
SPARK
EDITION 10,2014
GEEKY CORNER!
CONSCIENCE!
DEPARTMENT OF CHEMICAL ENGINEERING
UNWINDING!
RACEE 2014

SPARK

"However big the urge to achieve is, how much ever the capability to shine is, however splendid the opportunity to rise is, a Spark is what is required to light up all these into reality."

Edition 10, 2014

From the Editor's Desk....

What's Sparking?

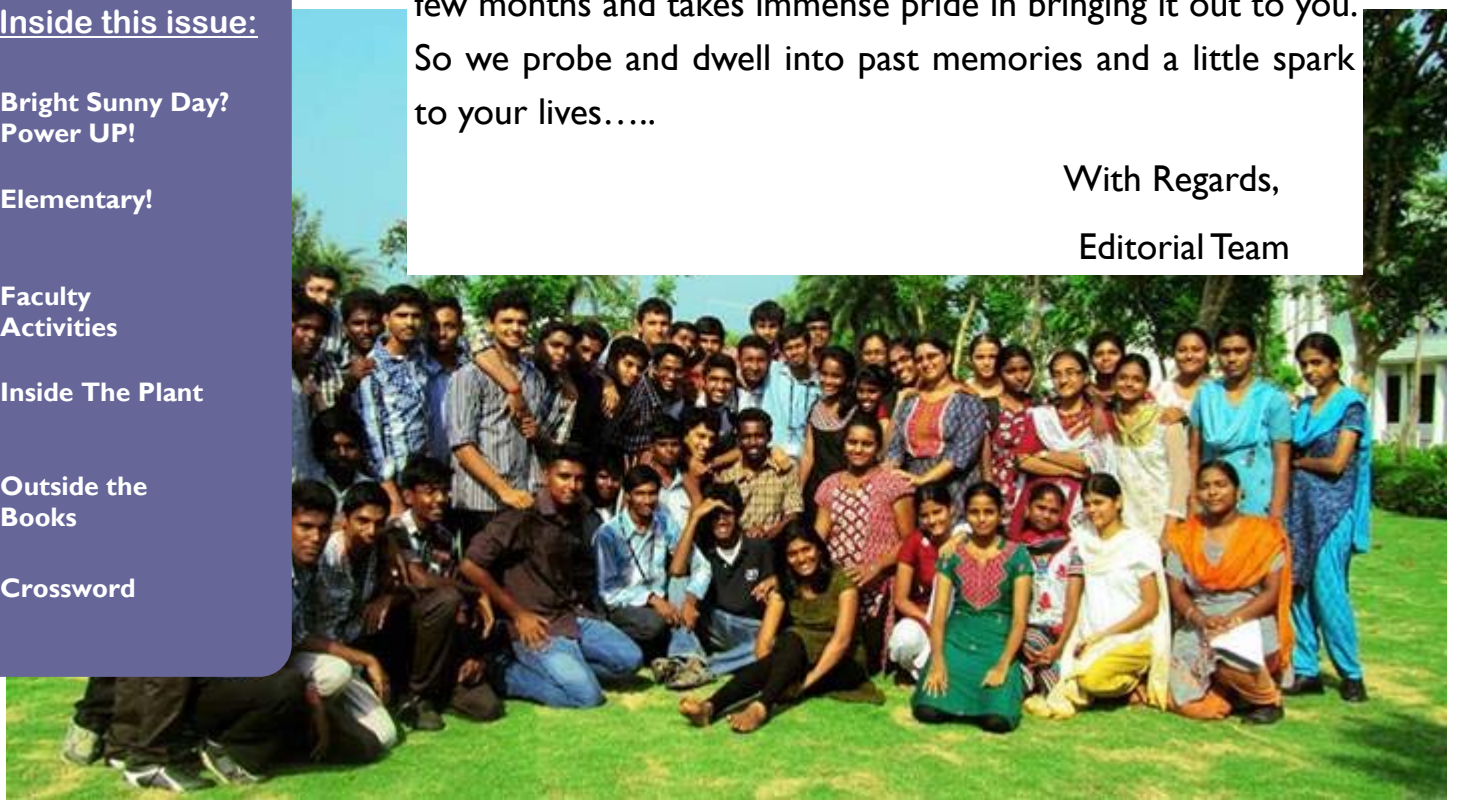
Hello,

Spark is the newsletter of the Chemical Engineering Department which aims to bring forward all the buzz and news from the department in the past few months. The department is extremely proud of all achievements it has attained in the past few months and takes immense pride in bringing it out to you. So we probe and dwell into past memories and a little spark to your lives…..

