

Magazine
June 2006

Chemical Engineering
Association



Department of Chemical Engineering
Indian Institute of Science
Bangalore

CEA Magazine - A renaissance of thoughts...

The dream of a CEA Magazine with a bunch of quality and diverse articles comes in reality and we are very glad to present in your hands on this auspicious occasion.

Keeping in mind that good start is a half finish; we started with a great positive frame of mind. The sincere efforts and dedication ensures the dream coming to a reality. We realize if there is a desire a path with apprehensive hurdles sounds like a cake walk, a ray of light follows our path; the uncertainty fades up to convert expectations to an achievement.

In this journey of joy we express our gratitude towards all of those who are responsible to make this Magazine a success. The involvement of the volunteers and the dedication of the contributors is a fascinating. We are thankful for the support gained by the faculties and other departments in the form of the contribution.

The articles in this newsletter with different colors and shades have made this white paper to blossom. The articles ranging from the warm emotions which are close to the heart to the mind-blowing thoughts.

The inspiration can be drawn from the Kuloor's memorial lecture. It reminds us about the fascinating personalities who have set themselves as an example.

The talent has to be challenged to get out of the shell is proved in the Rowling's struggle which gave birth to a great fantasy "Harry Potter", which shows the power of silent tears, poured on papers supported by a rare imagination. From the question mark it is clear that things are never trivial and the mystery unfolds with history.

The couple of poems remind childhood for a while. Poets cherish the past golden era along with the great future vision regarding the blending of academic subjects. The poems suggest sacrifices to be made in Love and segregate it from the materialistic world.

The philosophical touch to a hole in street teaches a fruitful lesson. The philosophy of life is unfolded in the rhythmic way.

The course on Hydrodynamic Navigation speaks right from Darwin's theory to the Vivekananda's thoughts. It gives an essence how the practical life is and how the hurdles are to be overcome in a smarter way.

We hope this offering of a bunch of articles will be a memorable one. We hope we will be successful in exploring the raw talent and giving an ample opportunities to express them in the forthcoming editions.

...CEA Executive Committee

About Kuloor Memorial Lecture

In 1960, Professor Kuloor took over as the Chairman of the Department of Chemical Engineering during its crucial formative years. The building in which we are presently located is a testimony to his outstanding organizational ability and perception. Prof. Kuloor brought with him two important aspects to the department: Excellence in research with his DIC and Ph.D. from Imperial College, London while working with Prof. Newitt, FRS and experience in industrial research while guiding research at Shriram Institute for Industrial Research. Blending these two, he was able to lead the department with focused excellence. He was a very affectionate man with great concern for the well being of staff and students. His untimely death in 1970 at a young age robbed the profession, and the department, of an eminent researcher and leader.

Professor Kuloor had a very good following in both academic and industrial fields. Many of his friends, colleagues and students expressed a desire to start a suitable activity in his memory. The Department of Chemical Engineering instituted Professor N. R. Kuloor Memorial Lecture in 1978 to perpetuate the memory of Prof. Kuloor for his contributions to basic and applied studies in Chemical Engineering.

The list of the speakers who have delivered Kuloor Memorial Lecturers in the past is given below:

01. Dr. L.K. Doraiswamy	1980
02. Prof. M.M .Sharma	1981
02. Prof. D Ramkrishna	1982
03. Prof. Rutherford Aris	1983
04. Dr. C.V. Seshadri	1984
05. Prof. E.N.Lightfoot	1987
06. Prof. J.Bridgwater	1988
07. Dr. A.N. Dravid	1990

08. Dr. P.R. Krishnaswamy	1993
09. Dr. S. Varadarajan	1994
10. Prof. John Davidson	1995
11. Dr. R.A. Mashelkar	1997
12. Dr. Arvind Varma	1998
13. Dr. B.D.Kulkarni	2001
14. Dr. Abhinandan	2003
15. Prof. Homsy	2004
15. Dr. J. B. Joshi	2005

