

Report of Two Days National Workshop on Fuel Cell Technology

(From basic science to application)

Title: Two Days National Workshop on Fuel Cell Technology (From basic science to application) during 24th-25th March, 2014

Department: Energy Centre, MANIT Bhopal

The Fuel Cell Workshop was inaugurated by Dr. Appu Kuttan K.K., Director MANIT, on 24th march 2014 at 9:30 am. He was accompanied by Dr. Saroj Rangnekar (H.O.D. of Energy Department), Dr. K. Sudhakar (co-coordinator), Dr. K.S. Dhathathreyan (Head Centre of fuel cell technology, CFCT ARCI Chennai), Dr. Damaraju Parvatalu (Deputy General Manager ONGC, Energy center, Mumbai) and Dr. I.B. Singh (Senior Principal Scientist & Professor AMPRI, CSIR).

The main motive of this workshop was to create awareness among young minds in the country regarding Fuel Cell Technology as well as their application in various sectors.

About 60 participants from various institutes & industries took part from all over India, this workshop was coordinated by Dr. K. Sudhakar, Assistant professor in the Energy department, MANIT. During this workshop, regional chapter of IAHEAM (Indian Association of hydrogen energy and advanced materials) was inaugurated. Institutional membership was awarded to MANIT by Dr. Damaraju Parvatalu (DGM, ONGC Mumbai) on behalf of IAHEAM and participants were given a free membership of IAHEAM.

The workshop included lectures from fuel cell experts who came from different parts of the country. The interesting part of the workshop was the practical demonstration of various upcoming fuel cell technologies like biological fuel Cells, microbial and plant fuel cell.

Brief Programme report

DAY 1: Expert Lectures

- **Dr. K.S. Dhathathreyan**, Head (Centre of fuel cell technology, CFCT ARCI Chennai) on the topic "Fuel cell stack assembly and development".



- **Dr. Damaraju Parvatalu**, Deputy General Manager (ONGC, Energy center, Mumbai) on the topic “Thermochemical Hydrogen generation technologies”.
- **Dr. K. Sudhakar**, Assistant Professor (MANIT, Bhopal) on the topic “Introduction to fuel cell including microbial and Biological Fuel Cell”.
- **Shri Vikas Asawat**, Registered Patent & Trade mark attorney (Kota, Rajasthan) on the topic “Innovation and Patent Management in Fuel cell Technology”.
- **Dr. I.B. Singh**, Senior Principal Scientist & Professor (AMPRI, CSIR) on the topic “Synthesis of mno_2 nanowires/nanorods for their applications in super capacitors.

Practical Session

The practical session included the demonstration of DMFC fuel cell using practical kits. It also included handling and demonstration of various microbial fuel cells, developed by the students of the Energy Department. The participants were involved in practical work by means of small assignments. Explanation and display of cells using lemon and potatoes were included to exhibit the energy content in fruits and vegetables.



Test Session

Teams were divided into groups and objective tests were conducted to check the understanding ability of the participants and also to evaluate them for selection of the best group among the participants.

DAY 2

Day 2 also consisted of different lectures delivered by experts from different organizations and institutions from India. It included a video session and concluded with a valedictory function.

Expert Lectures

- **Dr. P. Sridhar**, Chief Scientist, Central Electrochemical Research Institute, CSIR Madras Complex(CMC) **Title:** Advancement in Materials for Fuel cell application

- **Dr. Bipin Kumar Gupta**, Scientist National Physics Laboratory(NPL)-CSIR,Newdelhi **Title:** Hydrogen as a Freedom fuel : A New Era in India
- **Dr.C.Sasikumar** ,Assistant Professor MSME department, MANIT,Bhopal **Title:** Thermodynamic Aspect of fuel cell



- **Dr. Saroj Rangnekar** ,Professor & Head , Energy Centre,MANIT,Bhopal **Title:** Ultra capacitors and its applications in Fuel cells.



Video Session

The video session consisted all about the fuel cell from basics, including working principle of fuel cells, production methodology in lab scale and industrial scale. It also included practical applications and future aspects.

Valedictory

The valedictory function was conducted in presence of the Director of MANIT, Dr. Appukuttan KK. The participants were handed over the certificates and the best team chosen among the participants, were given awards for their performance during the workshop.



In conclusion the two day workshop on Fuel Cell Technology from basic Science to Application was a great success, with positive feedbacks from most of the participants. The event organization and contents were greatly appreciated by all the members who attended as well as the Expert lecturers who had come from various institutions and organizations across the country.