With Regards,

Editorial Team

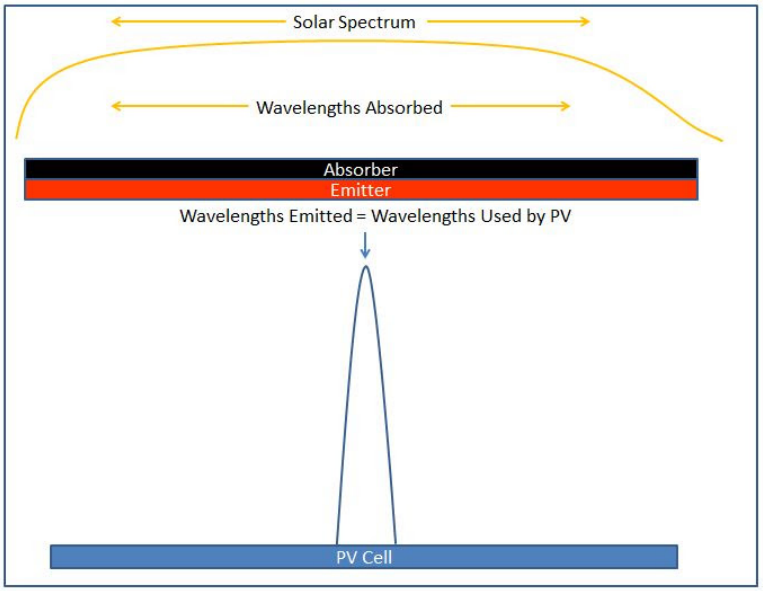
Inside this issue:



Powerless Nights? Charge UP!

SOLAR THERMOPHOTOVOLTAIC CELLS

Photovoltaics could have a sunny outlook as an energy source if they can overcome a couple of deficiencies. First and foremost, they don't generate power at night. And second, inexpensive single-junction PV cells only absorb a narrow band of wavelengths from sunlight. Researchers at MIT may have solved both of these problems with one device: the **solar thermophotovoltaic (STPV)** cell. The idea is to concentrate sunlight onto a solar cell, grab most of the solar spectrum, and convert it to the wavelength that photovoltaics prefer. The multilayer STPV cell incorporates an absorber made of carbon nanotubes that absorb most of sun's spectrum and convert it to heat, and an emitter made of of a silicon photonic crystal that glows when heated. The emitter's output is tuned to the wavelength at which PV cells operate most efficiently. STPV makes more solar energy available for conversion by tuning the energy to match the PV cell's preferred wavelength. In other words, the PV cell is receiving more solar energy at the right wavelength, allowing it to produce more electricity with the same overall solar input.



What happens at night? Heat can be stored more easily than electricity, so panels made of solar thermophotovoltaic (STPV) cells can generate electricity at night, assuming they hold on to the heat that they absorbed during the day. This is because the emitter material has a relatively large thermal mass, so it heats up slowly and retains its heat even after the sunlight disappears. That way, instead of getting a burst of energy when the sun is shining and nothing after sunset, we'd get a more steady energy production day and night.

STPV isn't exactly a new idea; the MIT researchers simply improved its performance. Past attempts at using STPV cells have produced experimental efficiencies of around 1%. MIT's team brings that up to 3.2%. They believe that with slight improvements, STPV will soon achieve around 20% efficiency, making it competitive with today's PV panels. Theoretically STPV could reach 80% efficiency, according to Dr. Evelyn Wang, associate professor of mechanical engineering at MIT, one of the lead researchers on this project. But even at 20%, the ability to store energy as heat and convert it to electricity later gives STPV an edge over a 20% efficient PV panel.

http://www.engineering.com/

ELEMENTARY! - Ununoctium

Lets meet the last element that has been synthesised so far. This element is ununoctium, which has the temporary atomic symbol, **Uuo** and the permanent atomic number, **118**. This element probably a non-metallic colourless element may be either a volatile solid or possibly a gas -- similar to its little sisters in row column 18 (the noble gases) of the periodic table. This element is known from just three atoms that were claimed to have been synthesised three years Ununoctium, also known as element 118, was reported as being discovered in 2002. This experiment initially produced one atom and involved bombarding a californium-249 target with 2.5 x 10^{19} calcium-48 ions. Ununoctium is radioactive (of course) with a half-life that appears to last less than a millisecond -- longer than some predictions, which seems to support the idea that an "island of stability" exists.