About Prof. Kuloor Memorial lecture series:
Professor N. R. Kuloor was an alumnus of the Department of Chemical Technology of the University of Bombay and the Imperial College, London. Of Prof. Kuloor's brilliant professional career spanning over 3 decades, his unstinted efforts in shaping two fledgling institutions to a state of pre-eminence in the country bears testimony to his outstanding organizational ability and perception. The first was the Shri Ram Institute of Industrial Research, New Delhi, and the other the Department of Chemical Engineering at the Indian Institute of Science, Bangalore. During his stewardship as the Head of the Department in about just a decade, this Department has emerged as a Centre of Chemical Engineering Research of repute. As a tribute to the contribution made by Prof. Kuloor towards its growth and to perpetuate his memory, the Department of Chemical Engineering has instituted the Kuloor Memorial Lectureship in 1979, which became operative from the academic year 1980-81.

Under this, the lecturer spends some time in the department interacting with the members of faculty and students by way of lectures and discussions to give impetus to the teaching, research and Consultancy programs of the Department.

***-Prof. Jayant M Modak
Chairman***

Pen is mightier than sword ...

In an era of Sidney Sheldon, Erich Segal and, Jeffrey Archer who with their lavish usage of vocabulary and awkward plots had attracted many, here comes a lady who had emerged successfully with the same formula used by Shakespeare, in “Hamlet”, but her works are exclusively for children. It’s amazing that, her hero had become hugely popular with adults too!

J.K.Rowling, with the creation of a bespectacled hero...Harry Potter mesmerized millions of people all over the world... even children below 5. But then, how come the writer enchanted millions, that everyone is wild about Harry? Harry walked into her mind not in a day or two...she’s been a writer from the age of six!

A look back at her personal life....She was teaching English in Portugal and had then married a journalist. The marriage was short-lived but Rowling had just then given birth to a baby girl, Jessica. Rowling had been abandoned and had to pack off from her in-law’s place.

She then arrived in Edinburgh .She had a friend who had a baby boy. Following her invitation, she visited her place and she was bewildered to see his bedroom full of toys while Jessica’s toys fitted into a shoe box.

Depression and anger tormented Rowling. She started writing the books

for herself, and it reached the outside world, with much difficulty. As years rolled by, with the creation of a hero who enchanted children, her books had been at the top of best seller’s lists. And, millions of copies are now sold all over the world. Things had revolutionized that, she bought a house in London by herself. Now that, she has to buy a castle to dump her kid’s toys! However, Jessica, like all other children had to wait till the publication day to find out what Harry does next. When her third series of Harry Potter was released, she got remarried.

Simplicity is the charm of Rowling, for whom, “Children are a writer’s dream”. Having a writer as a daughter is an immense pleasure for her mother even if only a copy of her books was ever sold! For Rowling, Jane Austen’s “Emma” was the “best twist ever in Literature”.

Rowling was not revengeful towards her first husband, rather worked constructively and established a unique strand for herself. To me, had he not divorced her, her identity would have been lost. The book buyers, hence have to thank him, for the reason that, ditching the helpless philanthropist had proven to be a blessing in disguise!

Joane Kathleen Rowling rather symbolizes an ideal feministic character... adventurous, bewitching, calm, dynamic and peaceful with silent tears that would not, perhaps did not long last... Hats off to Rowling!

**- V.Vadhana
ME I year**

Question mark (?)

Who are you? How old are you? These are simple to answer. If one asks this type of WH questions to any materialistic world, then I am pretty sure, one can discover many new things. Now it wonders what this end symbol (?) stands for.

In any language if any question is asked, it is ended with the symbol (?). It is called a symbol of question mark. This is the combination of two symbols, one curly line and a dot. The dot represents the end of a statement. But the curly line along with the dot means a question of the statement. It means the second person has to reply back some positive response to the asked questions.

In the middle age the writers of Latin were putting this symbol (q) at the end of questionable statement. This (q) is the Latin word qosochio's first letter. According to time chronology the letter q turned into (?) symbol. Although this symbol (?) looks like human ear, it has nothing to do with ear. According to history around 800AD in the era of emperor Karlemagne people were using this symbol to indicate resisting something that was happening.

