All India Council for Technical Education

(A Statutory body under Ministry of HRD, Govt. of India)

Nelson Mandela Marg,Vasant Kunj, New Delhi-110070 Website: www.aicte-india.org

STTP: Sanction Letter

Ref. No. 34-66/160/FDC/STTP/Policy-1/2019-20

Date 10 AUG 2020

From

Director,
Faculty Development Cell,
AICTE, New Delhi-110070

To

The Drawing and Disbursing Officer,
All India Council for Technical Education,
Nelson Mandela Marg,
Vasant Kunj, New Delhi – 110070

Sub: Release of grant for conduct of Short Term Training Programme (STTP) under AQIS 2019-20 during the financial year 2020-21– reg.

Sir,

This is to convey the sanction of the Council for payment of **Rs. 316667 /- (Rupees Three Lakh Sixteen Thousand Six Hundred SixtySeven Only)** for conduct of Short Term Training Program as per details given below:-

1.	Name and address of the beneficiary University / Institution	KONGU ENGINEERING COLLEGE PERUNDURAI RAILWAY STATION ROAD, THOPPUPALAYAM PERUNDURAI, ERODE - 638 052 Tamil Nadu 636060
2.	Permanent ID of Institute	1-3589631
3.	Institute type	Unaided - Private
4.	Name of Coordinator	Dr. KANNAN KANDASAMY
5.	Amount sanctioned	Rs. 316667/-
6	Amount to be released	Rs.316667/- Full & final payment
7.	Head of account	601.15(a) Gen. Short Term Training Programme (Plan)
8	The authorized officer in whose favour Cheque/ Demand Draft/ RTGS is to be made	REGISTRAR / DIRECTOR / PRINCIPAL
9.	Title of the programme	Augmentation of SMART Materials and Technologies for Commercial Energy Harvestation

1. The amount of the grant shall be drawn by the Drawing and Disbursing Officer, All India Council for Technical Education on the grant-in-aid bill and shall be disbursed to and credited to the Registrar/ Director/Principal of the Institute through RTGS.

2. This grant-in-aid is being released in conformity with the terms & conditions as well as norms of the scheme as already communicated, and also being communicated in this letter.

3. The Principal of the Institute and the Coordinator of the Program are requested to verify the correctness of the under-mentioned Bank Account / RTGS Details submitted by them alongwith the proposals, in

Institute PAN No.	Bank Name	Bank Branch Name	Bank Branch Address	Account Holder Name	Account Type	Account Number	IFSC Code
AAAAK1117B	KARUR VYSYA BANK	KEC NAGAR	KONGU ENGINEERING COLLEGE CAMPUS, PERUNDURAI - 638052 TAMILNADU	THE PRINCIPAL KONGU ENGINEERING COLLEGE	Saving Account	1247155000132631	KVBL0001247

Instructions/Guidelines to be followed by the University/Institution

I. Disbursement of funds to University/Institutions

mmmm. The full amount of the grant sanctioned is being released as advance to the University/Institute.

b. The amount spent by the institute on the conduct of STTP shall be adjusted on the basis of utilization certificate and detailed expenditure statement submitted by the University/Institution on the prescribed format along with other mandatory documents viz feedback form, copy of proceedings and completion report etc.

nnnn. The above said amount of grant shall be refunded back to AICTE if the Letter of Approval (LOA) / Extension of Approval (EOA) is not issued by AICTE to the institute for the academic year 2020-21.

II Maintenance of Accounts

a. The Institute shall strictly follow the provisions laid down in the scheme document as available on the portal.

b. Funds covered by this grant shall be kept separately and would not be mixed up with other funds so as to know the amount of interest accrued on the grant.

c. The University/College/Institute shall maintain proper accounts of the expenditure out of the grants, which shall be utilized only on approved items of expenditure.

d. The grant is intended to cover items of expenditure connected with the Short Term Training Programme such as Boarding & Lodging to the participants, TA to outstation participants, Honorarium to Course Coordinator, reading material to participants, Honorarium to resource persons, TA/DA to resource persons including two outstations resource persons & working expenses (reprographic services, postage, transport, daily wages, tea/coffee etc.

III. Conduct of test and issuance of certificate

A test shall be conducted by Program Monitoring Committee (PMC) at the end of the program and joint certificates shall be issued (by AICTE & conducting Institute) to those participants who have attended the program and have scored minimum 60% marks in the test.

IV. Submission of Documents by the University/Institutions to AICTE

a. The following mandatory relevant documents are required to be submitted by the University/Institution within one month of the completion of the program:-

(i) ~~(xlvi)~~ Original Statement of actual expenditure & Utilization Certificate in the prescribed proforma duly signed by the Head of the institution and countersigned by Registrar/Finance Officer/Govt. Auditor In case of self-financing/private institutions, Statement of actual Expenditure & Utilization Certificate are required to be audited & signed and sealed by a Chartered Accountant endorsing the membership number and complete postal address. Format for the same is available on AICTE web portal.

The University/Institution is not required to submit bills/vouchers/invoices etc for the expenditure incurred out of recurring grants. However, such copies of bills/vouchers/invoices shall be digitized by respective institutions receiving grant and uploaded scanned copies of such bills/vouchers/invoices etc on the portal for availability and view at any point of time.

(ii) Feedback form in the prescribed proforma.

(iii) Copy of the proceedings and completion report.

(iv) List of candidates who have successfully completed the program on the basis of the test conducted by Program Monitoring Committee (PMC).

(v) Report submitted by Program Monitoring Committee (PMC).

b. The amount of the grant shall be adjusted on submission of utilization certificate & detailed expenditure statement by University/Institution. On receipt of these documents, the total amount of financial assistance, admissible as per the norms, shall be worked out and grant-in-aid adjusted.

V. General instructions

a. **Preferably 10% of the participants may be industry professionals deputed by industry. Further, not more than 2 participants shall be from the host institution/group of institutions.**

b. **The grant released/or part thereof, if remains unutilized for any reason after expiry of stipulated time period (for any reasons to include unspent amount, interest , penalty if imposed) shall be refunded back to AICTE in the form of RTGS payable to Member Secretary, AICTE, New Delhi. The bank details of AICTE are as under:-**

Account No	:	**55113199952**
Name of the Account Holder	:	**Member Secretary, AICTE, New Delhi**
Bank Name	:	**State Bank of India**
Branch Name	:	**Shastri Bhawan, New Delhi**
IFSC Code	:	**SBIN0050203**

c. **The STTP is a residential program of a duration of six days with minimum 40 participants.** The approved STTP shall be conducted within six months from the date of release of funds.

d. **If programme is not conducted within the period of six months of the release of the 100% grant, the released amount, alongwith interest accrued thereon, has to be necessarily returned back to AICTE within a month through RTGS.**

d. The expenditure under the Heads **'Honorarium to Course Coordinator'** and **'Honorarium to Resource Persons'** shall not exceed **1% & 20%** respectively of the total sanctioned grant for the Programme. However, overall expenditure shall not exceed the funds sanctioned for the Programme.

g. Any extra money required to complete the programme must be borne by the institute from their own resources. But the quality of the activities should not be compromised.

h. Any unavoidable circumstantial change in the program with respect to name of Project Coordinator, Venue and date for organizing STTP would mandatorily require prior approval of the Council. All such requests should be addressed to AICTE, in advance, recording the specific reasons for proposed changes, failing which the offer for the grant already issued would be treated as automatically withdrawn and the financial assistance released in favour of the beneficiary institution shall be refunded immediately to the Council. Kindly mention the File No. 34-66/160/FDC/STTP/Policy-1/2019-20 in your future correspondence.

i. **Steering Committee/Project Monitoring Committee (PMC)** is required to be constituted at institutional level. The constitution of the PEC shall be as under:

(i) Principal/Director/Registrar of the institution (Chairperson).

(ii) (ii) Coordinator of the program (Member Secretary).

(iii) Two HoDs and one subject expert (members).

The members of the said PMC shall not be below the rank of Associate Professor. A test shall be conducted by Project Monitoring Committee (PMC) at the end of the program and the certificates shall be issued to those participants who have attended the program and have qualified in the test. The minutes of the meetings, along with PMC report, are to be submitted to the Council at end of the program along with other mandatory documents.

j. **GoI GFR rules** (@https://doe.gov.in/order-circular/general-financial-rules2017-0) should be followed during utilization of grant.

k. This Sanction Order may be treated as Offer Letter for all purposes.

NOTE:- Any deviation from the above will invoke serious action against the Institute.

Yours sincerely,

(Col. B Venkat)
Director (FDC)
10 AUG 2020

Copy forwarded for information and necessary action to: -

1. **Name and Address of the Coordinator**
   Dr. KANNAN KANDASAMY
   KONGU ENGINEERING COLLEGE
   PERUNDURAI RAILWAY STATION ROAD, THOPPUPALAYAM PERUNDURAI, ERODE - 638 052
   Tamil Nadu636060

2. **The Registrar / Director / Principal**
   KONGU ENGINEERING COLLEGE
   PERUNDURAI RAILWAY STATION ROAD, THOPPUPALAYAM PERUNDURAI, ERODE - 638 052
   Tamil Nadu636060

3. **Guard File**

About the Department

The Department of Chemical Engineering was started in the academic year 1994 -1995 and offers B.Tech., and M.Tech., Degree programmes in Chemical Engineering. This department is one of the recognized research centers by the Anna University, Chennai. The Department comprises of qualified staff members with good academic and industrial exposure. Well-equipped laboratories containing equipment like Fourier Transform Infrared, Atomic Absorption Spectrometry and with advanced simulation softwares like ASPEN, HYSYS, HTRI, gPROM and ProSIM's cater to the interests of aspiring students. The department focuses on imparting students with excellent technical knowledge to meet the needs of industries and research as well.

About the College

Kongu Engineering College (KEC) was established in the year 1984. Approved by AICTE, New Delhi and affiliated to Anna University, Chennai. The Institution has completed 36 years of dedicated and excellent service in the field of technical education. The Institution offers 14 UG, 19 PG and 16 Research programmes in Engineering, Applied Sciences and Management branches. The Institution is one among the best self-financing engineering colleges imparting high quality technical education in Tamilnadu and is rated as 135th among all Engineering Colleges including IITs & NITs in India by MHRD & NIRF and listed among Band A institutions in Private and Self Financed Colleges by ARIIA-2020. The Institution has got NBA accreditation for all UG programme and is also ISO certified. The Technology Business Incubator was established in the Institution with sponsorship from DST.

AICTE Sponsored

One week

Online Short Term Training Program

on

"Augmentation of SMART Materials and Technologies for Commercial Energy Harvestation"

Phase I

23/11/2020 to 28/11/2020

Coordinator

Dr.K.Kannan

Co-Coordinators

Dr.K.Saravanan,

Dr.D.Nesakumar

Mr.S.Pranav

Department of Chemical Engineering,

School of Chemical & Food Sciences

Kongu Engineering College, Erode.

Contact No: +91-9842823432,

Email Id: hod_chem@kongu.ac.in

KONGU

Assuring the Best

Course Outline

India is a fast growing nation in which energy generation and effective utilization of energy is a key for economic development. Owing to depletion of fossil fuels and deficiencies of non-conventional energy resources, there is a necessity for the technological community to look for new approaches to resolve the pertaining energy crisis. Cutting edge researches on materials and energy harvesting technologies are coming out to be materialistic, yet industrial and domestic applications of these technologies are under pipeline. The proposed training program will cover contemporary progression in application of advanced and SMART materials for energy generation in solar, fuel cells, batteries, super capacitors, approaches for hydrocarbon conversion from waste materials and technologies for storage of electricity, thermal energy and hydrogen.

Benefits to Participants

- The participants would be benefited by getting aware and conscious about the advanced researches on energy harvesting using SMART materials and technologies
- The participants would be enlightened and motivated to carry out research on the proposed discipline for development of energy generation and storage systems

Registration

- The program is fully sponsored and there is no registration fee
- Faculties and Research Scholars from Engineering and Science Institutes can apply for the program
- Registration link: https://forms.gle/pxu95s48AvD33aCQ8
- Registration for Phase I closes on 18/11/2020 and registration through any other mode will not be considered

General Instructions

- The total number of participants is limited to 50 for each phase. First 50 registered participants will be considered
- Registration will be confirmed through email and a google meet link will be sent to the confirmed participants
- Online evaluation examination will be conducted during the end of each phase of the course and e-certificates will be awarded based on attendance and performance in the test

Contact Details

- Dr. D.Nesakumar
  Department of Chemical Engineering,
  Kongu Engineering College
  Email: nesakumar@kongu.ac.in
  Mobile: +91- 9976584220

- Mr.S.Pranav
  Department of Chemical Engineering,
  Kongu Engineering College
  Email: pranav.chem@kongu.ac.in
  Mobile: +91- 9159192731

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One week

Online Short Term Training Program

on

"Augmentation of SMART Materials and Technologies for Commercial Energy Harvestation"

Phase II

30/11/2020 to 05/12/2020

Coordinator

Dr.K.Kannan

Co-Coordinators

Dr.K.Saravanan,

Dr.D.Nesakumar

Mr.S.Pranav

Department of Chemical Engineering,

School of Chemical & Food Sciences

Kongu Engineering College, Erode.

