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THE CHEMIE NEWSLETTER

CHEMICAL ENGINEERING
ASSOCIATION

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In so many words 4

Last month 26th, India celebrated its 63rd Republic Day , a day many of us Indians took time off to feel pride is ourselves, and of the glorious past of our nation. As a continuation of that we bring to you a small piece citing the extent of the Indian glory in our stream. Yes indeed we are going to see a little bit, here and there about chemical engineering in ancient India.

Even when the current super powers were in their 'dark ages', Indians were producing chemicals and cutleries, silk and seagoing vessels, dyes and Damascus steel, metal wares, glass and ceramics, phytal drugs and perfumes, gold, copper and iron ornaments and metal alloys. Their understanding of unit operations and unit process is very evident in the production of textile dyes, therapeutics of ayurveda and siddha, organic and inorganic pigments, and colours used in the murals and frescoes of that period. Their empirical knowledge of chemistry, thermodynamics, design engineering, techniques of heat and mass transfer, could be discerned in the manufacturing practices followed by the ancients in respect of copper, iron, bronze, zinc, mercury, gold and silver mining, ornaments, hand tools and armaments, glass ceramics and glazed pottery. Our today's excavations stand to testify such high standard of technological and engineering advancements of their day.

During 2500 – 1500 BC closed pottery kilns generating temperatures of 700°C - 800°C were developed to smelt copper ores to make implements for daily use. It was also during this period that dyed cotton fabric came to use. 800 AD saw the emergence of mining of ores of copper, iron, gold, silver and lesser metals. Many other chemical engineering marvels were achieved in this period.

The ***Atharvaveda*** deals with a variety of topics relating to disease and therapeutics ,texts of Charaka and Susrutha gave detailed procedures in the production of these therapeutics. The ***Arthasashtra*** contains chapters on gemmology, mining and metallurgical operations, minting coins, ocean mining, salt manufacture, spotting minerals and metals etc. . The other texts on this subject include ***Rasarnava, Sarvesvararasayana, Datuvada, Rasahriyadaya, Rasendrachudamani, Rasaprakarasudhakara, Rasachintamani, Rasakalpa, and Rasaratnasamuchaychya***. All these works deal with the extraction, distillation, purification, sublimation, chemical processing of substances, the apparatus and equipments used for the same. They give concise description and material of construction of these equipments.

The apparatus and equipment used by the alchemists and artisans in the ancient past was clay pots, bamboo and metallic vessels made of iron and copper and surgical instruments made of steel. These units have been designed to meet the objectives of functional facility, cost effectiveness and operational flexibility.

Some of these fine equipments include the 'dola yentram', a swing apparatus with an attached semi permeable membrane used for extraction; 'adhasaptana yentram', a primitive distillation unit; 'triyakpatana yentram', a multistage cone shaped distillation with an attached sublimation section; 'valuka yentram', a sand bath apparatus used for producing mercuric compounds; 'koshti yentram', a zinc extraction unit etc.

The examples cited in the above testify to the existence of the technologically advanced society till about the medieval era. Leading centres of learning at Taxila, Nalanda, Saranath, Amaravathi, Banares, Ujjain, Kanchi, and Odantapura were imparting knowledge in different branches of sciences until they were destroyed by dynastic wars and invasions from abroad. Yet fragments of the rich tradition survived the test of time and the basic principles are still today seen even in our sophisticated industries. And this gives each of us chemical engineers to hold our head high for an added reason this 'Indian Republic Day'.

Article with ideas adapted from 'One Hundred Years of Chemical Engineering' by Nikolaos A Peppas

Events in ALCHEMY 2012

Papyrus Inscribe:

We invite you to the paper presentation event of Alchemy ' 12; Get a chance to showcase your research, exhibit your ideas and display your presentation skills at the flagship event of Alchemy 2012. Register on our website and send in your abstracts pertaining to the listed fields, to teamalchemy.nitt@gmail.com.
Check out the topics for presentation on
the website.

Debate:

Prepare for the war of words! Presenting DEBATE at Alchemy 2012 in association with LEAP club NITT (League for environment awareness and protection), the official environment club of the college.
The first round would be submission of an abstract on the topic which will be uploaded here soon. The Teams will be selected for the final round based on their performance in the written round. Final round will have 4 teams battling it out in a semi-final and final classic debate scenario.
Ready to battle it out on stage?