The island of stability is a concept first proposed by Glenn Seaborg in the late 1960s (the element seaborgium was named to honour him whilst he was still alive). Although observations revealed that the elements trend towards becoming increasingly unstable as their atomic number (nuclear size) increases, according to the "island of stability" idea, some of the super-heavy elements may be more stable than those with an atomic number that is closer to that of uranium. According to calculations, some of these super-heavy synthetic elements may have half-lives of minutes or days instead of milliseconds. Some physicists even predict half-lives of millions of years.

Probably the most interesting events associated with element 118 is the fact that the original discovery claim was later found to be fraudulent. In 1999, a team at Berkeley announced they had synthesised what appeared to be elements 118 and 116 by bombarding a lead-208 target with krypton-86 ions. They also claimed this work took just 11 days to produce three atoms of element 118. This experiment had originally been suggested by Polish physicist, Robert Smolanczuk, but the claim was later retracted when several groups (including the Berkeley team) were unable to reproduce these results. An investigation found that the original claim by Bulgarian physicist, Victor Ninov, was based on fraudulent

http://www.theguardian.com/

FACULTY ACTIVITIES

8th November 2013

Dr. M. Subramanian & Dr. D. Gnanaprakash visited the following industries: (i) TANFAC Industries, (ii) Chemplast Sanmar- PVC Plant, and (iii) Arkema Peroxides at Cuddalore (with PALS 2013 team.)

9th NOVEMBER 2013

Seminar presentation – Mr. Sri Balaji, Part time Ph.D. Scholar under the guidance of Dr. K. Sathish Kumar gave the presentation of his work to the faculty members. Faculty member interacted with the scholar and suggestions were given.

Dr. K.P. Gopinath, Associate Professor and Dr. R. Saravanathamizhan, Associate Professor received the orders for the SSN internal project grant from the President of SSN.

The department congratulates Dr. K. P. Gopinath, Dr. R. Saravanathamizhan, and Dr. P. Senthil kumar for receiving internal projects from SSN Trust.

11th NOVEMBER 2013

Doctoral Committee Meeting was convened by Dr. K. Sathish Kumar, Associate Professor for his Ph. D. Scholar Mr. Sri Balaji (Madha Engineering College, Chennai) Dr. Sukumar, Anna University and Dr. Sivasamy, Scientist, CLRI. were present and interacted with the research scholar.

12th NOVEMBER 2013

Energy Research Group Meeting presided by Dr. Baruah, MNRE. Dr. K.P. Gopinath, Dr. K. Sathish Kumarand the Head of the Department attended the meeting and made presentation on Algae bio-diesel proposed project.

14th NOVEMBER 2013

Dr. M. Subramanian, Associate Professor and Dr. R. Saravanathamizhan, Associate Professor visited Saint Gobin glass factory, Sriperumbudur along with PAL (IIT Alumni) 2013 Team

18th NOVEMBER 2013

Dr. P. Senthil Kumar published a paper titled of "Removal of fluoride from aqueous media by magnesium oxide coated nanoparticles" in Desalination and Water Treatment (IF: 0.885)

21st NOVEMBER 2013

Dr. P. Senthil Kumar applied for International Conference grant proposal titled "Recent Advancements in Chemical, Environmental & Energy Engineering (RACEEE – 2014)" to Defence Research and Development Organization (DRDO), Government of India, New Delhi.

27th NOVEMBER 2013

Dr. K. Ramakrishnan, Head of the Department attended a National Conference on Industry – Institute Interaction organized by IIChE and Anna University at A.C. Tech.