Contact No: +91-9842823432,

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Registration

- The program is fully sponsored and there is no registration fee
- Faculties and Research Scholars from Engineering and Science Institutes can apply for the program
- Registration link: https://forms.gle/pSRE6z7gvjuP1YpZ9
- Registration for Phase I closes on 28/11/2020 and registration through any other mode will not be considered

General Instructions

- The total number of participants is limited to 50 for each phase. First 50 registered participants will be considered
- Registration will be confirmed through email and a google meet link will be sent to the confirmed participants
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AICTE Sponsored

One week

Online Short Term Training Program

on

"Augmentation of SMART Materials and Technologies for Commercial Energy Harvestation"

Phase III

07/12/2020 to 12/12/2020

Coordinator

Dr.K.Kannan

Co-Coordinators.

Dr.K.Saravanan,

Dr.D.Nesakumar

Mr.S.Pranav

Department of Chemical Engineering,

School of Chemical & Food Sciences

Kongu Engineering College, Erode.

Contact No: +91-9842823432,

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- The participants would be enlightened and motivated to carry out research on the proposed discipline for development of energy generation and storage systems

Registration

- The program is fully sponsored and there is no registration fee
- Faculties and Research Scholars from Engineering and Science Institutes can apply for the program
- Registration link: https://forms.gle/boJYCN9WdTNmWPUS7
- Registration for Phase III closes on 06/12/2020 and registration through any other mode will not be considered

General Instructions

- The total number of participants is limited to 50 for each phase. First 50 registered participants will be considered
- Registration will be confirmed through email and a google meet link will be sent to the confirmed participants
- Online evaluation examination will be conducted during the end of each phase of the course and e-certificates will be awarded based on attendance and performance in the test

Contact Details

- Dr. D.Nesakumar
  Department of Chemical Engineering,
  Kongu Engineering College
  Email: nesakumar@kongu.ac.in
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- Mr.S.Pranav
  Department of Chemical Engineering,
  Kongu Engineering College
  Email: pranav.chem@kongu.ac.in
  Mobile: +91- 9159192731

AICTE Sponsored Short Term Training Program on

"Augmentation of SMART Materials and Technologies for Commercial Energy Harvestation"

Phase – I

23/11/2020 to 28/11/2020

List of Participants

S.No	Name Of The Participant	Name Of The Institute
1	P.Santhosh	Excel College Of Engineering And Technology
2	Mrs.Udayanatchi.K.V	Kongu Engineering College
3	Mr.D.Sakthivel	Velalar College Of Engineering And Technology,Thindal,Erode
4	Mr Karthikeyan C	St Joseph's College Of Engineering
5	Mr.S.Ramesh Kumar	Velalar College Of Engineering And Technology
6	Dr. P. Srinivasan	Kongu Engineering College
7	S. Mangaleswari	Anjalai Ammal - Mahalingam Engineering College - Kovilvenni, Thiruvarur - 614 403.
8	J.Saravanan	Jct College Of Engineering And Technology
9	Dr. S. Sathishkumar	Kongu Engineering College
10	Dr.K.Gayathri	Kongu Engineering College
11	Mr.D.Sakthivel	Velalar College Of Engineering And Technology,Thindal,Erode
12	C Mathiyalagan	Builders Engineering College
13	Mr.D.Sakthivel	Velalar College Of Engineering And Technology
14	Dr.K.Vimalashanmugam	Tamilnadu Govt. Polytechnic College, Madurai
15	Mr.V.Sampathkumar	Kongu Engineering College
16	Mr. K. Yoghananthan	Kongu Engineering College
17	Ms P Induja	Hindusthan College Of Engineering And Technology
18	Yoghananthan K	Kongu Engineering College
19	Ms.M.Yuvarani	Builders Engineering College
20	Karthik S	Acharya Institute Of Technology
21	Karthik S	Acharya Institute Of Technology
22	Dr. P. Srinivasan	Kongu Engineering College
23	Dr. Dhondiram Tukaram Sakhare	Shivaji Arts, Comm. & Science College Kannad Dist. Aurangabad
24	P.Senthilraj	Anjali Ammal-Mahalingam Engineering College Koilvenni, Thiruvarur
25	Dr.T.Pradeep	Kongu Engineering College
26	Dr. P. Krishnamoorthy	Kongu Engineering College
27	Mr Adaikkalam K	Tamilnadu Govt Polytechnic College
28	Mr.Chandrasekaran.A	Kongu Engineering College
29	Mr.S.Ramesh Kumar	Velalar College Of Engineering And Technology
30	Meenakumari R	Kongu Engineering College Perundurai
31	Nithyashree S	Dr.Ait
32	Mrs.P.P.Selvi	Kongu Engineering College
33	Engr. Bernard Oruabena	Federal Polytechnic Ekowe, Nigeria
34	M C Jawahar	Nandha Engg. College
35	Murugesan M P	Kongu Engineering College
36	S. Radhika	Builders Engineering College
37	Mrs. Jaya Bharathi J	Kongu Engineering College
38	Mr. G. Mohan Kumar	Nandha Engg. College



AICTE Sponsored Short Term Training Program on

"Augmentation of SMART Materials and Technologies for Commercial Energy Harvestation"

Phase – II

30/11/2020 to 05/12/2020

List of Participants

S.No	Name	Name Of The Institute
1	Swetha S	Sn College
2	G.Nirmala Devi	Aarupadai Veedu Institute Of Technology
3	R. Venkatesh	Psna College Of Engineering And Technology, Dindigul
4	Jani Dilip Batukray	Government Engineering College Dahod
5	Ramesh. P	Nehru Memorial College, Puthanampatti
6	Senthilkumar G	Jj College Of Arts And Science (Autonomous)
7	Vaishnavi S	ESEC Perundurai
8	Dr.K.Senthil Kumar	Kongu Engineering College
9	Santhoshs	Mr.
10	Dr. Aditya Mahabhai Vora	Gujarat University, Ahmedabad
11	S.Kiruthika	Kongu Engineering College
12	Dr.Kakade Genudas Nivrutti	Sppu ,Pune
13	Mr. G. Mohan Kumar	Nandha Engineering College
14	M C Jawahar	Nandha Engineering College
15	Silvya Anumegalai A	Anna University
16	Aravindh Natarajan	Amrita University
17	A Dhanalakshmi	Anna University
18	Dr. M Seshu Kumar	Sri Sadhana Degree College
19	Anushka Servesh	Excel Public College Mysore
20	P.Senthilraj	M.Tech Chemical Engineering
21	S.Kiruthika	Kongu Engineering College
22	Gengadevi R	JCT College of Engineering
23	Mrs. Krishnaveni K	Anna University
24	A S Arun Prasad	RVS College of Engineering
25	Sindhu. B	RVS College of Engineering
26	Dr. Ravi Kumar Vemula	JNTU Hyderabad
27	Dr.K.Muralikandhan	Annamalai University
28	Dr Sheela V	Anna University
29	Vijaya Kumar B	Anna University
30	Dr. S. Venkatesh Babu	JCT College of Engineering
31	Dr.A.Saravanan	Hindustan Institute Of Technology And Science
32	Arthi Gunasekar	Karpaga Vinayaga College Of Engineering And Technology



AICTE Sponsored Short Term Training Program on

"Augmentation of SMART Materials and Technologies for Commercial Energy Harvestation"

Phase – III

07/12/2020 to 12/12/2020

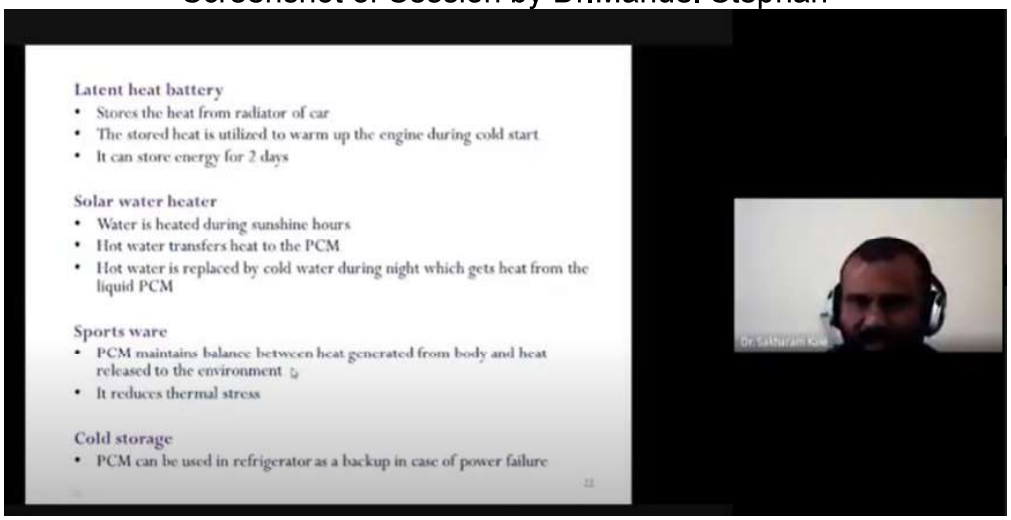
List of Participants

S.No	Name	Name Of The Institute
1	Swetha S	SN College
2	Dr Seenuvasan M	Hindusthan College Of Engineering And Technology,
3	Dr. S. Venkatesh Babu	Anna University
4	M. C. Jawahar	Nandha Engineering College
5	Vaishnavi.S	Anna University
6	Dr. A. S. Periasamy Manikandan	Kongu Engineering College
7	R. Venkatesh	Psna College Of Engineering And Technology
8	Jani Dilip Batukray	Government Engineering College Dahod
9	G. Mohan Kumar	Nandha Engineering College
10	Santhosh S	Kongu Engineering College
11	Aravindh Rajagopalan	Amirtha University
12	Bhalamphiga Arasi T	Amrita Vishwa Vidyapeetham University
13	R.Sathish Raam	Anna University, Chennai
14	Mothil S	Kongu Engineering College
15	Dr. Aditya Mahabhai Vora	Department Of Physics, Gujarat University, Ahmedabad
16	Revathi D	Kongu Engineering College
17	Dr.Kakade Genudas Nivrutti	S.S.G.M.College,Kopargaon
18	Dr.V.Sangeetha	Engineering
19	Vijay.V	Central Electrochemical Research Institute
20	Dr. Dhondiram Tukaram Sakhare	Shivaji Arts, Comm. & Science College, Kannad, Dist. Aurangabad
21	Vijay.V	Central Electrochemical Research Institute
22	Mukesh Suthar	Department Of Ceramic Engineering
23	Mugaishudeen G	Kongu Engineering College
24	Dr.Kakade Genudas Nicrutti	S.S.G.M.College,Kopargaon
25	Jyothy G Vijayan	M.S Ramaiah University Of Applied Sciences
26	Dr Sheela V	Anna University
27	Dr. Dhondiram Tukaram Sakhare	Shivaji Arts, Comm. & Science College Kannad Dist. Aurangabad
28	Dr.K.Senthil Kumar	Kongu Engineering College
29	Dr.S.Sudha	Kongu Engineering College