Towards its origin there is a story which is related to the song. In the old days, in some part of the song, the symbol (~) was used. This means that the pitch of some words of the song will be little

higher. To quote any statement if this symbol was used, it was meant that it has to be given more importance. So today's question mark has some similarity with the song symbol of old Latin literature.

The presently used question mark symbol came around 1400 AD in different manner. This symbol was based on the humanist script that was being used around 1300AD. Around 1600 AD this symbol was accepted by all. In other part of Europe, for some time this symbol was used in the opposite manner (¿). But it did not last for long. It ended around 1600AD. The famous coin maker Aldus Mounituos was using this symbol. There after all the Roman and Italian questionable statement were ended with the symbol (?).

In Spain a straight question mark symbol was created 1700 AD. It was assumed at that time that this symbol was not affecting the people too much, one of the reasons may be due to accepting the other culture. In 1739 this problem was taken in to the committee and resolved that for any enquiring statement the statement should be started with inverted (¿) and end with (?). But it took around two decades to implement it fully. But it confused with the end of the previous statement ending with a full stop. So in the later stage the starting inverted (¿) was removed and only at the end (?) was used and from then it is being used.

**- K.P.S.S. Hembram
Dept. of Instrumentation**

Let me wish!!

Those were the days when life was best, Joys were more and sorrows less.

Open air all around, when bird was in nest, Caring was more and burdens less.

Time has beard of all hues now, Bright less and greyish more. Songs have lost their charms now, Music less and instruments more,

Life clashes with joys and sorrows, For, now it is an open ring. Sorrows here and joys in burrows, Who knows when bells will ring?

Dawn is breaking and night a past Year is ending to follow again. Hope is nearing and expectations vast But will I be a child again?

Ratan Misra
Project Assistant

Subjects...

*There's lot to learn besides Physics and Chemistry
There's English, Hindi and bits of History.*

*Mathematics you can't do without
If you don't know it, ideas in your brain won't sprout.*

*For first aid and emergencies Biology is what you need to know,
It is as important as the others, I'm telling you so.*

*To know where you are going Geography is what you'll need,
Whether it is east or west it will lead.*

*Computers are essential in today's world,
It is impossible to do without one I am told.*

*By reading the newspaper your G.K. you must build,
Keep your brain updated and filled, with news and information that interest you,
And remember to take note of anything new.*

*So, come on friends let's put these together,
And stir until a student who will ace and excel emerges.*

Nischita K.Kaza
Class V

Rhythmic voice of life...

R-Read

"Read not to contradict and confute, nor to believe and take for granted, nor to find talk and discourse, but to weigh and consider." -Bacon

H-Honesty

"Making our heart honest in this way brings the blessing of being deeply trusted by others."

Y-Your Vision

"Your vision will become clear only when you can look into your own heart. Who looks outside, dreams; who looks inside, awakens." -Carl Jung

T-Thought of kindness and love

"The best portion of your life is a little, nameless and unremembered act of your kindness and love." - William Wordsworth

H-Hope

"We must accept finite disappointment, but we must never lose infinite hope" - Martin Luther King

M-Marriage

"Marriage is like a Mirage; it's not what you always think..."

It is the platform to bring spiritual affinity with inquisitiveness for searching the everlasting and divine truth of life.

I-Inspiration

"Without inspiration the best powers of the mind remain dormant, there is a fuel in us which needs to be ignited with sparks" - Johann Gottfried Von Herder

C-Commitment

"The quality of our life is in direct proportion to our commitment to excellence, regardless of our chosen field of endeavor" - Vincent Lombard

***Jaysree Patra
M.Sc (Engg)***

I wish...

*It does not interest me
to be keen at your
fame, money and share-
But I wish...
to be touched with your
sweet affection and care.*

*It does not interest me
to celebrate your
joys and happiness
but I wish...
to cry with you when
you are in deep distress*

*it does not interest me
to pay attention to you
whenever you are near-
but I wish...
to tell you
my eyes follow you
wherever you are*

*it does not interest you
if I utter that
all are rest-first in my life
but I wish...
to refrain because
it is you and only you
who is my life!!*

***Jayasree Patra
M.Sc (Engg)***

Learning to do things better...

