



Behind the Nobel Prize...

Robert Lefkowitz and Brian Kobilka are awarded the 2012 Nobel Prize in Chemistry for groundbreaking discoveries that reveal the inner workings of an important family of such receptors: G-protein–coupled receptors.

For a long time, it remained a mystery how cells could sense their environment. Scientists suspected that cell surfaces contained some kind of recipient for hormones. But what these receptors actually consisted of and how they worked remained obscured for most of the 20th Century.

Lefkowitz started to use radioactivity in 1968 in order to trace cells' receptors. He attached an iodine isotope to various hormones, and thanks to the radiation, he managed to unveil several receptors, among those a receptor for adrenalin: β -adrenergic receptor. The newly recruited Kobilka accepted the challenge to isolate the gene that codes for the β -adrenergic receptor from the gigantic human genome. The researchers discovered that the receptor was similar to one in the eye that captures light. They realized that there is a whole family of receptors that look alike and function in the same manner.

Today this family is referred to as G-protein–coupled receptors. The studies by Lefkowitz and Kobilka are crucial for understanding how G-protein–coupled receptors function. Furthermore, in 2011, Kobilka achieved another break-through; he and his research team captured an image of the β -adrenergic receptor at the exact moment that it is activated by a hormone and sends a signal into the cell. This image is a molecular masterpiece – the result of decades of research.

In and around the department:

• Prof. S. Pushpavanam, Department of Chemical Engineering, IIT Madras, delivered a special lecture on the 22nd of Jan 2013.



• Three days Training Programme on “MATLAB and MS-Excel for Chemical Engineering Applications” was conducted by Dr. M. Subramanian (Associate Professor) from 31st Jan to 2nd Feb 2013. As part of this programme Professor M. Chidambaram, IIT Madras delivered the inaugural lecture and Dr. T. Renganathan, IIT delivered a lecture cum demonstrative session.



- ☐ On 02-02-13, Dr. T. Renganathan, Assistant Professor, IIT Madras, gave a special lecture on MS Excel as a part of training programme.
- ☐ On 26-02-2013, National Student Conference on **Recent Advancement in Chemical Engineering** (RACE) was conducted. Dr. V. Jayakumar, Principal, Jayasurya College of Engineering inaugurated the conference. Students from various universities participated and presented the technical papers. (Co-ordinator– Dr. K. Sathish Kumar and Dr. P. Senthil Kumar).

Faculty achievements



Dr. D. Gnanaprakash, Associate Professor received Rs.8.5 lakhs SSN Research Fund to continue the research on Hydrotropic Extraction of Bioactive Materials.

Student Achievements

The Scholarship Day function was held on 5th of November 2012 and the following students are the recipients

FINAL YEAR

- Mr S.Shahul Hameed
- Ms Suriya.S
- Mr Mohan Kumar S
- Mr Ethiraj H

THIRD YEAR

- Ms Sai Deepthi. A.S.L
- Ms Neeraja. K
- Ms Manimegalai. M
- Mr Vinod. B
- Mr. Saleem.R

SECOND YEAR

- Ms G.Vandana
- Ms Nandhini.V
- Ms Cheshta Varma.P

Congratulations to the awardees!

Student Activities

- **Sangeetha Priyadarshini.R, Janani.S** and **Pryakrit.K** of III year attended an International Conference on bio energy, environmental and sustainable technology.
- On 21-01-13, the following students of II year won prizes in **Chemzest** conducted in **Adhiparasakthi College**:
 - **Prabhakaran.C** and **Pritham.A** won First place in Tech quiz and Third place in Paper presentation.
 - **Sai Madhusudanan** and **Pradeep Panneerselvam** won Second place in poster presentation.
 - **Gayathri.R** and **B.Priyadarshini** won First place in paper presentation and Third place in tech quiz.
- On 24-01-13 and 25-01-13, the following students of II year won prizes in **TECHNOVATION** conducted by **Coimbatore Institute of Technology**:
 - **Saranya Balu** won First place in Paper Presentation on Industrial defined problems.
 - **B.Priyadarshini** and **Gayathri.R** won Second place in Paper Presentation.
 - **Pritham.A** and **Prabhakaran.C** won First place in Technical Quiz.