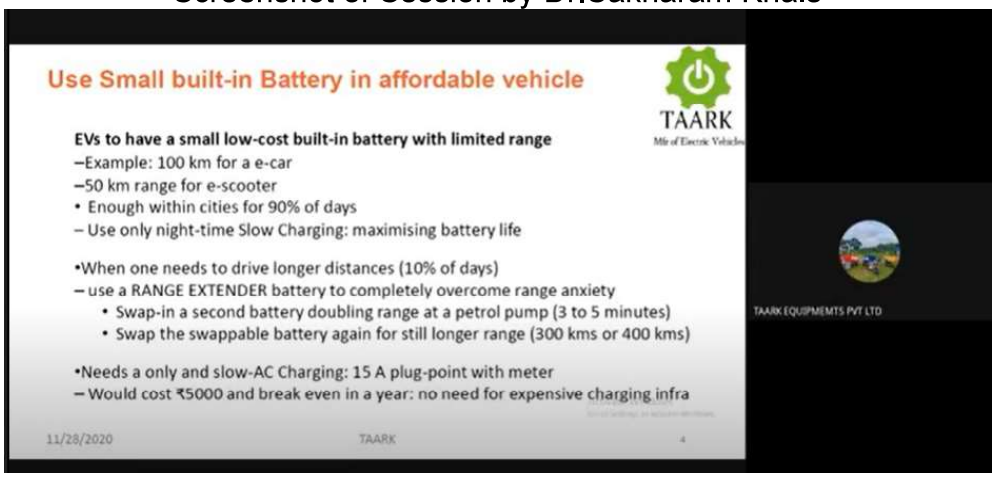


Sample Screenshots – Phase I

Screenshot of Session by Dr.Manuel Stephan

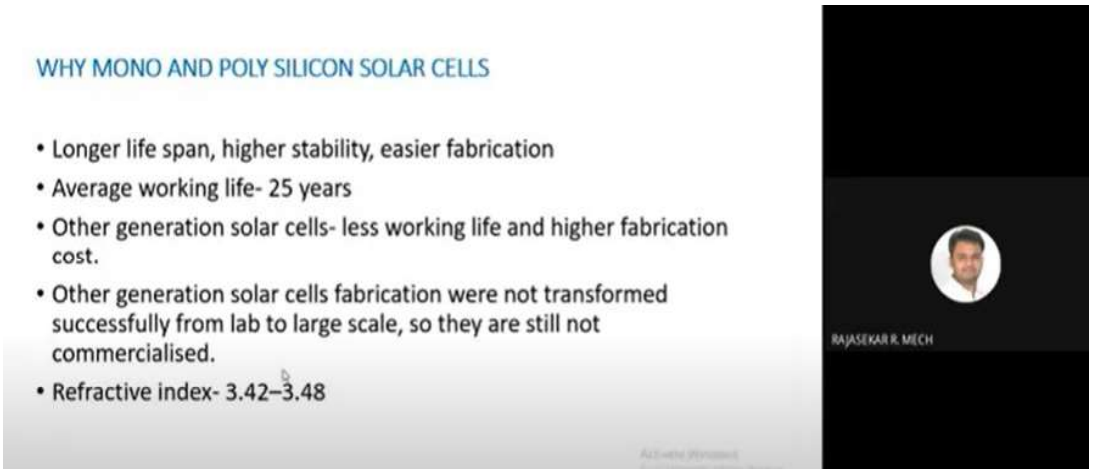


Screenshot of Session by Dr.Sakharam Khale

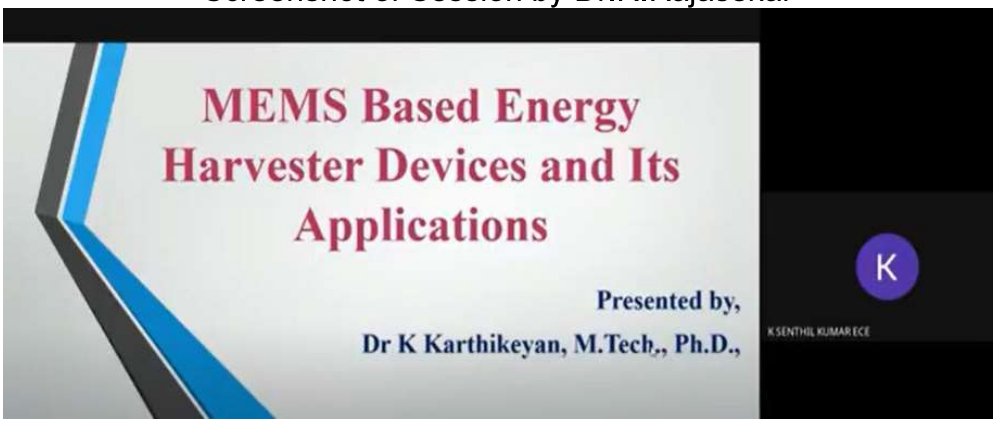


Screenshot of Session by Mr.Kaarthik, Taark Equipment

Sample Screenshots – Phase II



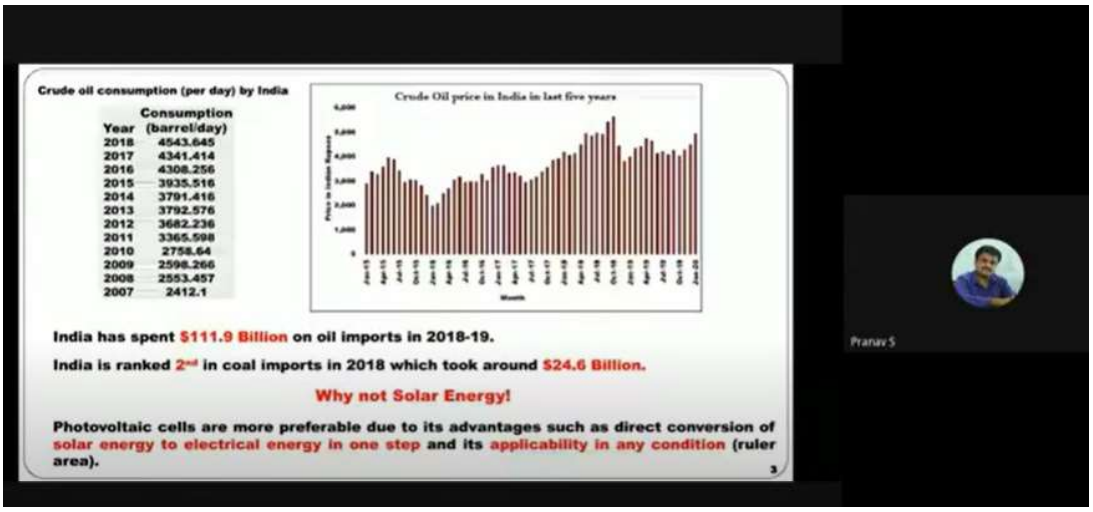
Screenshot of Session by Dr.R.Rajasekar



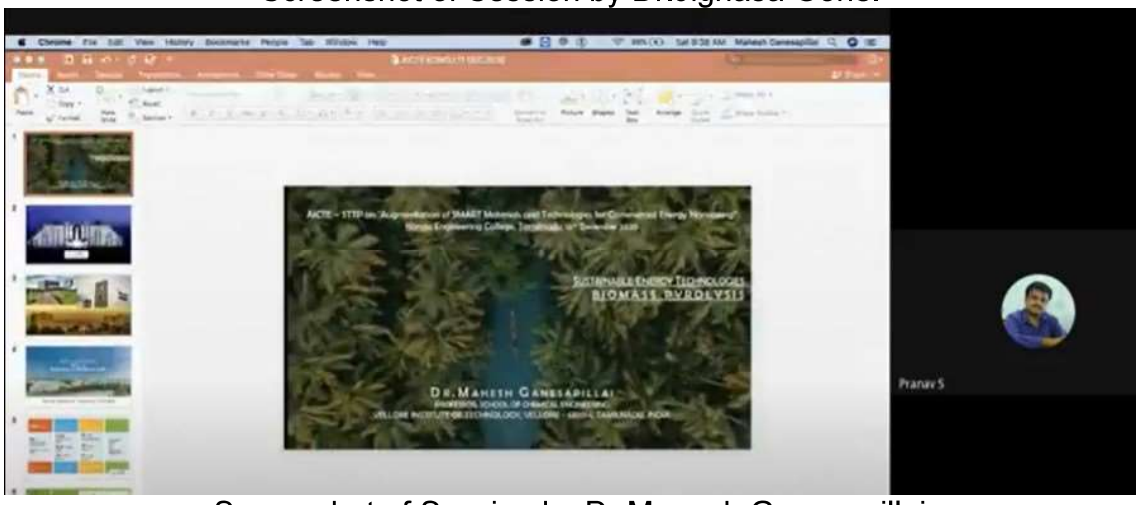
Screenshot of Session by Dr.K.Karthikeyan

Screenshot of Session by Er.K.Varatharajan

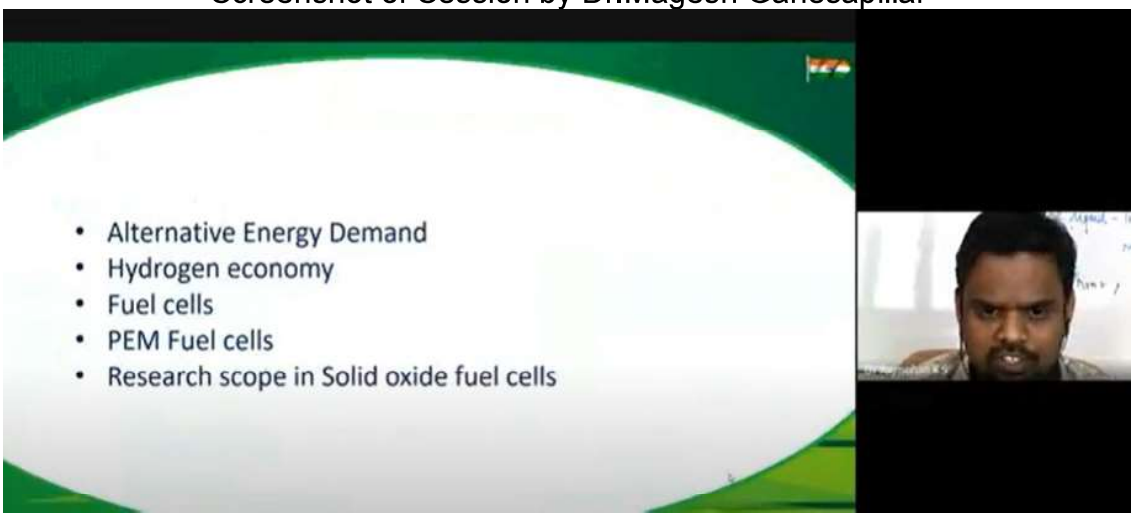
Sample Screenshots – Phase III



Screenshot of Session by Dr.Jignasa Gohel



Screenshot of Session by Dr.Magesh Ganesapillai



Screenshot of Session by Dr.Raj Mohan

Preamble

India is a fast growing nation in which energy generation and effective utilization of energy is a key for economic development. Owing to depletion of fossil fuels and deficiencies of non-conventional energy resources, there is a necessity for the technological community to look for new approaches to resolve the pertaining energy crisis. Cutting edge researches on materials and energy harvesting technologies are coming out to be materialistic, yet industrial and domestic applications of these technologies are under pipeline. The proposed training program will facilitate dissemination of recent advancements on materials and technologies for energy generation and storage. The program will cover contemporary progression in application of advanced and SMART materials for energy generation in solar, fuel cells, batteries, super capacitors, approaches for hydrocarbon conversion from waste materials and technologies for storage of electricity, thermal energy and hydrogen.

Chemical engineering is an arena which extends its wings to most of the technologies. The intervention of chemical engineering principles is essential for large scale synthesis of advanced and SMART materials and development of novel energy generation technologies. The multi-disciplinary knowledge and contribution is indispensable for advanced research and application of the energy generation and storage. The proposed training program will highlight the scope for collaborative research among academicians for transpiration of energy sufficient nation.

It is a need of the hour to catalyze energy generation and improve the usage of energy. The proposed program will facilitate transfer of knowledge among the faculties in the recent advancements in various arenas of energy generation and storage. Knowledge on utilization of SMART materials and technologies for energy systems will throw light upon the research platforms that are to be looked upon in future.

Objectives:

- To highlight recent trends and progress in the areas of energy generation and storage for commercial applications
- To exchange views on SMART materials like photo-voltaic, piezoelectric, pyroelectric, fuel cells, batteries and technologies for hydrocarbon production from wastes for improvisation of non conventional energy generation

- To ponder about the promotion and execution of measures for storage of electric, thermal energies and hydrogen

Expected outcome

The proposed training program is targeted to achieve following objectives

- Dissemination of recent trends and scope for research in SMART materials like photo-voltaic, piezo-electic, pyro-electric materials, fuel cells and batteries for energy systems
- Promotion of research among faculty members to develop and improve eco-friendly energy generation measures like production of hydrocarbon from wastes, solar energy, etc
- Foster the opportunities for advanced research for development of storage of electricity in SMART grids, batteries, thermal energy storage using phase change materials and storage of hydrogen

Benefits to Faculty:

- The participating faculties would be benefited by getting aware and knowledgeable about the advanced researches on energy harvesting using SMART materials and technologies
- The participating faculty would be enlightened and motivated to carry out research on the proposed discipline for development of energy generation and storage systems
- The participating faculties will have a multi-disciplinary interaction with the expert speakers, fellow trainees and industrial personnel.
- The participating faculty will have an acquaintance with the host institute for further collaborations to improvise academic research

About the Department

The Department of Chemical Engineering was started in the academic year 1994 -1995 and offers B.Tech., and M.Tech., Degree programmes in Chemical Engineering. This department is one of the recognized research centers by the Anna University, Chennai. The Department comprises of qualified staff members with good academic and industrial exposure. Well-equipped laboratories containing equipment like Fourier Transform Infrared, Atomic Absorption Spectrometry and with advanced simulation softwares like ASPEN, HYSYS, HTRI, gPROM and ProSIM's cater to the interests of aspiring students. The department focuses on imparting students with excellent technical knowledge to meet the needs of industries and research as well.

About the College

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AICTE Sponsored

One week

Online Short Term Training Program

on

"Augmentation of SMART Materials and Technologies for Commercial Energy Harvestation"

Phase I

23/11/2020 to 28/11/2020

Coordinator

Dr.K.Kannan

Co-Coordinators

Dr.K.Saravanan,

Dr.D.Nesakumar

Mr.S.Pranav

Department of Chemical Engineering,

School of Chemical & Food Sciences

Kongu Engineering College, Erode.