*I walk down the street.
There is a hole.
I didn't see it.
I fall in.
It isn't my fault.
It takes a very long to get out.*

*I walk down the same street.
There is still a deep hole.
I pretend not to see it.
I fall in.
I pretend it is still not my fault.
It takes a long time to get out.*

*I walk down the same street.
There is still the same deep hole.
I see it.
I fall in anyway.
It's a habit.
I get out quicker this time.*

*I walk down the same street.
There is the same deep hole.
I see it.
I walk around it.
I don't fall in*

*Next time when I walk,
I choose a different street.*

***P.V. Gopala Rao
1st year ME***

XYZ-007: A first course on HYDRO-DYNAMIC NAVIGATION

It is a life-time learning experience of all lessons of life that are indispensable to survive let alone excel in this world. It is the world's well-known **Lincoln & Dunkan University of Advanced Studies**. For the 'benefit' of the student community, Prof. Alaska of Nebraska has offered a new course entitled **A first course on HYDRO-DYNAMIC NAVIGATION** (as a core course) comprising three modules, in his own inimitable, unconventional manner.

Students then thronged to his chamber to enquire about the course content and the placement prospects as a sequel to doing such a course. Some innocent student enquired whether the SWIMMING course offered by other universities and this **HYDRO-DYNAMIC NAVIGATION** are one and the same. The Professor got angry even at the mere thought of comparison of courses of **Lincoln & Dunkan University** and those of any other university of the world. He made it clear that it is only at the **Lincoln & Dunkan University** that all the critical lessons of life are imparted and that the teaching style adopted is radically different from any other university across the globe. He assured them of terrific placement prospects as well.

MODULE-I:

The classes commenced and the professor started teaching every fine detail about the Solid Hydrogen, Liquid Hydrogen & Gaseous Hydrogen, Solid Oxygen, Liquid Oxygen & Gaseous Oxygen, Hard Water, Soft Water, Mineral Water, Sea Water, River Water, Lake Water and their pH values and other properties and 'geared them up' for the first internal examination. And the students followed his lectures in all reverence and obedience.

The first internal examination commenced and they came to the University and the Professor took them to the precipice of the springboard contiguous to a swimming pool and kept on chatting with them and all of a sudden made them fall into the pool and asked them to reach the other end and that constitute his first internal examination.

Those who already knew swimming reached the other end in no time while those who were new to it guzzled lots of water and somehow reached the other end while some were rescued by the attending staff. The Professor who is totally fair and unbiased gave grades based on the quantum of water gulped. Lesser the amount of water intake, greater was the grade.

When the students approached him, he said he had always been fair and unbiased towards students as he kept all the students in the dark regarding the examination pattern. Moreover, he was perhaps the only faculty who took extra classes of extraordinary quality in dealing with the very prefix HYDRO of the course in all details in terms of its finer ingredients in all possible ramifications. When some of them found fault with his elusive response to their former query regarding the same or overlapping syllabus of the SWIMMING course of other universities the Professor replied that no adult student would ever expect such a kind of spoon-feeding and that too at the world's well-known **Lincoln & Dunkan University**.

Some other students questioned his indifference to the possibility of their getting drowned in water. He quipped in his own style: "Death is inevitable in one's life". This is even more true in this heartless world where the innocent and unsmart people are

taken for a ride by other smart and brainy people. Besides, all such deaths go unnoticed and the deceased go unsung and unwept. However, if you die during the course of my exams, your names will be etched in golden letters in the annals of this university's history. It is something similar to VEERA-MARAN (valorous death) quoted in our mythological scriptures of yester-millennia. It is always better to die as heroes than as stocks and stones. At our university, researchers may die, but the research never dies. In other universities, researchers may live long, but the research dies. As said by Swami Vivekananda, when death is inevitable, it is better to die in a great cause than to lead a bland life and it is always better to wear out than to rust out. Moreover, death is just a transition from one physical body to another and I don't know why people raise hue and cry for such a simple phenomenon. After all, death is only for the physical body and not for the soul, which is immortal.