- **Gayathri.R** and **B.Priyadarshini** won Second Place in Paper Presentation and First Place in Tech quiz in **Selectx** conducted by CSIC – **CECRI, Karaikudi**.



- **Gayathri.R** and **B.Priyadarshini** presented paper in National Conference on “Recent Advancement in Chemical Engineering **RACE**” conducted by our college.
- On 26-02-2013 and 27-02-2013 **A S L Sai Deepthi** and **R. Bharani**, III year, received Best Paper Award in DRDO sponsored National Conference on “Mathematical Modelling in Civil Engineering organized by the Department of Civil Engineering, **Sri Krishna College of Technology, Coimbatore**.”

- On 23-02-2013, **Shahul Hameed S**, IV year attended special lecture conducted at **IICHe** Head Office.
- On 23-02-13, **Pradeep Panneerselvam** and **Sai Madhusudanan** won First place in Poster Presentation and Second place in Tech Quiz in **Zealiche** conducted by **Sengunthar College**, Erode.



- **Ganesh Karthik**, **Aditya.V** and **Eswar Bharadwaaj** of III year won the Second place in the symposium conducted at **UGCT Maatunga** (Bombay).



Internships and In Plant Training

Akshita G. underwent industrial training on “Introduction to safety studies in petrochemical industries” at **Chola MS risk services**.

M. Sarath Kumar attended winter industrial training in **ONGC Hazira plant** at Surat for a month i.e. from 17th Dec 2012 to 7th Jan 2013. A field orientation training program of Hazira plant was conducted.

Ganesh Karthik, **Neeraja K.** & **Sangeetha R** attended winter internship programme in **Orchid Chemicals**.

Anitha Venkat attended an internship at **Ion Exchange** in December 2012 and January 2013.

Deepika N. & **Nivedha** underwent training at **Shriram EPC**, BCCL.

Deepika N. underwent training at **Indian Oil Corporation** (CPCL, Manali).

G. Vandana underwent in-plant training at **Travancore Titanium Products Ltd.**, (TTPL), Thiruvananthapuram, Kerala. She has drafted a detailed report on the manufacturing process and improvement strategies on efficient resource management.

A day in the helmet of an Engineer!



On 20th Feb, we, the students of II year visited The Cetex Petrochemicals, Manali. Methyl ethyl ketone (MEK) is their main chemical of manufacture, besides other chemicals such as secondary butyl alcohol (SBA), spent acid and various other chemicals of commercial importance. The main applications of the products are in the manufacture of paints, printing inks, adhesives, coatings and aroma chemicals. We were given the flow scheme involving the main processes of the plant before the trip, for a basic knowledge. Once at the plant, curiosity mounted us as we were briefed about the processes that took place at the plant and about the safety aspects of the field work. After the briefing, we were split into groups and the tour began. We were made to wear bright yellow safety helmets that gave us the proper 'I'm an engineer' look and a feeling of importance. We were accompanied by an experienced instructor who turned out to be extremely interactive. The wired control room with various indication lights blinking for attention, the giant sized reactors with intricate pipe connections and parameter settings, the distillation tanks, the storage tanks and the fuelling units where wood was burnt, were all astounding to look at. It made us realize the enormity of industries and the scale up involved from experiments done at lab level. A good meal and a quiet bus journey back marked the end of the visit. Overall, the trip made us look beyond the books and provided what classrooms could never have. We thank the ever enthusiastic Mr. Seenivasan and the ever entertaining Dhandapani Sir for accompanying us and Dr. Ramakrishnan, HOD for arranging the wonderful trip.