Contact No: +91-9842823432,

Email Id: hod_chem@kongu.ac.in

KONGU

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Course Outline

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General Instructions

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- Registration will be confirmed through email and a google meet link will be sent to the confirmed participants
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AICTE Sponsored Short Term Training Program on

"Augmentation of SMART Materials and Technologies for Commercial Energy Harvestation"

Phase – I

23/11/2020 to 28/11/2020

Details of the Expert Session

S.No	Name of the Speaker & Full Official Address	Date & Session	Title of the talk
1	Dr.Manuel Stephen Senior Prinicpal Scientist Cecri	23/11/2020 FN	Lithium-sulfur batteries: A futuristic system
2	Dr.N.Balasubramanian Professor, Department of Chemical Engineering Anna University, Chennai	23/11/2020 AN	Recent Trends in Fuel Cells
3	Dr. Sakharam Kale, Scientist, Horticultural Crop Processing Division, ICAR-Central Institute of Post Harvest Engineering & Technology, Abohar, Punjab	24/11/2020 FN	Phase Change Materials Application in Interim Storage and Transportation of Fresh and Processed Foods
4	Dr.K.Senthil Kumar, Associate Professor, Department of Electronics and Communication Engineering, Kongu Engineering College, Erode	24/11/2020 AN	MOFs for Supercapacitor: A Perspective
5	Dr.Jignasa V Gohel Associate Professor, Department of Chemical Engineering, Sardar Vallabhbhai National Institute of Technology, Surat	25/11/2020 FN	SMART materials and Hybrid solar cells
6	Dr.Amritesh Kumar, Assistant Professor, Department of Electrical & Electronics Engineering, National Institute of Technology, Silchar	25/11/2020 AN	Grid/Off-Grid Electric Vehicle Charging Infrastructure
7	Dr.Mahesh Ganesapillai Professor, Department of Chemical Engineering, Vellore Institute of Technology, Vellore	26/11/2020 FN	Recycling nitrogen from human urine: a step towards developing a bio-economy dependent on excreta
8	Dr.K.V.Gunavathy, Assistant Professor, Department of Physics Kongu Engineering College, Erode	26/11/2020 AN	Materials for Solar Cells
9	Dr.R.Harikrishnan Professor & Head,	27/11/2020 FN	SMART Grid Power Transmission

	Department of Mechanical Engineering, King's Engineering College, Kancheepuram		
10	Dr.D.Nesakumar Assistant Professor, Department of Chemical Engineering, Kongu Engineering College	27/11/2020 AN	Electrochemical Workstation for testing of batteries
11	Mr.V. Prem Neesanth Founder & CEO, Sunloop Energy Pvt Ltd Coimbatore	28/11/2020 FN	Rooftop Solar Photovoltaic Systems for rural power generatiom
12	Mr.R.Karthick, Founder & CEO, Taark Equipments Pvt Ltd, Pollachi	28/11/2020 AN	Electric Vehicles Manufacturing– Challenges & Opportunities

Coordinators

HOD/Chem

Title of the Talk: Lithium-sulfur batteries: A futuristic system
Date and Time: 23/11/2020 & FN
Name & Details of the Speaker: Dr.Manuel Stephen
Senior Prinicpal Scientist Cecri
Report:

Lithium-sulphur batteries (LSBs) have one of the great potentials for serving as next generation high energy density batteries. As per recent market research reports the graphene battery market including graphene battery, lithium-sulphur battery, and graphene supercapacitors end use industries like electronics, automotive, power, etc., the market size is projected to grow from 168 million USD in 2024 to 609 million USD by 2030. The Li–S batteries are promising because of the high energy density, low cost, and natural abundance of sulfur material. However, these advantages can be achieved only when the Li–S battery uses elemental sulfur as the cathode active material and the sulfur approaches the theoretical capacity with low process cost. In recent years, great improvement in the cycling performances of Li–S batteries has been made; however, all these achievements are obtained in exchange for the energy density and process cost. Nanostructured sulfur composites based on various types of carbon materials and conducting polymers have driven the specific capacity of sulfur to a level approaching the theoretical value with acceptable cycling efficiency and cycle number. However, syntheses of these composites are very costly and, furthermore, the cathodes using these composites contain low sulfur content (< 60%) and low sulfur-loading (< 2 mg/cm2), which dramatically reduces the energy density of Li–S batteries.

Title of the Talk: Recent Trends in Fuel Cells
Date and Time: 23/11/2020 & AN
Name & Details of the Speaker: Dr.N.Balasubramanian
Professor, Department of Chemical Engineering
Anna University, Chennai
Report:

A fuel cell uses the chemical energy of hydrogen or other fuels to cleanly and efficiently produce electricity. If hydrogen is the fuel, the only products are electricity, water, and heat. Fuel cells are unique in terms of the variety of their potential applications; they can use a wide range of fuels and feedstocks and can provide power for systems as large as a utility power station and as small as a laptop computer. Fuel cells work like batteries, but they do not run down or need recharging. They produce electricity and heat as long as fuel is supplied. A fuel cell consists of two electrodes—a negative electrode (or anode) and a positive electrode (or cathode)—sandwiched around an electrolyte. A fuel, such as hydrogen, is fed to the anode, and air is fed to the cathode. In a hydrogen fuel cell, a catalyst at the anode separates hydrogen molecules into protons and electrons, which take different paths to the cathode. The electrons go through an external circuit, creating a flow of electricity.

Title of the Talk: Phase Change Materials Application in Interim Storage and Transportation of Fresh and Processed Foods
Date and Time: 24/11/2020 & FN
Name & Details of the Speaker: Dr. Sakharam Kale, Scientist,
Horticultural Crop Processing Division,
ICAR-Central Institute of Post Harvest Engineering & Technology,
Abohar, Punjab

Report:

Temperature sensitive products such as pharmaceuticals, vaccines and biological materials are required to be maintained within a pre-defined temperature range to ensure that the product quality is preserved. As such, shipping systems must comply with regional regulations. In the EU, the good distribution practice (GDP) guidelines (2013/C 343/01) require distributors of pharmaceuticals to "demonstrate that the medicines have not been exposed to conditions that may compromise their quality" and this type of legislation is being adopted around the world. PCM packs are sometimes referred to as coolant packs or eutectic packs. Generally, the packs are either rigid plastic (e.g. HDPE) flat containers or flexible plastic pouches. Selection is determined based on factors such as cost, ease of production, compatibility of plastics with the PCM and durability. Rigid packs can contain up to several litres of PCM whereas flexible packs tend to contain up to about 1 litre. Innovative forms of PCM are emerging providing further benefits. For example, CrodaTherm™ bio-based PCMs can be converted into rubbery, shape-stable forms or can be absorbed into shape-stable foam bricks.

Title of the Talk: MOFs for Supercapacitor: A Perspective
Date and Time: 24/11/2020 & AN
Name & Details of the Speaker: Dr.K.Senthil Kumar,
Associate Professor, Department of Electronics and Communication Engineering,
Kongu Engineering College, Erode

Report:

Metal-Organic frameworks are the advanced electrode materials for supercapacitors due to their controllable structures and large surface area. Here Ni-MOF has been prepared by hydrothermal method for their application as electrode material in supercapacitors. The prepared material is characterized with the help of X-ray diffraction and Fourier transforms infrared spectroscopy. The electrochemical performance of the prepared material has been studied in 1M LiOH aqueous electrolyte using cyclic voltammetry and galvanostatic charge-discharge methods. We get the different values of specific capacitance at different scan rates. The prepared Ni-MOF shows maximum specific capacitance of 309.05 Fg-1 at 5mVs-1 scan rate.

Title of the Talk: SMART materials and Hybrid solar cells
Date and Time: 25/11/2020 & FN
Name & Details of the Speaker: Dr.Jignasa V Gohel
Associate Professor, Department of Chemical Engineering,
Sardar Vallabhbhai National Institute of Technology, Surat

Report:

The PV cell is composed of semiconductor material; the "semi" means that it can conduct electricity better than an insulator but not as well as a good conductor like a metal. There are several different semiconductor materials used in PV cells. When the semiconductor is exposed to light, it absorbs the light's energy and transfers it to negatively charged particles in the material called electrons. This extra energy allows the electrons to flow through the material as an electrical current. This current is extracted through conductive metal contacts – the grid-like lines on a solar cells – and can then be used to power your home and the rest of the electric grid. The efficiency of a PV cell is simply the amount of electrical power coming out of the cell compared to the energy from the light shining on it, which indicates how effective the cell is at converting energy from one form to the other. The amount of electricity produced from PV cells depends on the characteristics (such as intensity and wavelengths) of the light available and multiple performance attributes of the cell.

Title of the Talk: Grid/Off-Grid Electric Vehicle Charging Infrastructure
Date and Time: 25/11/2020 & AN
Name & Details of the Speaker: Dr.Amritesh Kumar,
Assistant Professor, Department of Electrical & Electronics Engineering,
National Institute of Technology, Silchar

Report:

To increase the uses of electric vehicle (EV) at remote locations and minimize the grid burdening in urban areas, an off-grid charging station (OGCS) plays a significant role. The OGCS seeks energy from renewable energy sources (RES). Amongst all RES, the photovoltaic (PV) is the best suitable clean energy source due to abundance and simple installation. However, PV energy fluctuates due to change in irradiance and it can not generate the constant energy. Therefore, an energy storage device is required to meet the energy demand and improve the sustainability of the charging station. Thereby, a system has been proposed which consists of an energy storage system (ESS) along with the PV source and EV charger. The proposed system includes a PV array with a boost converter, two bi-directional converters (BDC) and ESS. The BDC has been used for charging/discharging of the EV and ESS. The energy generated from PV is not sufficient to meet the demand during the absence of or reduced sunlight, thus, the ESS can meet the required demand. On the other hand, while the generation is more than the demand, the ESS utilizes the excess clean energy to make the proposed system stable. This results, a reliable off-grid, efficient and pollution-free EV charging station. Furthermore, the proposed system has been implemented in MATLAB/Simulink environment to verify the system performance.

Title of the Talk: Recycling nitrogen from human urine: a step towards developing a bio-economy dependent on excreta
Date and Time: 26/11/2020 & FN
Name & Details of the Speaker: Dr.Mahesh Ganesapillai
Professor, Department of Chemical Engineering,
Vellore Institute of Technology, Vellore

Report:

The need for better nutrient management has spurred efforts towards more comprehensive recycling of nutrients contained in human excreta to agriculture. Research in this direction has intensified throughout the past years, continuously unfolding new knowledge and technologies. The present review aspires to provide a systematic synthesis of the field by providing an accessible overview of terminology, recovery pathways and treatment options, and products rendered by treatment. Our synthesis suggests that, rather than focusing on a specific recovery pathway or product and on a limited set of nutrients, there is scope for exploring how to maximize nutrient recovery by combining individual pathways and products and including a broader range of nutrients. To this end, finding ways to more effectively share and consolidate knowledge and information on recovery pathways and products would be beneficial. The present review aims to provide a template that aims to facilitate designing human excreta management for maximum nutrient recovery, and that can serve as foundation for organizing and categorizing information for more effective sharing and consolidation.

Title of the Talk: Materials for Solar Cells
Date and Time: 28/11/2020 & AN
Name & Details of the Speaker: Dr.K.V.Gunavathy,
Assistant Professor,
Department of Physics, Kongu Engineering College,
Erode

Report:

Solar panels consist of a number of layers, typically glass, then a protection layer and a front contact layer covering individual solar cells switched in series. Beneath those, there are metal back contacts which conduct the electricity and are laminated to waterproof the cells and insulate it from excess heat. Finally, there is a protective back layer of glass, metal or plastic. The solar cell is based on semiconducting materials which vary from system to system. Most commonly, solar cells contain two different types of semiconducting materials: a p-type and an n-type semiconductor, leading to a p-n-junction. When the light of appropriate wavelength impinges on the solar cell, energy is absorbed promoting electrons to the conduction band of the semiconductor and leaving behind a hole in the valence band.

Title of the Talk: SMART Grid Power Transmission
Date and Time: 27/11/2020 & FN
Name & Details of the Speaker: Dr.R.Harikrishnan
Professor & Head, Department of Mechanical Engineering,
King's Engineering College, Kancheepuram

Report:

A smart grid is an electricity network/grid enabling a two-way flow of electricity and data whereby smart metering is often seen as a first step. Smart grids – as a concept – became known over a decade ago and are essential in the digital transformation of the electricity sector. An introduction with definitions, trends and essential characteristics of smart grids. Big data analytics and IoT technologies are important technology drivers in smart grids whereby analytics shift to the edge, as in edge computing. Smart grids leverage more technologies but aren't just about IT nor even technologies. A smart grid serves several purposes and the movement from traditional electric grids to smart grids is driven by multiple factors, including the deregulation of the energy market, evolutions in metering, changes on the level of electricity production, decentralization (distributed energy), the advent of the involved 'prosumer', changing regulations, the rise of microgeneration and (isolated) microgrids, renewable energy mandates with more energy sources and new points where and purposes for which electricity is needed (e.g. electrical vehicle charging points).

Title of the Talk: Electrochemical Workstation for testing of batteries
Date and Time: 27/11/2020 & AN
Name & Details of the Speaker: Dr.D.Nesakumar
Assistant Professor, Department of Chemical Engineering,
Kongu Engineering College

Report:

An electrochemical workstation has a potentiostat and relevant control software on one end, and the electrochemical cell setup—generally inside a Faraday cage—on the other. Electrochemical cells are designed to hold a working, reference, and counter electrode in an appropriate geometry, but beyond that they can vary a great deal. A potentiostat is an electronic instrument that controls the voltage difference between a Working Electrode and a Reference Electrode. Both electrodes are contained in an electrochemical cell. The potentiostat implements this control by injecting current into the cell through an Auxiliary, or Counter, electrode. In almost all applications, the potentiostat measures the current flow between the Working and Counter electrodes. The controlled variable in a potentiostat is the cell potential and the measured variable is the cell current.