28th NOVEMBER 2013

Dr.R.Saravanathamizhan, Associate Professor has been approved by Anna university as recognised Ph.D., supervisor in the field of advanced oxidation process and mathematical modeling.

4th DECEMBER 2013

Dr. M. Subramanian, Associate Professor delivered a lecture on "MATLAB for Biochemical Engineering for a Faculty Development Programme titled "Emerging Trends in Biochemical Engineering" organized by Department of Industrial Biotechnology, GCT, Coimbatore.

2nd DECEMBER TO 15th DECEMBER 2013

Mr. Kilaru Harsha Vardhan attended Faculty Development Programme on Mechatronics at Mechanical Engineering, SSNCE

Mrs. R. Pushpalatha and Mrs. B. Chitra participated in the one week TEQIP Phase-II sponsored Short Term Training Program on Advances in Chemical, Biochemical and Environmental Engg. organized by the Dept. of Chemical Engg.., PEC from 2nd to 6th Dec 2013.

6th DECEMBER 2013

Dr. M. Subramanian delivered a lecture on "Overview of process simulations with some insights into MATLAB" in STTP on "Advances in chemical, biological and Environmental Engg." organized by Pondicherry Engg. College, Pondicherry.

8th DECEMBER 2013

Dr. P. Senthil Kumar was the captain for SSN Staff Cricket Team that won the match with Sri Ramachandra Medical University Veterans Team, Chennai

24th DECEMBER TO 28th DECEMBER 2013

Dr. M. Subramanian and Dr. A. Seenivasan attended short term training programme on Bio-Energy Conversion Technology organized by Maulana Azad National Institute of Technology, Bhopal.

Dr. M. Subramanian and Dr. A. Seenivasan submitted a proposal for AICTE for Faculty Development Programme on "Chemical and Biological Engineering Principles for the sustainable Production of Chemicals and Energy in a Green Way".

Dr. A. Seenivasan, Associate Professor received invitation to act as Editorial member for the Journal Chitakara Chemistry Review.

At biomass gasification unit, Bhopal

The gasifer converts the solid pellets (*residues of biomass in agricultural fields are converted into briquettes/pellets*) into gas (CO, H_2, etc). The produced syngas run an IC engine. The engine produces power to the adjacent pumping station during power failure.

7th January

Dr. P. Senthil Kumar, Associate Professor along with the passed out Chemical Engineering students has published papers titled

1. Adsorption kinetics, mechanism, isotherm and thermodynamic analysis of copper ions onto the surface modified agricultural waste in an International Journal "Environmental Progress and Sustainable Energy", Vol. 33 (1), pp. 28-37, 2014 (IF: 1.649)

2. Adsorption of lead(II) ions from simulated wastewater using natural waste: A kinetic, thermodynamic and equilibrium study" in an International Journal "Environmental Progress and Sustainable Energy", Vol. 33 (1), pp. 55-64, 2014 (IF: 1.649)

From Alumni

23rd January

Dr. K. Sathish Kumar, Associate Professor's paper was accepted in American Institute of Chemical Engineers (AIChE) on the topic "Binding of Zn(II) Ions to Chitosan–PVA Blend in Aqueous Environment: Adsorption Kinetics and Equilibrium Studies".

CETEX

Cetex Petrochemic

25th January

- **Mr. Centhil, Process Engineer, CETEX Petrochemical interacted with the 3rd year chemical Engineering students regarding placement in Chemical Industries.**

An industrial visit

25th January

- **II year students along with Dr. A. Seenivasan visited GHCL at Thirupporur.**
- **Mr. Ramesh, Head operation interacted with students and shared his expereince**

28th January

Dr. P. Senthil Kumar, Associate Professor and Dr. K. Sathish Kumar, Associate Professor have published a paper titled of "Binding of Zn(II) ions to Chitosan-PVA blend in aqueous environment: Adsorption kinetics and equilibrium studies" in an International Journal "Environmental Progress and Sustainable Energy" (IF: 1.649)

Geeky Corner:Inside The Plant

Pritham V A of Third year had hands on experience during his training from 16th Decmeber-13 to 16th January-14 in Essar

ESSAR
OIL & GAS

C. Prabhakaran, Anish Kumar, Dhanraj of third year & Koushik Balaji, Rahul Joshi of second year had the prestigious opportunity to train at ONGC from 16-31st Dec-13

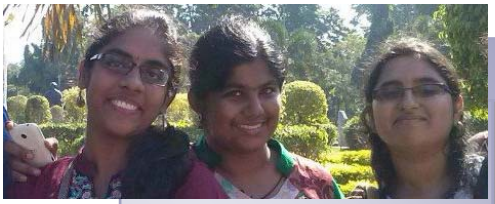
ओएनजीसी
ONGC
making tomorrow brighter
Oil and Natural Gas Corporation Ltd.