FACULTY ACTIVITIES

- **Dr. B. Ashraf Ali** (Associate Professor) **delivered a lecture** in the **Seventeenth National Seminar on Crystal Growth** at the Dept. Of Physics, Anna University.
- **Dr. B. Ashraf Ali** (Associate Professor) attended 3 days **International conference** on Mathematics and Chemical Kinetics (**MACKIC 2013**) at **IIT Madras** on February 4th to 6th 2013 and presented a paper "DEM / DPM approach for modelling of crystal dynamics in a batch crystallizer".
- On 12-02-2013, the Head of Department (**HOD**) attended **IICHe** meeting at IICHe Centre, Chennai and discussed with members about problems of chemical engineering students regarding industrial training, project excursion and placements.
- **Dr. Ashraf Ali** (Associate Professor) successfully completed eight days Faculty Development Programme on **Process Control** at **Anna University**.
- **Sri A. Seenivasan** (Assistant Professor) attended the Faculty Development Programme on **Instrumental Methods of Analysis** at **Anna University**.
- **Dr. P. Senthil Kumar** attended 3 days workshop on Recent Trends in **Monitoring Control and Abatement of Air Pollution** organized by Department of Chemical Engineering **NITK**, Surathkal.
- **CSIR** fund for national conference was applied by **Dr. P. Senthil Kumar** (Associate Professor) & **Dr.K.Sathish Kumar** (Associate Professor).
- The **HOD** & **Dr.K.Sathish Kumar** visited **Aramats Biotek** and discussed with the Director regarding various projects in Biotech field, nano field and the possibility of signing MOU with Chemical Engineering Department for further research work.
- **Dr. B. Ashraf Ali** (Associate Professor) **delivered a special lecture** for the faculty of the Department of Chemical Engineering, SSN.



PAPERS PUBLISHED

- **Dr. P. Senthil Kumar**, Associate Professor published a paper titled "Process Optimization studies of congo red dye adsorption onto cashew nut shell using response surface methodology" in International Journal of Industrial Chemistry, 2013, Volume 4, pp.17 (Springer Lime).
- **Dr. Senthil Kumar**, Associate Professor published a paper in international journal on Environmental Progress and sustainable Energy ("Absorption of lead (II) ions from simulated waste water using natural waste: A Kinetic thermodynamic and equilibrium study") IF 1.649
- **K. Sathish Kumar, D.Gnana Prakash, K.Mayilvaganan** and final year students **C. Arunraj & S.Mohan Kumar** published a research article in "Pharmaceutical Sciences and Research" (International Journal).
- **D.Gnana Prakash, P.Balaji Bharagav** (SSN research centre) and students **J.Pavithra, S.Suriya** (IV year) published a paper in "Vibrational Spectroscopy" - Advanced Materials Research, Vol. 584.
- **Dr. P. Senthil Kumar** along with B.Tech. Chemical Engineering students **Ms M. Priyadharshini, Ms P. Sebastina Anne Fernando** and **Mr. R. Srinath**, has published a paper entitled "Kinetic Mechanism Isotherm and Thermodynamic Analysis of Adsorption of Cadmium Ions by surface-modified strychnos potatorum seeds" in the peer-reviewed international journal titled "Korean Journal of Chemical Engineering Vol.29 (12) 2012-12-01 (IF 0.991).



CURRENT PROJECT

AREAS OF FOURTH

YEARS:

- Extraction of BIO-PESTICIDE from Neem seeds (AZADIRACTIN) using hydro tropes with microwave assistance.
- THERMAL MANAGEMENT in fuel cells – Design of blowers to reduce the air temperature to the fuel stacks.
- Conversion of WASTE PLASTIC into FUEL OIL.
- A new three phase three dimensional ELECTROCHEMICAL REACTOR – Application in dye wastewater treatment.
- Comparative study of different laccases coupled with metal nanoparticles for DYE DEGRADATION.
- Removal of HEAVY METAL ION using surface modified agricultural waste.
- Production of BIODIESEL from marine ALGAE.
- Preparation and characterization of Cds doped silica XEROGELS by sol-gel method.
- Experimental study to enhance the thermal conductivity of NANOFLUIDS.
- Numerical investigation of hydrodynamics and mixing in lid driven cavity.

The following students of IV year have been successfully placed in the following Corporates. The department of Chemical engineering congratulates them.

COGNIZANT TECHNOLOGY

1. Lekshmi Ajith Kumar
2. Maria Jacob Stani Raja
3. Nithya Thangathurai
4. Pavithra Jayaprakash
5. Pradyumna K
6. Sangita Gayatri K
7. Shreyas Venkat Padmanabhan
8. Sindhuja M
9. Suriya S
10. Varsha P

INFOSYS

1. Anusha V
2. Arunraj C
3. Navin Kishore B
4. Pavithra Jayaprakash
5. Poorvajan Sekar
6. Rathnakumar R
7. Sangita Gayatri K
8. Shahul Hameed S
9. Shiva Shankar B
10. Sindhuja M
11. Suriya S
12. Varsha P

CORE COMPANIES

PETROFAC – Varsha P

TECHNIP - Shahul Hameed S

KILL THE DIESEL PROJECT!