Title of the Talk: Rooftop Solar Photovoltaic Systems for rural power generation
Date and Time: 28/11/2020 & FN
Name & Details of the Speaker: Mr.V. Prem Neesanth
Founder & CEO, Sunloop Energy Pvt Ltd
Coimbatore

Report:

In present times, the world has been adopting renewable power at a rapid rate. India is also emerging in the global arena as a leading generator of renewable energy. In its efforts to move further towards sustainable development, the government has set a target to achieve 175 GW of installed capacity of renewable energy by the end of 2022. Out of this, 100 GW is the target set for solar installations. Till date, 23 GW of this target has already been achieved and 40 GW is under different stages of implementation. This inclination towards solar generation has allowed India to overpower the US and become the 2nd largest country in terms of solar power generation in the world. Now, the country is marching towards the achievement of the laid targets for the year 2022. The installed capacity of solar rooftop augmented from 117 MW to 1250 MW from the period between 2013 to 2016. Taking this immense growth into consideration, the Ministry of New and Renewable Energy through its National Solar Mission Of India has set a target of 40 GW power through rooftop solar by 2022.

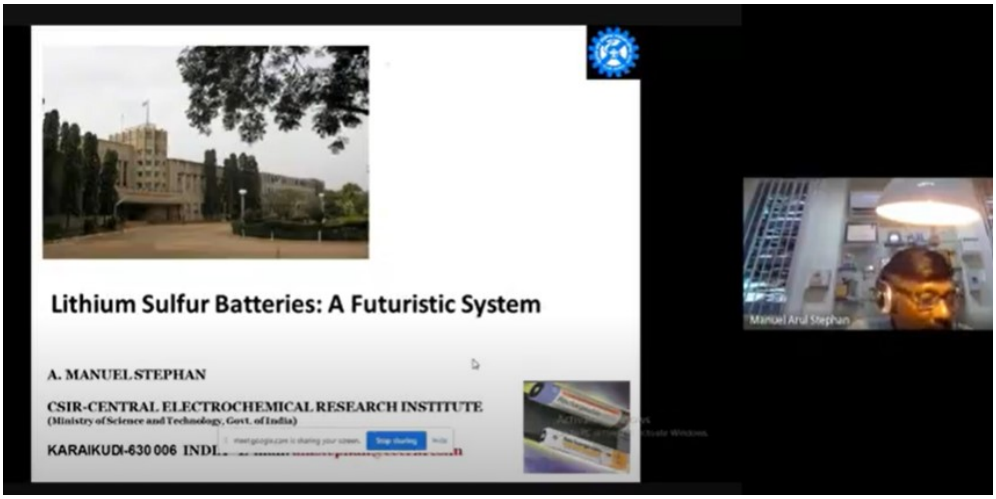
Title of the Talk: Electric Vehicles Manufacturing– Challenges & Opportunities
Date and Time: 28/11/2020 & AN
Name & Details of the Speaker: Mr.R.Karthick,
Founder & CEO,
Taark Equipments Pvt Ltd, Pollachi

Report:

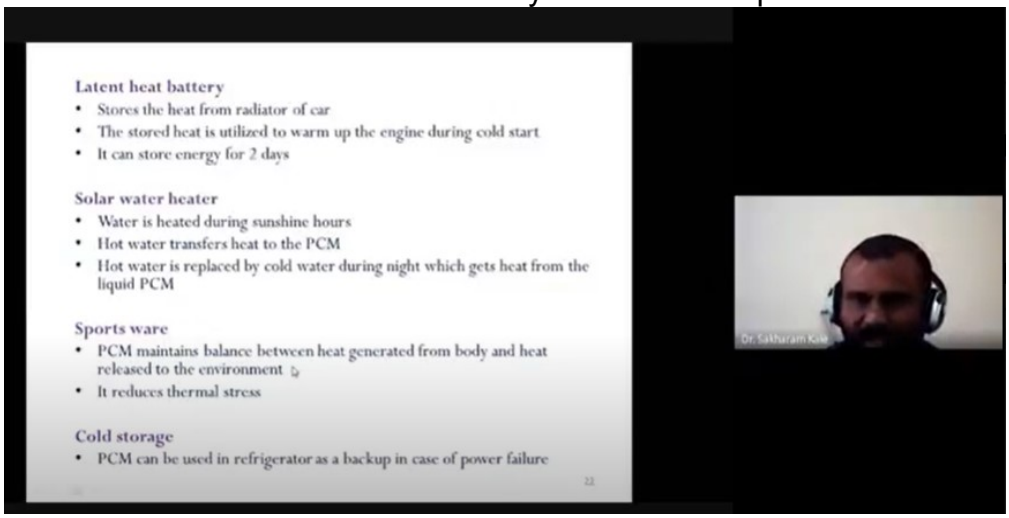
Electric automobiles were popular because they were clean, quiet, and easy to operate; however, two developments improved the gasoline-powered vehicle so much so that competition was nonexistent. In 1912, Charles Kettering invented the electric starter that eliminated the need for a hand crank. At the same time, Henry Ford developed an assembly line process to manufacture his Model T car. The assembly was efficient and less costly than the manufacture of the electric vehicle. Thus, the price for a gas-driven vehicle decreased enough to make it feasible for every family to afford an automobile. The manufacturing process required almost as much design consideration as the vehicle itself; and that design includes handcrafting and simplification as well as some high-tech approaches. The assemblers work in build-station teams to foster team spirit and mutual support, and parts are stored in modular units called creform racks of flexible plastic tubes and joints that are easy to fill and reshape for different parts. On the high-tech side, each station is equipped with one torque wrench with multiple heads; when the assembler locks on the appropriate size of head,

computer controls for the machine select the correct torque setting for the fasteners that fit that head.

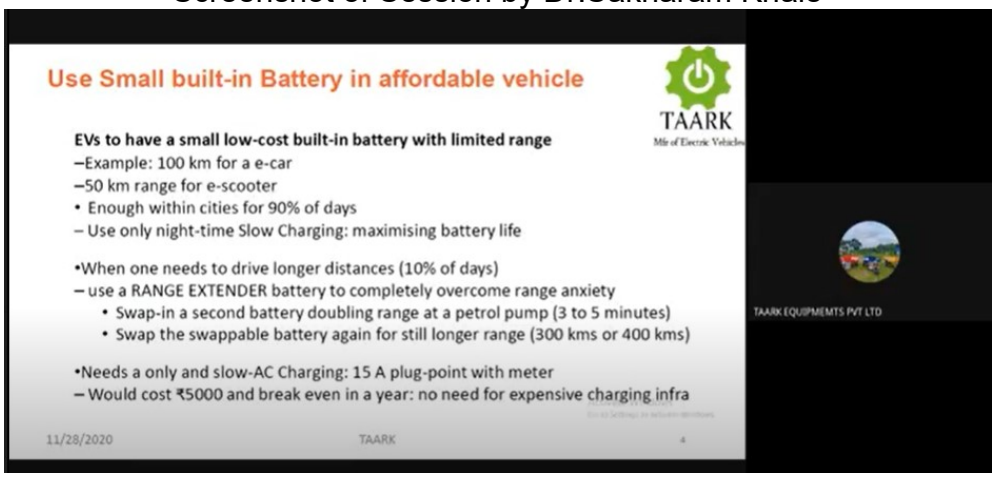
Sample Screenshots – Phase I



Screenshot of Session by Dr.Manuel Stephan



Screenshot of Session by Dr.Sakharam Khale



Screenshot of Session by Mr.Kaarthik, Taark Equipment

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on

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Phase II

30/11/2020 to 05/12/2020

Coordinator

Dr.K.Kannan

Co-Coordinators

Dr.K.Saravanan,

Dr.D.Nesakumar

Mr.S.Pranav

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Assuring the Best

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AICTE Sponsored Short Term Training Program on

"Augmentation of SMART Materials and Technologies for Commercial Energy Harvestation"

Phase – II

31/11/2020 – 05/12/2020

Details of the Expert Session

S.No	Name of the Speaker & Full Official Address	Date & Session	Title of the talk
1	Dr.V.Sivasubramanian, Associate Professor, Department of Chemical Engineering, NIT Calicut	30/11/2020 FN	Bio-energy and Bio-fuels
2	Dr.D.Ragupathy, Head, Department of Chemistry, NIT Karaikal	30/11/2020 AN	Nanocomposite Materials for Electro-catalytic and Energy Applications
3	Dr.N.Rajalakshmi, Senior Scientist & Team Lead, Centre for Fuel Cell Technology, ARCI	01/12/2020 FN	Materials for energy conversion and storage
4	Dr.P.Shanmugam, Assistant Professor, Department of Chemical Engineering, Kongu Engineering College	01/12/2020 AN	Catalysts for Bio-fuel Processing
5	Dr.Amritesh Kumar, Assistant Professor, Department of Electrical & Electronics Engineering, National Institute of Technology, Silchar	02/12/2020 FN	Power Electronics Interfaces for Photovoltaic System for feeding standalone load
6	Dr.M.Sathish, Senior Scientist, Central Electrochemical Research Institute, Karaikudi	02/12/2020 AN	Emerging Materials for Energy Conversion and Storage
7	Dr.Jignasa Gohel, Associate Professor, Department of Chemical Engineering, SVNIT, Surat	03/12/2020 FN	Synthesis Strategies for Improvising the energy efficiency in solar cells
8	Dr.M.Muthukumar, Professor, Central University of Kerala, Kasargod	03/12/2020 AN	Potential study for harvesting renewable energy
9	Er. K. Varatharajan, FIE Former Scientific Officer, IGCAR, DAE, Kalpakkam	04/12/2020 FN	Rural Applications of Solar Energy Harvesting
10	Mr.S.Pranav Assistant Professor, Department of Chemical Engineering, Kongu Engineering College	04/12/2020 AN	Preparation of Solar Cells by Thin Film Technology
11	Dr.K.Karthilkeyan, Tessolve Semiconductor Pvt Ltd., Bengaluru	05/12/2020 FN	MEMS Based Energy Harvester and Storage

			Devices
12	Dr.R.Rajasekar, Professor & Head, Department of Mechanical Engineering, KEC	05/12/2020 AN	Energy Materials

Coordinators

HOD/Chem

Title of the Talk: Bio-energy and Bio-fuels
Date and Time: 30/11/2020 & FN
Name & Details of the Speaker: Dr.V.Sivasubramanian, Associate Professor, Department of Chemical Engineering, NIT Calicut

Report:

Bioenergy refers to electricity and gas that is generated from organic matter, known as biomass. This can be anything from plants and timber to agricultural and food waste – and even sewage. The term bioenergy also covers transport fuels produced from organic matter. But on this page, we're just focusing on how it's used to generate electricity and carbon neutral gas. When biomass is used as an energy source, it's referred to as 'feedstock'. Feedstocks can be grown specifically for their energy content (an energy crop), or they can be made up of waste products from industries such as agriculture, food processing or timber production. Dry, combustible feedstocks such as wood pellets are burnt in boilers or furnaces. This in turn boils water and creates steam, which drives a turbine to generate electricity.

Title of the Talk: Nanocomposite Materials for Electro-catalytic and Energy Applications
Date and Time: 30/11/2020 & AN
Name & Details of the Speaker: Dr.D.Ragupathy, Head, Department of Chemistry, NIT Karaikal

Report:

Functional Hybrid materials based on conducting polymers and inorganic photo-electroactive species provide a wealth of opportunities for the development of novel materials with improved properties. Polyoxometalates are one type of well-known inorganic species with most interesting photo-electrochemical activity. They are perfect models for nanometer-sized oxide quantum-dots both concerning structure, topology and electrochemical and photochemical properties. Yet, they have not been applied as materials because of their molecular nature (i.e., soluble in most solvents or electrolytes). In our group we have recently developed a research line dealing with the integration of these fascinating clusters in conducting polymer matrices to yield functional hybrid materials. Our past emphasis was on electroactivity for energy-storage applications but these materials can also be used, as it is shown here, for photoelectrochemical applications.

Title of the Talk: Materials for energy conversion and storage
Date and Time: 01/12/2020 & FN
Name & Details of the Speaker: Dr.N.Rajalakshmi,
Senior Scientist & Team Lead,
Centre for Fuel Cell Technology, ARCI

Report:

Fuel cells convert chemical energy directly into electrical energy with high efficiency and low emission of pollutants. However, before fuel-cell technology can gain a significant share of the electrical power market, important issues have to be addressed. These issues include optimal choice of fuel, and the development of alternative materials in the fuel-cell stack. Present fuel-cell prototypes often use materials selected more than 25 years ago. Commercialization aspects, including cost and durability, have revealed inadequacies in some of these materials. Here we summarize recent progress in the search and development of innovative alternative materials.

Title of the Talk: Catalysts for Bio-fuel Processing
Date and Time: 01/12/2020 & AN
Name & Details of the Speaker: Dr.P.Shanmugam,
Assistant Professor,
Department of Chemical Engineering,
Kongu Engineering College

Report:

Biodiesel is one of the potential alternative energy sources that can be derived from renewable and low-grade origin through different processes. One of the processes is alcoholysis or transesterification in the presence of a suitable catalyst. The catalyst can be either homogeneous or heterogeneous. This article reviews various catalysts used for biodiesel production to date, presents the state of the art of types of catalysts, and compares their suitability and associated challenges in the transesterification process.