Abhinaya V of second year got to pursue research in her field of interest from 17 - 31st Dec-13 at Shasun, Chennai

Shasun

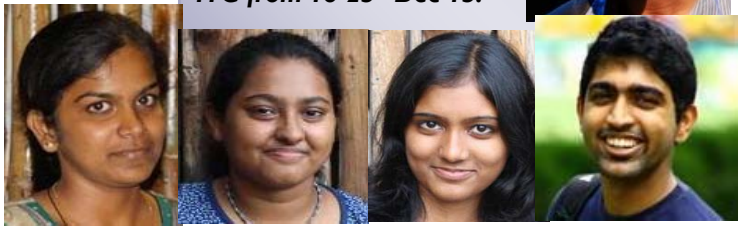
Hari Haran V, Praveen N, Prasanna V gained practical knowledge about manufacturing in Arasan Aluminium Indusries ,Sivakasi from 19th-21st Dec 13

C. Niveda, A. Anusuya of Second year had an insight of Nuclear power plant through their visit to BARC, Kalpakkam from 17 Dec-13 to 3rd Jan-14



ITC Limited

Abhishek Dutta, Abishek Narayan, Sengavi T, Amalishiya R,Ritu Philip, Ashwini, Vignesh Balasubramanian of 2nd year learnt the nuances of paper manufacturing at ITC from 18-23rd Dec 13.



R. Jyotsna, Malavikha Rajiv Moorthy, A. Neeha Dev of Second year acquired knowledge about Chemical process industry through their visit to the Coromandel International (Fertisiler Company) from 26-31st Dec-13

Coromandel

OUTSIDE THE BOOKS!

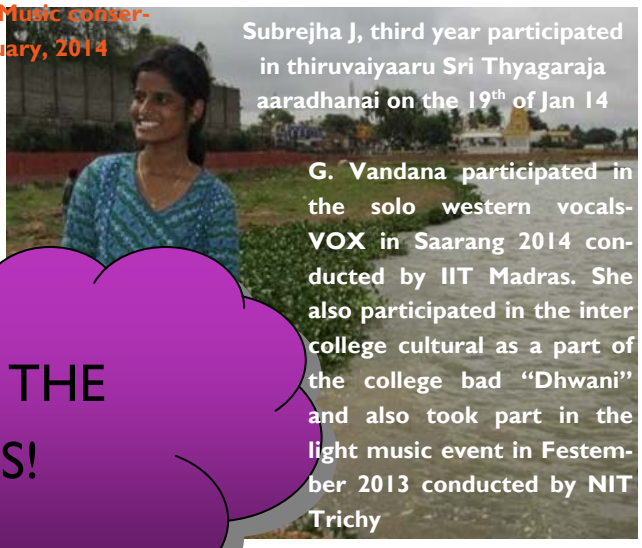
Raksha Mahalinkam of second year, had participated in the classical vocal competition in Festember 2013 conducted by NIT Trichy, to bag the 3rd prize. In the Festember music quiz she won the first prize!

Raksha Mahalinkam of second year, has participated in classical vocal competition in Saarang 2014 conducted by IIT Madras, to bag the third prize!

C. Prabhakaran of third year, as a part of SSN CE Foot ball Team participated in IIT Sportfest conducted by IIT Madras, from 25-30 Sept 2013, and bagged the 4th place!

C. Prabhakaran of third year participated in the Anna university inter-zonal Tournament 2013-2014 conducted at JJCET, Trichy, emerging as the winners, as a part of anna university zone 3.