Four students (**Deepikaa**, **Karthik**, **Nivedha** and **Anita** of III year) synthesized bio-diesel using used cooking oil from our very own canteen and ran a one stroke twin cylinder diesel engine as well as a lawn tiller using that, as a part of the E-Cell (Entrepreneurship cell) activities.

The process used was Trans esterification with acid catalyst. Though their attempts on using base catalysis (sodium hydroxide) was fruitful, the by-product (soap) was found to be more than bio diesel.

Acid catalysis gave a better yield in terms of bio diesel though the only disadvantage with that was the time factor.

They have entered this for the prestigious **NILIMA ROVSHAN** award. They extend their thanks to the department faculty, especially MR. D.Gnana Prakash and The HOD, Dr. Ramakrishnan whose support was indispensable.

The bio diesel obtained was used to run a tiller and a diesel engine on the 8th and 9th of February.

The NEN auditors checked the feasibility and success of this project, and were impressed.



BEYOND THE BOOKS!!!

- **A.R.Sankaranarayanan**, II Year participated in “**Lifest**” conducted by **CEG Anna University** on the 14th Nov 2012 and won the First Prize in the debate competition.
- He also won the 1st place in English debate conducted on 29th Nov 2012.
- The following students of II Year participated in **Technovations’13** conducted by **CIT** on 24th and 25th January, 2013.
B.Priyadarshini won I place in spot wibble,
Prabhakaran.C and **Pritham.A** won I place in Mr Genius
Saranya Balu won I place in Photo icono.
Prabhakaran.C was entitled “Gem of chem”.
- **A.R.Sankaranarayanan** won III place in quiz of **NOKIA India Fest** conducted on 19.01.13
- **K. Pryakrit** rendered a music concert at **Vanimahall** during the marghazhi December music season.
 - He was a supporting vocalist at **Naradha Ghana Sabha** during the music season.
 - He gave another performance at the **Madhya Kailash** during Sivarathri.
- **Priya.R**, **Saranya Balu**, **Gayathri.R**, **B.Priyadarshini**, **Divya.A**, **Santhana Krishnan**, **Pandian.M** of II year were a part of the NSS camp service in the **Echankadu District** between 28-01-13 and 03-02-13.
- **Prathima.M**, **Devi Baghya** and **Subrejha.J** of II year put up a sandwich stall named “**Between D Bread**” on 14-02-13 for **MELA 2013** and saw a handsome profit.
- **Shreyas Padmanabhan**, **Karthik A.**, **Deepikaa N.**, **Nivedha Sridhar** and **Anita** were a part of the organising team for **Tata First Dot 2013** powered by **NEN**.
- **Shreyas Padmanabhan**, **Karthik.A**, **Deepikaa.N**, **Nivedha Sridhar** and **Anita** were a part of the winning team during **E-WEEK 2013** conducted by the National Entrepreneurship Network.

“NSS ACTIVITIES”



Oh, It's not just work. It's play too!!!

- **Nilesh Subramanian**, II year was part of the **Chemplast** team which won the BCCI Corporate trophy.
- **V.Aditya** (2nd division Tamilnadu Cricket Association) of III year was the runner up at **Sairam Cricket Tournament** conducted between 25th & 29th Jan 2013.
- He was also the winner at **Sri Venkateshwara College of Engineering** Tournament conducted between 2nd & 8th Feb 2013.



- **S. Mohan Kumar**, IV year – Foot ball tournament in
 - **S.A Engineering College** 5's Tournament – Quarter finals
 - State level tournament – **TIES2k13** Pre-quarter finals

Editorial team

Students:

IV year:

Pavithra .J

Ramesh .M

Suriya .S

III year:

Deepika .N

II year:

Abhishek .S

Akshita .G

Cheshta .V

Pradeep .P

Prathima .M

Subrejha .J

Vandana .B

Faculty:

Dr. K. Ramakrishnan (HOD)

Shri. A. Seenivasan