Title of the Talk: Power Electronics Interfaces for Photovoltaic System for feeding standalone load
Date and Time: 02/12/2020 & FN
Name & Details of the Speaker: Dr.Amritesh Kumar,
Assistant Professor, Department of Electrical & Electronics Engineering,
National Institute of Technology, Silchar

Report:

PV energy fluctuates due to change in irradiance and it can not generate the constant energy. Therefore, an energy storage device is required to meet the energy demand and improve the sustainability of the charging station. Thereby, a system has been proposed which consists of an energy storage system (ESS) along with the PV source and EV charger. The proposed system includes a PV array with a boost converter, two bi-directional converters (BDC) and ESS. The BDC has been used for charging/discharging of the EV and ESS. The energy generated from PV is not sufficient to meet the demand during the absence of or reduced sunlight, thus, the ESS can meet the required demand. On the other hand, while the generation is more than the demand, the ESS utilizes the excess clean energy to make the proposed system stable. This results, a reliable off-grid, efficient and pollution-free EV charging station. Furthermore, the proposed system has been implemented in MATLAB/Simulink environment to verify the system performance.

Title of the Talk: Emerging Materials for Energy Conversion and Storage
Date and Time: 02/12/2020 & AN
Name & Details of the Speaker: Dr.M.Sathish, Senior Scientist,
Central Electrochemical Research Institute,
Karaikudi

Report:

The ability to offer high-capacity and affordable advanced energy storage technologies will be key to the full and successful integration of renewable low carbon energy into national and international energy networks. New composite materials for wind turbine blades would allow us to build larger turbines thereby increasing their energy yield. Other new materials could improve the corrosion resistance of turbines in particular for offshore installations. New materials for photovoltaic technologies like novel thin-film technologies do not require scare metals and perform better at lower cost, while enabling solar cells to be recycled at the end of life. Materials that generate electricity from vibration, mechanical and low-grade thermal energy are also being developed.

Title of the Talk: Synthesis Strategies for Improvising the energy efficiency in solar cells
Date and Time: 03/12/2020 & FN
Name & Details of the Speaker: Dr.Jignasa Gohel, Associate Professor, Department of Chemical Engineering, SVNIT, Surat

Report:

The PV cell is composed of semiconductor material; the "semi" means that it can conduct electricity better than an insulator but not as well as a good conductor like a metal. There are several different semiconductor materials used in PV cells. When the semiconductor is exposed to light, it absorbs the light's energy and transfers it to negatively charged particles in the material called electrons. This extra energy allows the electrons to flow through the material as an electrical current. This current is extracted through conductive metal contacts – the grid-like lines on a solar cells – and can then be used to power your home and the rest of the electric grid. The efficiency of a PV cell is simply the amount of electrical power coming out of the cell compared to the energy from the light shining on it, which indicates how effective the cell is at converting energy from one form to the other. The amount of electricity produced from PV cells depends on the characteristics (such as intensity and wavelengths) of the light available and multiple performance attributes of the cell.

Title of the Talk: Potential study for harvesting renewable energy
Date and Time: 03/12/2020 & AN
Name & Details of the Speaker: Dr.M.Muthukumar, Professor, Central University of Kerala, Kasargod

Report:

Renewable energy, often referred to as clean energy, comes from natural sources or processes that are constantly replenished. For example, sunlight or wind keep shining and blowing, even if their availability depends on time and weather. Now that we have increasingly innovative and less-expensive ways to capture and retain wind and solar energy, renewables are becoming a more important power source, accounting for more than one-eighth of U.S. generation. The expansion in renewables is also happening at scales large and small, from rooftop solar panels on homes that can sell power back to the grid to giant offshore wind farms. Even some entire rural communities rely on renewable energy for heating and lighting.

Title of the Talk: Rural Applications of Solar Energy Harvesting
Date and Time: 04/12/2020 & FN
Name & Details of the Speaker: Er. K. Varatharajan, FIE
Former Scientific Officer, IGCAR, DAE, Kalpakkam
Report:

Our nation is facing acute power crisis and is struggling to meet the burgeoning electricity demand due to its heavy reliance on conventional (non-renewable) energy sources. Emission from fossil fuels due to electricity generation is a main contributor to global climate change. In order to reduce the emissions and its impact on environment and mankind, and to overcome the frequent blackouts in our country, the Government of India is taking various initiatives to encourage the use of renewable energy resources such as solar, wind and tides etc. One such major initiative by the Central and State Governments is the Jawaharlal Nehru National Solar Mission to promote ecologically sustainable growth as well as to address India's energy security challenges -the goal is to install 20,000MW of solar power in India by 2022. The first phase of this mission aims to commission 1000MW of grid connected solar power by 2013. Based on the energy statistics of 2011, Tamil Nadu's estimated potential of renewable power is 8%.

Title of the Talk: Preparation of Solar Cells by Thin Film Technology
Date and Time: 04/12/2020 & AN
Name & Details of the Speaker: Mr.S.Pranav
Assistant Professor, Department of Chemical Engineering,
Kongu Engineering College
Report:

Thin-film solar cell, type of device that is designed to convert lightenergy into electrical energy (through the photovoltaic effect) and is composed of micron-thick photon-absorbing material layers deposited over a flexible substrate. Thin-film solar cells were originally introduced in the 1970s by researchers at the Institute of Energy Conversion at the University of Delaware in the United States. The technology continuously improved so that in the early 21st century the global thin-film photovoltaic market was growing at an unprecedented rate and was forecast to continue to grow. Several types of thin-film solar cells are widely used because of their relatively low cost and their efficiency in producing electricity.

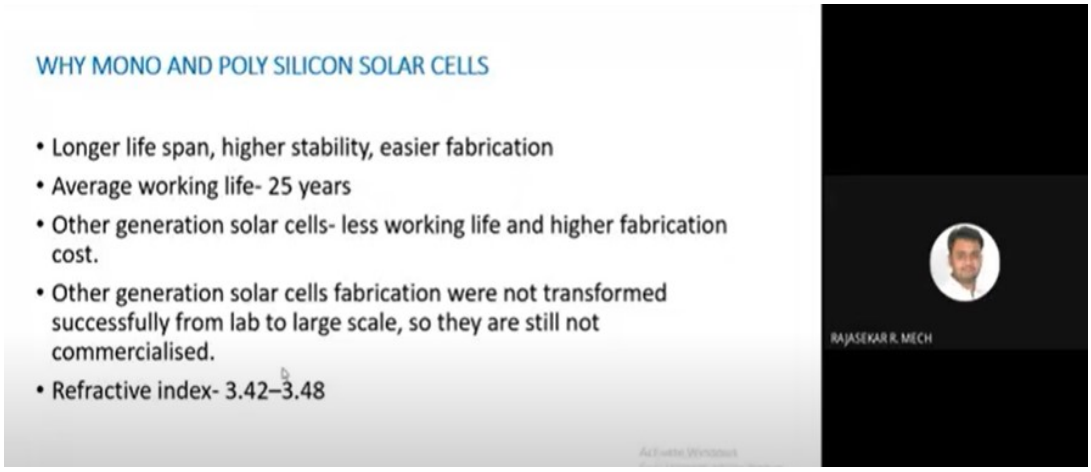
Title of the Talk: MEMS Based Energy Harvester and Storage Devices
Date and Time: 05/12/2020 & FN
Name & Details of the Speaker: Dr.K.Karthilkeyan, Tessolve Semiconductor Pvt Ltd., Bengaluru
Report:

Energy harvester cannot energize the complete IoT system with sufficient energy because usually these energy is sporadic and not stable. These energy must be stored on a supply for continuous power. Energy stored on the secondary battery need be converted to the load circuit voltage level. A buck converter demonstrated 80% efficiency at 1 μW load. Sometimes, in order to power blocks wise, we may need several sources of energy harvesters from our surroundings like indoor lighting together machine vibration, or sunlight together with wind and acoustic energy. Wafer scale integration of MEMS with IC is an inevitable trend.

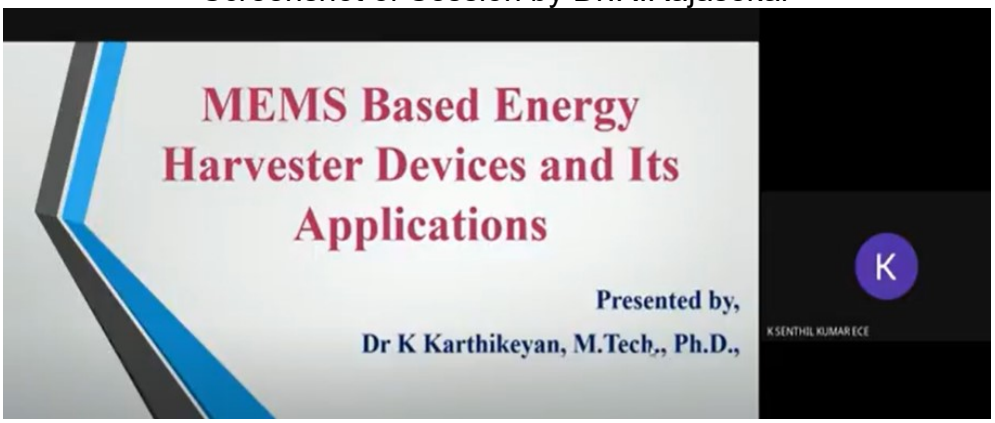
Title of the Talk: Energy Materials
Date and Time: 05/12/2020 & AN
Name & Details of the Speaker: Dr.R.Rajasekar, Professor & Head, Department of Mechanical Engineering, KEC
Report:

Rapidly growing global energy demands, limited reserves of fossil fuels and associated environmental concerns, the intermittent nature of renewable energy sources, the limited efficiency of existing energy conversion systems—these are the challenges that society faces today. Advanced materials are the key elements in the development of improved high-efficiency, low-cost, clean energy technologies. The section "Energy Materials" is a platform for the publication of original articles and comprehensive reviews on all aspects of fundamental science and applied research on materials used for harvesting, conversion, storage, transmission, and utilization of energy.

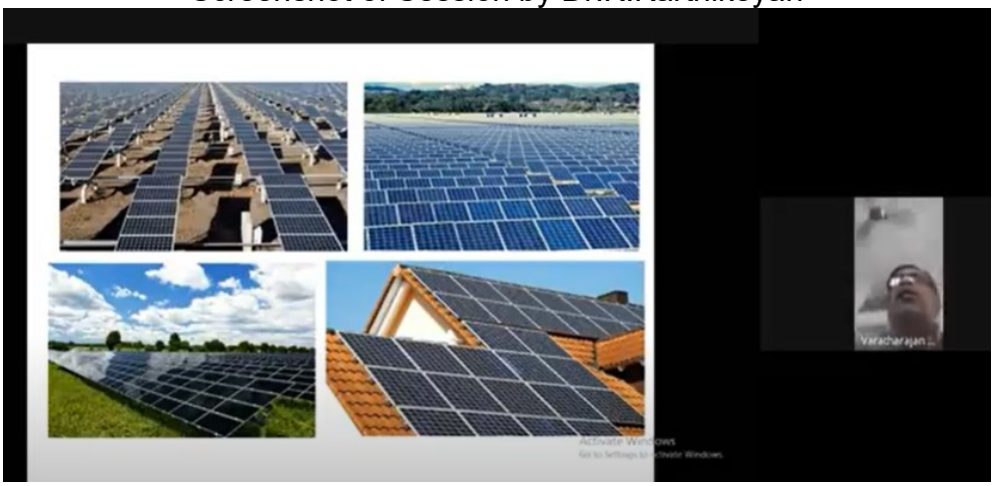
Sample Screenshots – Phase II



Screenshot of Session by Dr.R.Rajasekar



Screenshot of Session by Dr.K.Karthikeyan



Screenshot of Session by Er.K.Varatharajan

About the Department

The Department of Chemical Engineering was started in the academic year 1994 -1995 and offers B.Tech., and M.Tech., Degree programmes in Chemical Engineering. This department is one of the recognized research centers by the Anna University, Chennai. The Department comprises of qualified staff members with good academic and industrial exposure. Well-equipped laboratories containing equipment like Fourier Transform Infrared, Atomic Absorption Spectrometry and with advanced simulation softwares like ASPEN, HYSYS, HTRI, gPROM and ProSIM's cater to the interests of aspiring students. The department focuses on imparting students with excellent technical knowledge to meet the needs of industries and research as well.

About the College

Kongu Engineering College (KEC) was established in the year 1984. Approved by AICTE, New Delhi and affiliated to Anna University, Chennai. The Institution has completed 36 years of dedicated and excellent service in the field of technical education. The Institution offers 14 UG, 19 PG and 16 Research programmes in Engineering, Applied Sciences and Management branches. The Institution is one among the best self-financing engineering colleges imparting high quality technical education in Tamilnadu and is rated as 135th among all Engineering Colleges including IITs & NITs in India by MHRD & NIRF and listed among Band A institutions in Private and Self Financed Colleges by ARIIA-2020. The Institution has got NBA accreditation for all UG programme and is also ISO certified. The Technology Business Incubator was established in the Institution with sponsorship from DST.