When they were still grumbling, the renowned Professor gave his concluding remark that it is only the heartless people who can survive in this heartless world and all others are bound to die or lead a lustreless life subject to all kinds of exploitation by other smart people. This is one of the prime lessons of life that our course teaches right at the inception itself. It is in fact not the question of swimming at all. If it is just swimming, anyone can learn it at some point of time or the other. It is petrification of hearts that I teach and which is of paramount importance in this world that smacks of Darwin's theory of survival of the fittest.

MODULE-II:

He resumed his classes and gave them an extensive coverage of Lincoln's theorem of forward stroke and Dunkan's lemma of

backward stroke and all related family of theorems such as Stokes' principle of somersaults & Chezy's law of cartwheels with proofs from first principles, using a mish-mash of indo-chinese, indo-arabic and indo-mongolian notations. Then, all of a sudden he started covering all the biological aspects of various reptiles, right from snakes to crocodiles in every fine detail. Students did not dare to question the relevance of all that marine biology. However, they enrolled in a private swimming club and started learning swimming and they gained some amount of proficiency in that art by the time the second internal examination commenced and thought that they can somehow pass, if not excel. They also had some tutorials from their biology friends elsewhere and learnt some tips from them and felt happy that they are now fine with the course.

As before, the students were suddenly thrown into the swimming pool on the day of the second internal examination. But, the students just smiled at the professor in all confidence and took plunge into the water with consummate ease, this time. After a few seconds, they realized the presence of some snakes in the pool and almost all the students had a few bites before they reached the other end.

The Professor, in his own fair and unbiased manner, gave grades based on the no. of bites received by each student. Fewer the bites, better the grade. After receiving some first-aid from the university health centre, they reverted back to the professor and questioned his intentions in all fury. However, the professor did not lose his poise and replied in all equanimity: "I covered all reptiles, right from snakes to crocodiles. Had I not been sympathetic to your interests, you would have faced crocodiles in lieu of snakes. This shows how magnanimous I can be sometimes.

Moreover, I taught you all theorems of somersaults and cartwheels which are meant to escape from the pouncing snakes. Or else, at least you should have come up with safety jackets and you cannot expect spoon-feeding at this age. Some of the real-time challenges surface all of a sudden and one should be on one's guard all the time".

The professor expressed his unhappiness towards the abysmally dismal performance of some of the students and he even warned them that he would not hesitate to fail them if they do not come upto his expected standards and that he would not compromise on standards. He said that the average no. of snake bites was 4 and the standard deviation was 0.3 and there are several outlier students beyond the stipulated range viz., [Mean +/- 2*S.D].

MODULE-III:

He resumed his classes and spoke at length on life cycle of polar bears, their patterns of hibernation and other details. His portrayal of aerobic and anaerobic respiration patterns of various forms of life along with a special coverage of marine mammals like polar bear and various amphibians such as tortoises was exemplary. He even advised them to watch the Brucelee's movie **The fist of fury**, whenever time permits. However, the compassionate professor has arranged for a benefit show of the film in the in-house theatre to help them gain a full-fledged perspective of the movie on the big screen.

The students decided to take every precaution to face the final examination and accordingly enrolled for a crash course under a kung-fu master and started practising cartwheels and somersaults. Apart from this, they started visiting the

nearest zoo to gain an understanding of bears and gained tips from their trainer. As before, they discussed with their biology friends and took their counsel as well. They went for a CD of the movie **The fist of fury** and watched it several times. Anticipating that there would be some fight with the polar bears in water, they come prepared with iron gloves along with a snorkel_(to facilitate underwater / anaerobic respiration) and a safety jacket (to guard themselves against snakes, if any).

The long-awaited day of the final exam finally arrived. They were taken ceremoniously by the professor to the roof of a building wherefrom they were suddenly made to glide down on a sliding ramp which would lead them to the respective destination in water. With all their precautionary paraphernalia, they zoomed past the ramp with all confidence. Eventually, beyond their expectations of an encounter with a polar bear, each of them fell into a separate deep-water-chamber (15-foot deep) made of a five-inch glass wall. With the announcement on mike by the professor, they come to know that they are subject to Rapid Cooling Action and that they have to break open the glass wall fast (along with the frozen ice) and come out victorious and that constitutes the final examination. Grades are based on the relative speed of self-rescue.