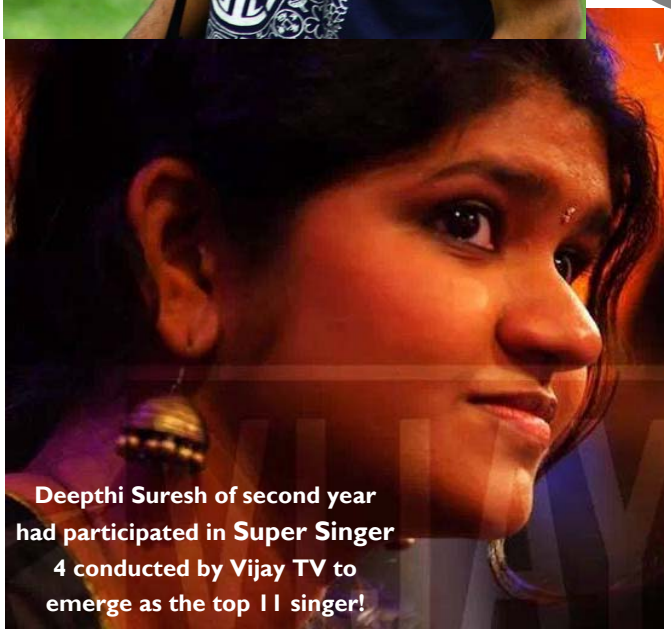
G. Vandana of third year participated in western vocals in RANGREZA 2014 conducted by A.R Rahman's KM Music conservatory on the 27th of January, 2014



Subrejha J, third year participated in thiruvaiyaaru Sri Thyagaraja aaradhanai on the 19th of Jan 14

G. Vandana participated in the solo western vocals-VOX in Saarang 2014 conducted by IIT Madras. She also participated in the inter college cultural as a part of the college bad "Dhwani" and also took part in the light music event in Festember 2013 conducted by NIT Trichy

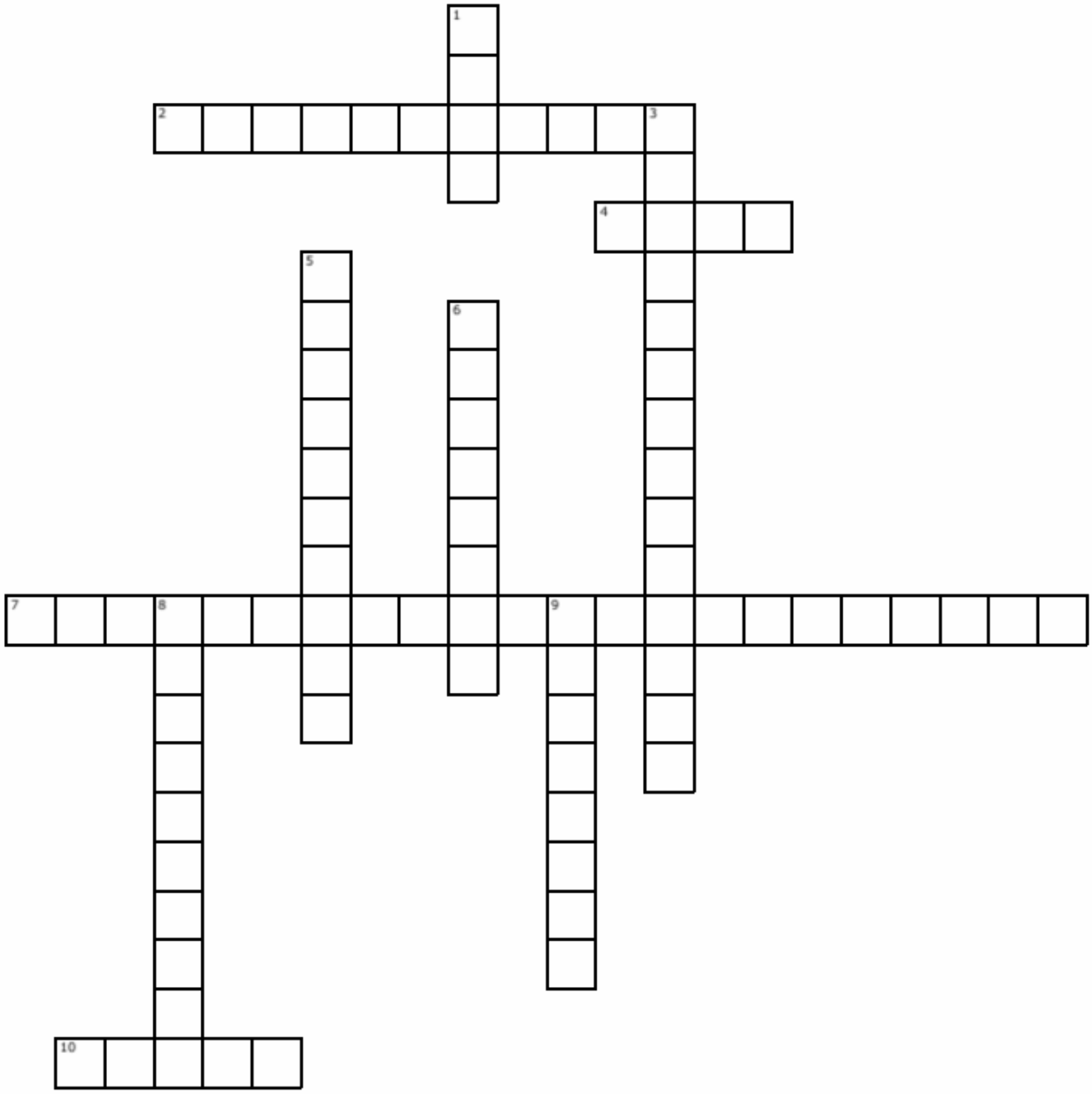
Abishek Narayan of second year participated in the All India rowing championship held in Kolkata from 19-30 Jan 2014