AICTE Sponsored

One week

Online Short Term Training Program

on

"Augmentation of SMART Materials and Technologies for Commercial Energy Harvestation"

Phase III

07/12/2020 to 12/12/2020

Coordinator

Dr.K.Kannan

Co-Coordinators.

Dr.K.Saravanan,

Dr.D.Nesakumar

Mr.S.Pranav

Department of Chemical Engineering,
School of Chemical & Food Sciences
Kongu Engineering College, Erode.
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Course Outline

India is a fast growing nation in which energy generation and effective utilization of energy is a key for economic development. Owing to depletion of fossil fuels and deficiencies of non-conventional energy resources, there is a necessity for the technological community to look for new approaches to resolve the pertaining energy crisis. Cutting edge researches on materials and energy harvesting technologies are coming out to be materialistic, yet industrial and domestic applications of these technologies are under pipeline. The proposed training program will cover contemporary progression in application of advanced and SMART materials for energy generation in solar, fuel cells, batteries, super capacitors, approaches for hydrocarbon conversion from waste materials and technologies for storage of electricity, thermal energy and hydrogen.

Benefits to Participants

- The participants would be benefited by getting aware and conscious about the advanced researches on energy harvesting using SMART materials and technologies
- The participants would be enlightened and motivated to carry out research on the proposed discipline for development of energy generation and storage systems

Registration

- The program is fully sponsored and there is no registration fee
- Faculties and Research Scholars from Engineering and Science Institutes can apply for the program
- Registration link: https://forms.gle/boJYCN9WdTNmWPUS7
- Registration for Phase III closes on 06/12/2020 and registration through any other mode will not be considered

General Instructions

- The total number of participants is limited to 50 for each phase. First 50 registered participants will be considered
- Registration will be confirmed through email and a google meet link will be sent to the confirmed participants
- Online evaluation examination will be conducted during the end of each phase of the course and e-certificates will be awarded based on attendance and performance in the test

Contact Details

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AICTE Sponsored Short Term Training Program on

"Augmentation of SMART Materials and Technologies for Commercial Energy Harvestation"

Phase – II

31/11/2020 – 05/12/2020

Details of the Expert Session

S.No	Name of the Speaker & Full Official Address	Date & Session	Title of the talk
1	Er. K. Varatharajan, FIE Former Scientific Officer, IGCAR, DAE, Kalpakkam	07/12/2020 FN	SMART Materials and Technologies in Solar Energy
2	Dr.K.Senthil Kumar, Associate Professor, Department of Electronics and Communication Engineering, Kongu Engineering College, Erode	07/12/2020 AN	MOFs for Supercapacitor: A Perspective
3	Dr. T.S. Senthil, Director – R&D, Prof. & Head / Physics, Erode Sengunthar Engineering College	08/12/2020 FN	Dye Sensitized Solar Cells for Energy Harvesting
4	Dr.K.S.Raj Mohan, Assistant Professor, Department of Chemical Engineering, National Institute of Technology Warangal	08/12/2020 AN	Recent trends in Fuel Cells
5	Dr.Raghuraja Pandiyan, Assistant Professor, Department of Chemical Engineering, National Institute of Technology, Warangal	09/12/2020 FN	Nanofluids in Energy Generation
6	Dr.Jignasa Gohel, Associate Professor, Department of Chemical Engineering, SVNIT, Surat	09/12/2020 AN	Hybrid solar cells – Synthesis and Applications
7	Dr.A.Arunagiri, Associate Professor, Department of Chemical Engineering, National Institute of Technology, Trichy	10/12/2020 FN	Energy Recovery using Pinch Technology
8	Dr.Amritesh Kumar, Assistant Professor, Department of EEE, NIT Silchar	10/12/2020 AN	Design and control of Grid connected Photovoltaic system
9	Dr.P.Shanmugam, Assistant Professor, Department of Chemical Engineering, Kongu Engineering College	11/12/2020 FN	Materials for Biodiesel
10	Dr.P.S.Raghavendran, Associate Professor, Department of Electrical and Electronics Engineering, Kongu Engineering College	11/12/2020 AN	Li-Ion Battery for Electric Vehicles Application
11	Dr.Mahesh Ganesapillai, Professor, Department of Chemical Engineering, Vellore Institute of Technology, Vellore	12/12/2020 FN	Sustainable Energy Technology Through Biomass Pyrolysis
12	Dr.K.Kannan, Professor & Head, Department of Chemical Engineering, Kongu Engineering College	12/12/2020 AN	Graphene Composites for Energy harvesting

AICTE Sponsored Short Term Training Program on
"Augmentation of SMART Materials and Technologies for Commercial Energy Harvestation"

Coordinators

HOD/Chem

Title of the Talk:	SMART Materials and Technologies in Solar Energy
Date and Time:	07/12/2020 & FN
Name & Details of the Speaker	Er. K. Varatharajan, FIE Former Scientific Officer, IGCAR, DAE, Kalpakkam

Report:

Increase in population increases the energy demand which causes in depletion of energy resources globally and this is the suitable time for the researchers to find some suitable solutions to meet the energy demand and also to save the natural resources. One important solution to meet the energy demand is the effective utilization of solar energy. Installation of solar PV panels helps to convert the solar energy into electrical energy which is used for heating, cooling and lighting purpose. Most of the developed countries applying this method to meet the energy demand. Use of SMART materials in this application plays a key role to recover the internal energy in a proper way. Because smart materials respond to the change in the environment and also undergo a material property change. So use of smart materials in Solar Energy helps to balance the electricity demand during the winter and summer days.

In this session the speaker clearly explains about the different SMART materials and technologies in solar energy. Properties of Smart materials such as thermochromic pigments, photochromic pigments, some polymers and some alloys, their applications in Solar Energy field were clearly explained by the speaker. The participants were interact with the speaker and clear their doubts in this smart material concept.

Title of the Talk:	MOFs for Supercapacitor: A Perspective
Date and Time:	07/12/2020 & AN
Name & Details of the Speaker	Dr.K.Senthil Kumar, Associate Professor, Department of Electronics and Communication Engineering, Kongu Engineering College, Erode

Report:

In this session, the speaker clearly explained about why Metal Organic Frameworks (MOFs) have been widely used in supercapacitor applications. The main factors behind this were high tenability, chemical composition, crystalline structure and adjustable geo morphologies of MOFs. Especially in the field of energy storage, it is very essential to find a way to enhance the performance of batteries and supercapacitors. To enhance their performance we need to consider the chemical and physical properties of the materials used in batteries and supercapacitors and also their chemical and physical property limitations. When MOFs considered for batteries and supercapacitors, it provides a to optimize the chemical and physical properties to enhance electrochemical properties.

The speaker also explained about MOFs as metal –ion cathodes, lithium sulfur batteries, physical encapsulation of polysulfides, chemical adsorption of polysulfides and Li-S MOF separators. The participants were interacted well with the speaker.

Title of the Talk:	Dye Sensitized Solar Cells for Energy Harvesting

Date and Time: 08/12/2020 & FN
Name & Details of the Speaker: Dr. T.S. Senthil, Director – R&D, Prof. & Head / Physics, Erode Sengunthar Engineering College
Report:

In this session the speaker explains about the main difference between the conventional solar cells used for energy harvesting and the dye sensitized solar cells used for energy harvesting. Several novel solar cells are being developed in addition to presently commercialized ones, for example, crystalline Si solar cells using bulk Si wafer, thin Si solar cells such as a-Si solar cells, compound semiconductor solar cells like a CuInGaSe2 (CIGS) cell, a CdTe cell. Dye-sensitized solar cells (DSC) have been actively developed as one of the candidates of novel environment friendly photovoltaic technologies. Stable and certain operation of the DCS under very low-light irradiation environments or unfavorable installation conditions for instance, the setting on the wall as described above due to its unique properties. So, a DSC operates effectively in applications like stand-alone power supplies, which are often installed in unfavorable light irradiation environments as its first commercial application. The above things were clearly explained by the speaker and the participants were understood clearly.

Title of the Talk: Recent trends in Fuel Cells
Date and Time: 08/12/2020 & AN
Name & Details of the Speaker: Dr.K.S.Raj Mohan, Assistant Professor, Department of Chemical Engineering, National Institute of Technology Warangal
Report:

In this session, the speaker explain about what is fuel cell, why we need to study about fuel cell, what is the current research scenario in the field of fuel cell and etc., A fuel cell uses the chemical energy of hydrogen or other fuels to cleanly and efficiently produce electricity. If hydrogen is the fuel, the only products are electricity, water, and heat. Fuel cells are unique in terms of the variety of their potential applications; they can use a wide range of fuels and feed stocks and can provide power for systems as large as a utility power station and as small as a laptop computer. A fuel cell consists of two electrodes—a negative electrode (or anode) and a positive electrode (or cathode)—sandwiched around an electrolyte. A fuel, such as hydrogen, is fed to the anode, and air is fed to the cathode. In a hydrogen fuel cell, a catalyst at the anode separates hydrogen molecules into protons and electrons, which take different paths to the cathode. The electrons go through an external circuit, creating a flow of electricity. These concepts were clearly explained by the speaker and the participants were understood clearly.

Title of the Talk:	Nanofluids in Energy Generation
Date and Time:	09/12/2020 & FN
Name & Details of the Speaker	Dr.Raghuraja Pandiyan, Assistant Professor, Department of Chemical Engineering, National Institute of Technology, Warangal
Report:	

In this session, the speaker explaind the following things. Energy consumption worldwide is constantly growing, and with it, there is a pressing need to develop new materials that can tackle this demand in a sustainable way. In the building sector, it is of the utmost importance that energy consumption can be counterbalanced with the generation of renewable energy. We live in a technological world, and in this reality, nanotechnology has a major role. Indeed, the number of nanoparticle/nanodevice applications is ever-growing. The use of nanotechnology in the development of new and alternative methods for pharmaceutical, medicinal, optical engineering, biosensing, and energy applications, among others, has boosted research on new nanoparticles and nanofluids. In the energy area, nanoparticles can be found in, e.g., storage units, luminescent solar concentrators, smart windows, and heat transfer mechanisms. All of these can provide high input in society and in the construction of a sustainable energy future. Nanofluids, for example, have a largely superior performance when compared to the currently employed heat transfer liquids; as such, they are greatly promising for applications in thermal management in sectors ranging from space exploration, automotive industry, and energy storage.

Title of the Talk:	Hybrid solar cells – Synthesis and Applications
Date and Time:	09/12/2020 & AN
Name & Details of the Speaker	Dr.Jignasa Gohel, Associate Professor, Department of Chemical Engineering, SVNIT, Surat
Report:	

In this session, the speaker explained about hybrid solar cells, synthesis, types and applications. Inorganic–organic hybrid solar cells (hybrid solar cells) have attracted considerable interest as a result of the synergistic properties of organic and inorganic semiconductors, which also take advantage of lightweight, robust, flexible, and inexpensive properties. Inorganic semiconductor nanomaterials (SNMs) (on the nanoscale in at least one of their dimensions) are dispersed in an organic polymer matrix. The nanomaterials used in hybrid solar cells have a lower optical absorption compared with conducting polymers and can absorb a much larger portion of the solar spectrum. Meanwhile, the nanomaterials could liberate and transport the potential charge carriers that are created through the absorption by the polymer host. In photovoltaic processes, the interfacial charge separation is considered critical to the function of the device, and having large interfaces could lead to greater opportunities for the excitons to reach the interfaces, which would result in a higher conversion efficiency. Nanostructured composites are the most studied hybrid solar cells.

Title of the Talk: Energy Recovery using Pinch Technology
Date and Time: 10/12/2020 & FN
Name & Details of the Speaker: Dr.A.Arunagiri, Associate Professor, Department of Chemical Engineering, National Institute of Technology, Trichy
Report:

In this session the speaker explain the following things

- Principle of pinch technology
- Construction of composite curves
- Determination of energy targets
- Targeting multiple utilities
- Grand composite curves
- Setting Minimum Number of Units Target
- Determining the Capital Cost Target
- Retrofit
- Retrofit Targeting based on Capital-energy trade-off
- DTmin Calculation in Pinch Express
- Typical DTmin values for various types of processes

Title of the Talk: Design and control of Grid connected Photovoltaic system
Date and Time: 10/12/2020 & AN
Name & Details of the Speaker: Dr.Amritesh Kumar, Assistant Professor, Department of EEE, NIT Silchar
Report:

In this session the following things were clearly explained by the expert.