The water in the chambers starts freezing at a rapid pace and all their efforts to come out result in vain. With such an escalatingly frosty chill, all the last ditch attempts to break open the frozen water along with the glass wall end in a fiasco despite their iron gloves. It is almost a case of Near Death Experience for each one of them. However, the general prayers offered to various deities by some of their parents for their well-being seem to have worked some last-minute

miracle for them. There is a short-circuit and the cooling comes to a halt with fires melting the ice and breaking the chambers and thereby saving the lives of the students.

The professor gave his justification for his modus operandi of teaching and examination to the vice-chancellor to whom the students and their parents reported against the professor. He showed all his slides on hibernation of polar bears and their mode of breathing scant oxygen in subterranean pits for longer periods. A natural extension of such a mode of living is that of a Rapid Cooling Chamber. He proved his enormous compassion for the student community by clarifying that the entire operation lasted only for a few minutes as against the 6-month period of hibernation. Besides, his slides on both aerobic and anaerobic respiration were also shown. He also proved his unrelenting commitment to teaching profession by showing a certificate of commendation (from the Head of the Department) that says that he was the only faculty who taught for more than 100 hours per subject in that semester while all others took only 40 hours as per the university norms. Moreover, he explained to the Vice-Chancellor that they were warned well in advance about the expectation of a strong fist by his arranging

for a special show of the Hollywood movie **The fist of fury**. He has also furnished a certificate from the international ophiologist (herpetologist), Dr. Ottawa of the University of Oklahoma who certified that all the snakes used were of the same genre and size along with their fangs and each of their vectors of movement in any direction strictly follows uniform distribution. Beyond this, no mature student should ever expect spoon-feeding to such an extent at such a world-class university of repute. The Vice-Chancellor is thoroughly convinced with the explanation given by the professor and wished him all success in all his future endeavours. He particularly congratulated him when he came to know of his advanced course entitled **TURBO HYDRO-DYNAMIC NAVIGATION** which is a natural sequel to the primer course. He also admonished the parents in a mild manner for their poor upbringing. And the students also prospered later from the world-class lessons of life learnt, though grumbled during that course. The victorious professor continued to rule the roost with the subsequent batches of students with his novel courses that are continually updated in tune with the changing times.

S.Bala
Dept of Mgmt Studies

Have You...

Have you ever fallen in love?

To give one fist of the light,

Ever burnt your life?

In spite of having wounded fingers,

Ever picked thorns from someone's way?

To offer someone a shadow,

Ever covered yourself with sunshine?

After losing into someone,

Ever found yourself?

Having seen the lightning of those eyes,

Ever felt the rain within you?

To give a rainbow to the sky,

Ever lost your sun?

In the memory of someone,

Ever cried at the wall of the temple?

Have you ever fallen in love?

Mukesh Joshi
(Translated by Foram Thakkar)

Placement News (2005):

Students	Degree	Companies
Ankit Sukla	ME	Fluent, Oswal
Bhanu Prakash Rao	ME	Prochem Solutions, Pune
Chottoo Chowdhary	ME	GE , Bangalore
Dhilip Kumar R	ME	Prochem Solutions , Pune
Mahesh Mynam	ME	IBM, Bangalore
Naga Vamsi Vijay Nerella	ME	ATUL, Gujarat
Ravikiran Kandikatla	ME	L & T, Mumbai
Sachin M Salam	ME	Honeywell, Pune
Sivaramakrishna Perala	ME	IBM, Bangalore
Surya Prakash Rao	ME	TVS Motor, Bangalore
Subbarao Kommuri	ME	Honeywell, Pune
Tamaghna Chakraborti	ME	Prochem Solutions, Pune
Vishal S Waghmare	ME	Honeywell, Pune
Jaysree Patra	MSc	IGCAR, Kalpakkam
Saurabh K	MSc	ATUL, Gujarat
Vivek Rathore	MSc	BPCL, Delhi
Senthil Kumar	PhD	General Motors, Bangalore