Deepthi Suresh of second year had participated in Super Singer 4 conducted by Vijay TV to emerge as the top 11 singer!

Abhishek dutta, Abishek Naryan, Sankar C, Sengavi Thirupathy, Ritu Philip of second year participated at the Theatrix event in Festember 2013, on the 28th of September emerging as the winners!

GO FIGURE!



Across :

2. Property which depends on the no of particles of the solute per unit volume if the solvent ()

4. Order of a reaction were rate does not depend on the conc. of reactants ()

7. Extraction process of petro goods ()

10. Product of contact process ()

Down :

1. Process of manufacturing soda ash without the liberation of ammonium chloride ()

3. The method of prevention of corrosion ()

5. Reaction in which reactants are in the same state ()

6. size reduction method ()

8. colloidal separation ()

9. graph which shows the variation of substance adsorbed on the surface with respect to pressure ()

COMING UP:RACE TO RACEE-2014

WE CORDIALLY INVITE ONE AND ALL TO WITNESS OUR FIRST INTERNATIONAL CONFERENCE

International Conference on
Recent Advancements in Chemical, Environmental & Energy Engineering (RACEEE-2014)
February 27-28, 2014 | Chennai, India

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Welcome to Our Website!

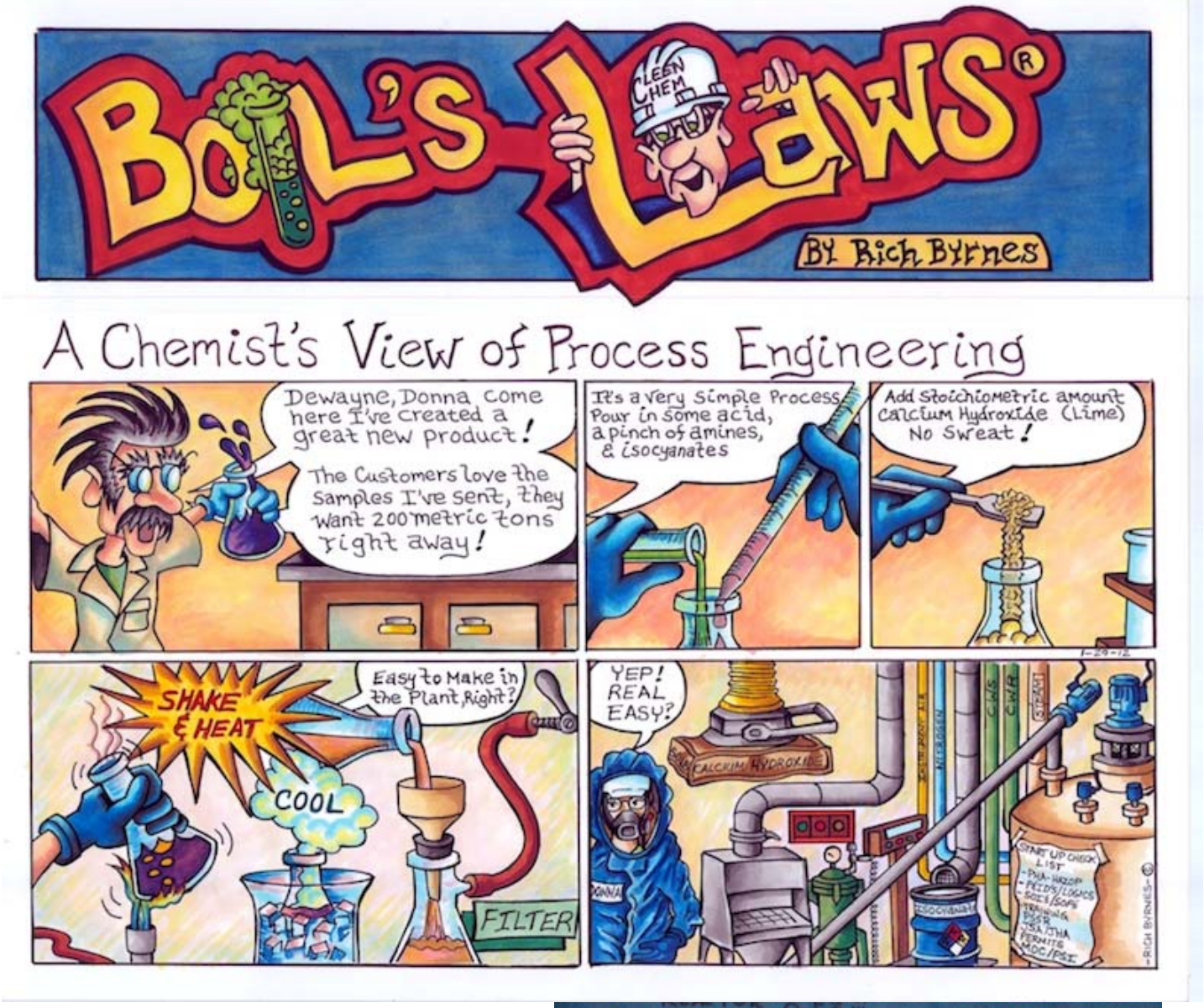
International Conference on Recent Advancements in Chemical, Environmental & Energy Engineering (RACEEE-2014) promotes the major themes of modern chemical engineering, environmental engineering and energy engineering. Modern Chemical Engineering processes involve advanced material