- Photovoltaic (PV) source is characterized by intermittent output and wide operating range
- PV system do not use batteries for energy storage
- The two-stage structure is generally used with PV systems having low and fluctuating output voltage
- Structure and Principles of PV system
- Design of the Main Circuits and principle
- Design and the working principle of Photovoltaic Control System
- The DC-DC control circuit
- Grid integration of PV systems
- The Three-Phase (3-) Neutral-Point-Clamped (NPC)-QZS inverter
- Partial Shaded Condition (PSC)

Title of the Talk: Materials for Biodiesel
Date and Time: 11/12/2020 & FN
Name & Details of the Speaker: Dr.P.Shanmugam, Assistant Professor, Department of Chemical Engineering, Kongu Engineering College
Report:

In this session the expert explains the following things

- Definition for biodiesel
- B2,B5,B10,B20 types blended biodiesel
- Reaction mechanism in biodiesel production
- Biofuel blends (Ex: biodiesel-diesel-bioethanol and biodiesel-diesel-biobutanol)
- Biodiesel oxidative stability
- Oxidation products of biodiesel
- Corrosiveness and degradation potential of biodiesel
- Handling, storage and transportation of biodiesel
- Biodiesel equipment and materials
- Materials degradation
- Corrosion prevention

Title of the Talk: Li-Ion Battery for Electric Vehicles Application
Date and Time: 11/12/2020 & AN
Name & Details of the Speaker: Dr.P.S.Raghavendran, Associate Professor, Department of Electrical and Electronics Engineering, Kongu Engineering College
Report:

In this session the expert explains the following things

- Basics of electric vehicle (EV), hybrid electric vehicle (HEV), or plug-in hybrid (PHEV)
- Choice of now lithium-ion (Li-ion) rechargeable batteries
- Advantage of Li-ion batteries
- Storage capacity of of Li-ion batteries
- Li-ion technology can use fewer individual cells to produce hundreds of volts.
- Protection and monitoring
- Over voltage peaks
- ADI's Li-ion battery monitoring and protection system
- AD8280 Safety Monitor Current-Mode Control
- AD7280 Voltage Measurement Device
- Compliant with AEC-Q100 and EMI (electromagnetic interference) standards
- A daisy-chain interface
- ADUM140X Isolators
- Battery Management System
- LTC6801 Battery Fault Monitor

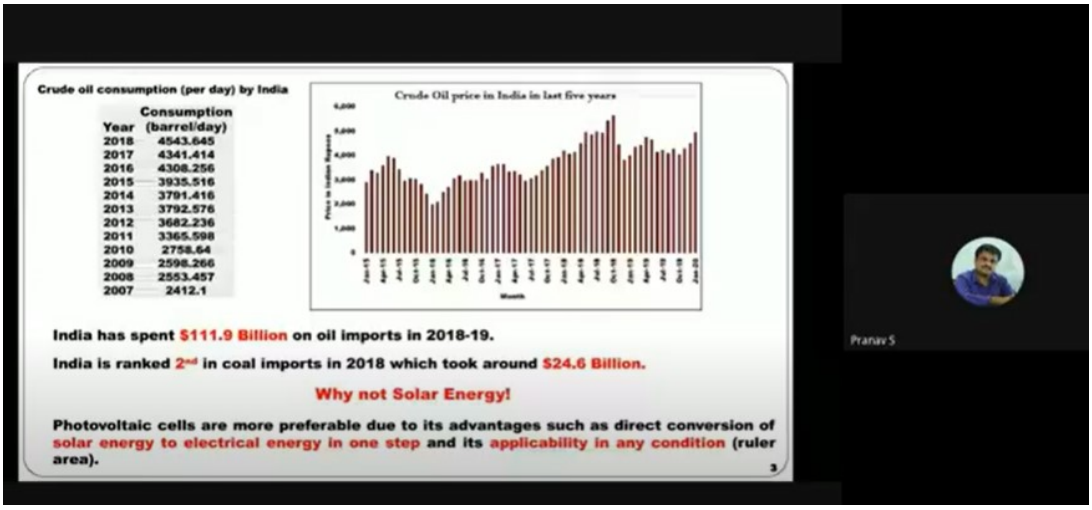
Title of the Talk: Sustainable Energy Technology Through Biomass Pyrolysis
Date and Time: 12/12/2020 & FN
Name & Details of the Speaker: Dr.Mahesh Ganesapillai, Professor, Department of Chemical Engineering, Vellore Institute of Technology, Vellore
Report:
In this session the expert explains the following things

- Pyrolysis – definition
- Energy, Consumption of Fossil Fuels
- Environmental Effects of Fossil Fuel Consumption
- Renewable Energy
- Biomass, Types, Advantegeous and Limitations
- Thermochemical Conversion Methods
- Pyrolysis • Pyrolysis Parameters
- Bio-oil, Products from bio-oil
- Economic Aspects of bio-oil production
- Bio-char production
- Application of Bio-char
- The future The situation of EN

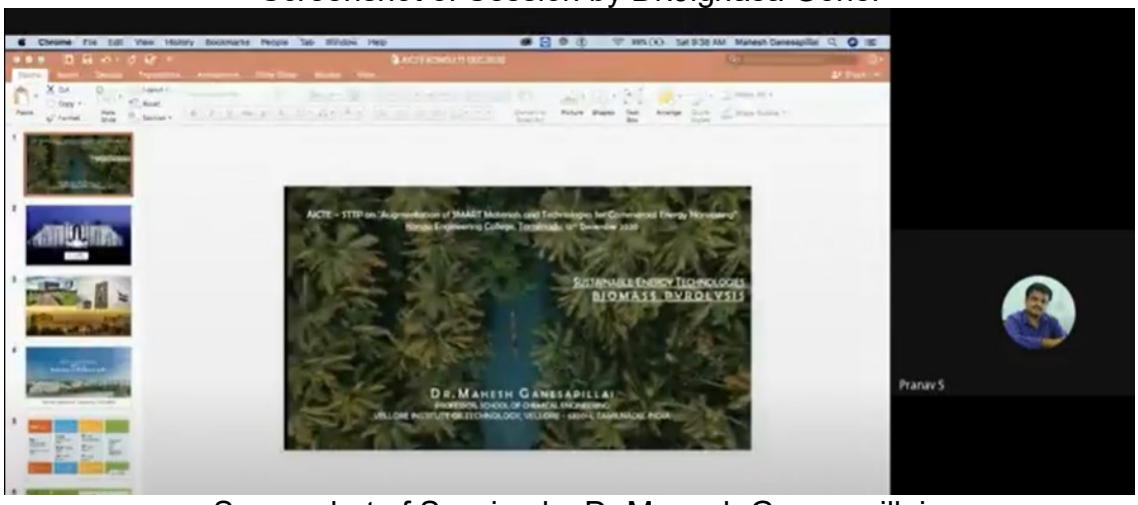
Title of the Talk: Graphene Composites for Energy harvesting
Date and Time: 12/12/2020 & AN
Name & Details of the Speaker: Dr.K.Kannan, Professor & Head, Department of Chemical Engineering, Kongu Engineering College
Report:
In this session the expert explains the following things

- Graphene
- Graphene oxide
- Graphene composites
- Energy harvesting
- Energy conversion
- Energy storage
- Thermal energy
- Solar energy
- Electrical energy
- Piezoelectric
- Energy by fluid movements
- Blue energy
- Self-powered devices

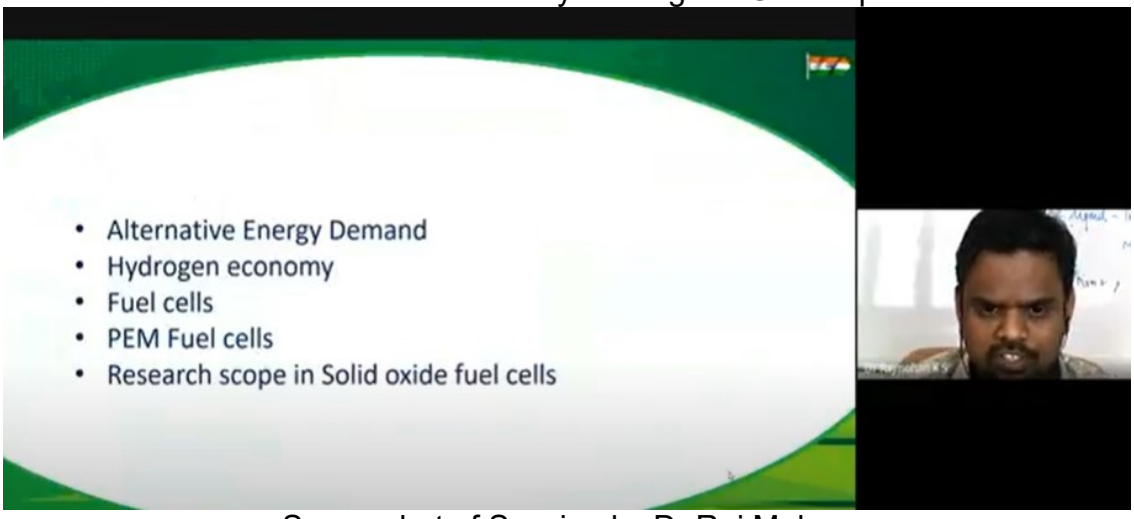
Sample Screenshots – Phase III



Screenshot of Session by Dr.Jignasa Gohel



Screenshot of Session by Dr.Magesh Ganesapillai



Screenshot of Session by Dr.Raj Mohan

KONGU ENGINEERING COLLEGE

(AUTONOMOUS)

PERUNDURAI, ERODE - 638 060, TAMILNADU, INDIA

School of Chemical & Food Sciences

Department of Chemical Engineering

CERTIFICATE OF APPRECIATION

This is to certify that *Dr.P.Krishnamoorthy* of Kongu Engineering College has participated in the 6 days AICTE Sponsored Short Term Training Program on, *"Augmentation of SMART Materials and Technologies for Commercial Energy Harvestation - Phase I"* from 23/11/2020 to 28/11/2020

Mr.S.Pranav	Dr.D.Nesakumar	Dr.K.Kannan
Program Co-coordinator	Program Coordinator	Convenor & HOD

KONGU ENGINEERING COLLEGE

(AUTONOMOUS)

PERUNDURAI, ERODE - 638 060, TAMILNADU, INDIA

School of Chemical & Food Sciences

Department of Chemical Engineering

CERTIFICATE OF APPRECIATION

This is to certify that *Dr.K.Senthil Kumar* of *Kongu Engineering College* has participated in the 6 days AICTE Sponsored Short-term Training Program on, *"Augmentation of SMART Materials and Technologies for Commercial Energy Harvestation - Phase III"* from 07/12/2020 to 12/12/2020

Mr.S.Pranav	Dr.D.Nesakumar	Dr.K.Kannan
Program Co-coordinator	Program Coordinator	Convenor & HOD

KONGU ENGINEERING COLLEGE

(AUTONOMOUS)

PERUNDURAI, ERODE - 638 060, TAMILNADU, INDIA

School of Chemical & Food Sciences

Department of Chemical Engineering

CERTIFICATE OF APPRECIATION

This is to certify that *Mr.R.Venkatesh* of PSNA College of Engineering & Technology has participated in the 6 days AICTE Sponsored Short Term Training Program on, *"Augmentation of SMART Materials and Technologies for Commercial Energy Harvestation - Phase III"* from 07/12/2020 to 12/12/2020.

Mr.S.Pranav	Dr.D.Nesakumar	Dr.K.Kannan
Program Co-coordinator	Program Coordinator	Convenor & HOD

Name and Address of Institute: Kongu Engineering College,
Perundurai, Erode – 638060, Tamil Nadu, India

Utilization Certificate for the financial year: 2020-2021

Name of the Scheme under which Grant was sanction: STTP under AQIS

AICTE Sanction Order No. & Date under which Grant was sanctioned	Amount Sanction (Rs.)	CERTIFICATE
Ref. No. 34-66/160/FDC/STTP/Policy-1/2019-20 and 10.08.2020	3,16,667/-	Certified that out of Grant-in-Aid of **Rs 3,16,667/- (Rupees Three Lakhs Sixteen Thousand Six Hundred and Sixty Seven Only)** sanctioned by the AICTE during the financial year 2019-20 in favor of Principal, Kongu Engineering College as per letter mentioned in column 1 and an amount of **Rs.2,79,000/- (Rs. Two Lakh Seventy Nine Thousand only)** has been utilized for the purpose for which it was sanctioned and the balance of **Rs. 37,667/- (Rupees Thirty Seven Thousand Six Hundred and Sixty Seven Only)** has been returned back to AICTE

Certified that I have satisfied myself that the conditions on which the grant-in-aid was sanctioned have been duly fulfilled and that I have exercised the following checks to see that the money was actually utilized for the purpose for which it was sanctioned.

Kinds of the checks exercise

1. Audited Annual Accounts of the Institute
2. Receipt and Payment Account of the Institute
3. Periodical Progress Report of the Institute

14.7.21

UDIN : 21026921AAAADQ9530

[Signature of Chartered Accountant]
Name of Chartered Accountant: C. SUMANI, B.Sc., F.C.A.,
Membership No: Chartered Accountant
Full Address : 33/1, Annamalai Layout, Nalli Hospital Road, ERODE - 638 011. M.No: 026921.

01.07.21

[Signature of the Head of Institution]
Name:Dr.V.BALUSAMY
Designation: PRINCIPAL
Full Address :Kongu Engineering College, Erode

Dr.V.BALUSAMY
PRINCIPAL
KONGU ENGINEERING COLLEGE
THOPPUPALAYAM(PO)
PERUNDURAI (TK) ERODE-638060
TAMILNADU.INDIA

2/7/21

[Signature of the Finance Officer]
Name: Dr. P. Balasubramanie
Designation: REGISTRAR
Full Address : KONGU ENGINEERING COLLEGE
[with Seal] THOPPUPALAYAM (PO)
PERUNDURAI (TK), ERODE - 638 060

Place :Perundurai
Date: