara College of Engineering
Post Bag No.1, Pennalur, Sriperumbudur Tk 602 117
Tamil Nadu, INDIA.

PROGRAM SCHEDULE

Day 1 - 9th May, 2019

TIME	EVENTS
08.30 AM - 09.00AM	Registration
09.00 AM - 09.05AM	Prayer Song
09.05 AM - 09.10AM	Welcome Address by Dr. N. Meyyappan Professor & Head Department of Chemical Engineering, SVCE
09.10AM - 09.20AM	Patron Address by Prof. S. Ganesh Vaidyanathan Principal, SVCE
09.20 AM - 09.25AM	Lighting the lamp by Chief Guest
09.25 AM - 09.30AM	Introducing the Chief guest by Dr. Nalinkanth V. Ghone Organizing Secretary, Professor - Chemical Engineering & Biotechnology, SVCE
09.30 AM - 10.30AM	Inaugural Address & Keynote Lecture -1 “Thin Film Technology for Nanoscale Devices” by Chief Guest Prof. R. Jayavel Professor - Crystal Growth Centre Coordinator, Centre for Nanoscience and Technology Anna University, Chennai
10.30 AM - 10.45 AM	TEA BREAK
10.45 AM – 11.30 AM	Lecture – 1 Advanced Physical Techniques for Thin Film Deposition by Dr. Sudhakar K. Bharatan Professor, Department of Electrical and Electronics Engineering Co-ordinator – Interdisciplinary Centre for Nanotechnology SVCE, Chennai
11.30 AM – 12.15 PM	Lecture – 2 Advanced Chemical Techniques for Thin Film Deposition by Dr. Nalinkanth V. Ghone Professor - Chemical Engineering & Biotechnology, Joint Co-ordinator – Interdisciplinary Centre for Nanotechnology SVCE, Chennai
12.15 PM – 01.15 PM	LUNCH
01.15 PM – 03.15 PM	Hands on Sessions (Parallel)
	Batch A Thin Film Coating by RF- Magnetron and DC Sputtering <i>Venue: TIC Building</i>

Day 2 - 10th May, 2019

TIME	EVENTS		
	Hands on Sessions (Parallel)		
09.00 AM - 11.00 AM	<table border="1"> <tr> <td align="center"> Batch A Hydrophobicity Characterization by Contact Angle Measurement <i>Venue: Chemical Engineering Lab</i> </td> <td align="center"> Batch B Thin Film Coating by RF- Magnetron and DC Sputtering <i>Venue: TIC Building</i> </td> </tr> </table>	Batch A Hydrophobicity Characterization by Contact Angle Measurement <i>Venue: Chemical Engineering Lab</i>	Batch B Thin Film Coating by RF- Magnetron and DC Sputtering <i>Venue: TIC Building</i>
Batch A Hydrophobicity Characterization by Contact Angle Measurement <i>Venue: Chemical Engineering Lab</i>	Batch B Thin Film Coating by RF- Magnetron and DC Sputtering <i>Venue: TIC Building</i>		
11.00 AM - 11.15 AM	TEA BREAK		
11.15 AM – 12.15 PM	Lecture – 3 Estimation of surface energy and characterization of Sputter deposited Thin Films: Theory, experiment and applications by Dr. Yogesh Kumar M. Assistant Professor Dept of Chemical Engineering, SVCE, Chennai		
12.15 PM – 01.15 PM	LUNCH		
01.15 PM – 02.30 PM	Keynote Lecture -2 “MEMS for Chemical Engineers” by Dr. K. Subramanian Executive Director (R&D) POWERGEAR LIMITED Chennai		
02.30 PM – 03.15 PM	Valedictory Function Valedictory Address & Certificate Distribution by Dr. K. Subramanian, Executive Director (R&D), POWERGEAR LIMITED, Chennai.		

Attendance Day 1 - 9th May, 2019

SL.NO	Name of the Participants
1	AARTHI ARUL
2	ABIRAMI P
3	ADHITHAN S
4	ADITHYA B
5	ADITYA SHARMA
6	AJAY KUMAR M
7	AJITH KUMAR N
8	AJITH KUMAR S
9	AKSHAY S L
10	AKSHAYA T
11	ANAND N
12	ANANTHARAM V
13	ANANYA R
14	ARAVIND M
15	AROREBIN A
16	ATHARSH S S
17	BALAJI R
18	BARATH K R
19	BASKARAN N
20	DAYANAND S
21	DEEPIKA V
22	DHANUSH KODI S
23	DHINESHKUMAR P
24	DINESH KUMAR V
25	GAJENDRA PRABHU D
26	GANESH R
27	GANESH RAM KUMAR K
28	GANJU CHIRANJEEVI CHAITANYA
29	GOKUL R
30	HARISH KUMAR N N
31	HARRISH KUMAR S
32	HEMANTH KUMAR C
33	JEEVAN KUMAR L
34	KALAI VENDHAN P
35	KARTHICE G
36	KARTHIK RAJA P
37	KAVITHA R
38	KRISHNA S ATHERYA
39	KUBERA VASAN M
40	KUMARAGURU R
41	KUNAL D
42	LALITH KANNA T
43	LOGESH S

Attendance Day 2 - 10th May, 2019

SL.NO	Name of the Participants
1	AARTHI ARUL
2	ABIRAMI P
3	ADHITHAN S
4	ADITHYA B
5	ADITYA SHARMA
6	AJAY KUMAR M
7	AJITH KUMAR N
8	AJITH KUMAR S
9	AKSHAY S L
10	AKSHAYA T
11	ANAND N
12	ANANTHARAM V
13	ANANYA R
14	ARAVIND M
15	AROREBIN A
16	ATHARSH S S
17	BALAJI R
18	BARATH K R
19	BASKARAN N
20	DAYANAND S
21	DEEPIKA V
22	DHANUSH KODI S
23	DHINESHKUMAR P
24	DINESH KUMAR V
25	GAJENDRA PRABHU D
26	GANESH R
27	GANESH RAM KUMAR K
28	GANJU CHIRANJEEVI CHAITANYA
29	GOKUL R
30	HARISH KUMAR N N
31	HARRISH KUMAR S
32	HEMANTH KUMAR C
33	JEEVAN KUMAR L
34	KALAI VENDHAN P
35	KARTHICE G
36	KARTHIK RAJA P
37	KAVITHA R
38	KRISHNA S ATHERYA
39	KUBERA VASAN M
40	KUMARAGURU R
41	KUNAL D
42	LALITH KANNA T
43	LOGESH S

EVENT PHOTOS
Inaugural Function Photos



Valedictory Function Photos



FEEDBACK ANALYSIS REPORT

All participants participated in providing the feedback based on the following criteria for rating:

S. No	Criteria	Average Rating by the participants
1	Lecture Content	4.56
2	Knowledge on the topics	4.52
3	Coverage of topics	4.48
4	Practical session experience	4.12
5	Overall assessment of the Program	4.36

Average assessment of the program: 4.41

Rating of 1: It was not satisfactory to my needs.

Rating of 2: It only met a few of my needs.

Rating of 3: It was satisfactory for my needs.

Rating of 4: It was more than satisfactory for my needs.

Rating of 5: Outstanding-it far exceeded my expectations!

Dr. D. Swaminathan
Associate Professor
Department of Chemical Engineering
Sri Venkateswara College of Engineering

Dr. N. MEYYAPPAN, M.E., Ph.D.,
Professor & HOD
Department of Chemical Engineering
Sri Venkateswara College of Engineering
Post Bag No.1, Pennalur, Sriperumbudur Tk 602 117
Tamil Nadu, INDIA.