science, process control strategies, environmental engineering and energy engineering. These fields have developed a lot in the past two decades. The research quest in these novel areas, have yielded various attractive results which helped in the development of human society.

Energy engineering is one of the more recent engineering disciplines to emerge. It is increasingly seen as a major step forward in meeting carbon reduction targets. Environmental engineering is the integration of science and engineering principles to improve the natural environment, to provide healthy water, air, and land for human habitation and for other organisms, and to remediate pollution sites. Further more it is concerned with finding plausible solutions in the field of public health, such arthropod-borne diseases, implementing law which promote adequate sanitation in urban, rural and recreational areas.

OUR GUESTS OF HONOUR

Prof Dr Badhrulhisham Bin Abdul Aziz, Professor, Process System Engineering, Faculty of Chemical and Natural Resource Engineering, Universiti Malasia Pahang. He holds the post of the Deputy Vice Chancellor (Academic and International). His areas of interest include Process System Engineering, Process and Plant Safety, Scale up of Fine/Specialty Chemical Processes .

Dr. K. Ramesh, Process System Engineering, Faculty of Chemical and Natural Resource Engineering, Universiti Malasia Pahang. His Areas of Expertise includes Modeling and Simulation, Nonlinear Model Predictive Control, Advanced Process Control .



THE EDITORIAL TEAM

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