Effluent Treatment:

Are you someone keen on going beyond the textbooks? Having concern for industrial problems? Then this is the event for you. Effluent Treatment will take you through a blend of mass transfer, surface science, fluid mechanics and environmental engineering. An effluent with typical composition will be provided. You will have to Come up with a model encompassing a series of techniques to arrive at prescribed dischargeable levels. Ready for the challenge?

Problem statement coming up soon.

Tech Quiz:

Get ready to crack the codes. Tech Quiz intends to test your fundamentals of chemical engineering. Brace yourself to steal the show.

Format: on the spot registration. An eliminative written round followed by the final on stage battle between the finalists.

Flow schemat:

How good are you at flowsheeting? Here is the twist! -The names of the chemicals and the operations will not be mentioned. Can you still prepare a process flow diagram given the physical and chemical properties of the raw materials, products, kinetic and thermodynamic data??? An amusing event that tests your technical fundamentals, questioning and logic. Time to show your engineering skills.

Stay tuned for more details.

Informals

Labyrinth

Labyrinth brings to you an online treasure hunt, with the thrills of an Indiana Jones adventure. Add to that some code-breaking, puzzle cracking, brainstorming, lateral thinking and some very smart Google-ing skills and you are on your way to getting to the treasure. Labyrinth is a race that pushes participants to peel each layer of mystery as quickly as possible. Drawing the heaps towards their ever evasive destination, this hunt promises to be a contest of high adrenaline action.

Photography

Theme : Waste recycle.

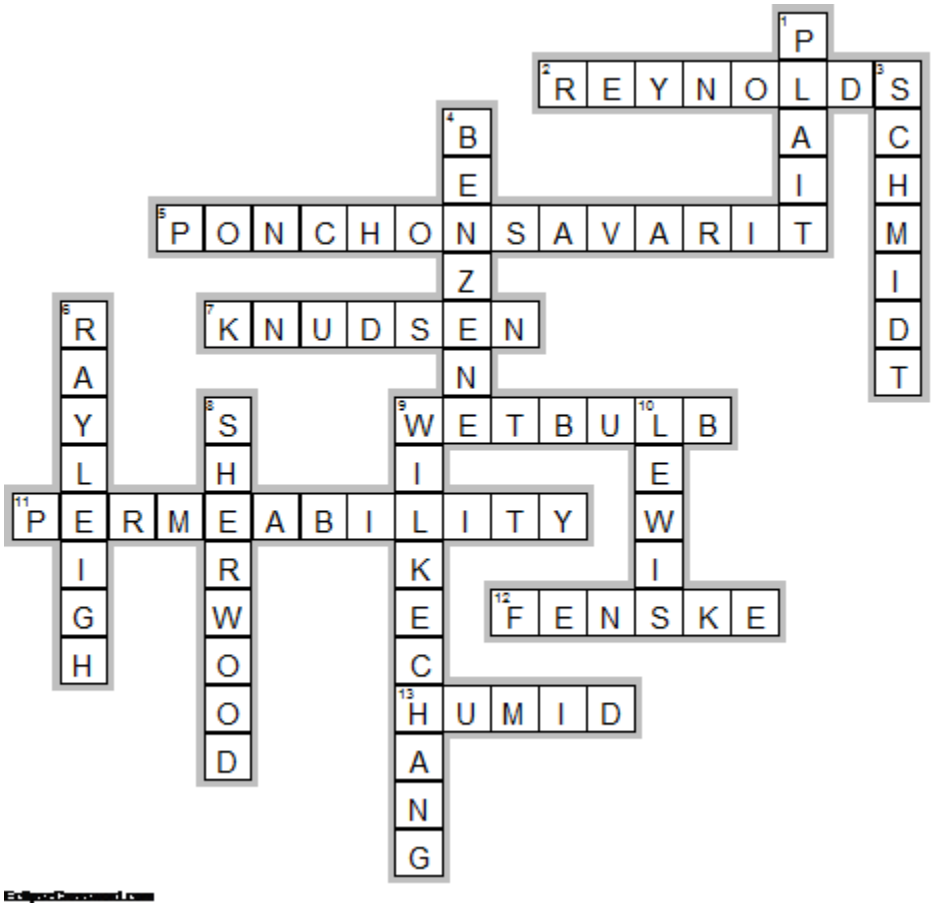
A photography competition in search of innovative approaches to eradicating polluting elements and pragmatic solutions to convert them into useful resources in order to maximize efficiency and move toward sustainability. Photographs depicting the adverse effects of pollutants on our precious environment along with ideas to practically uplift the situation are expected. The photography must be updated on the link that will be put up shortly.

General Quiz:

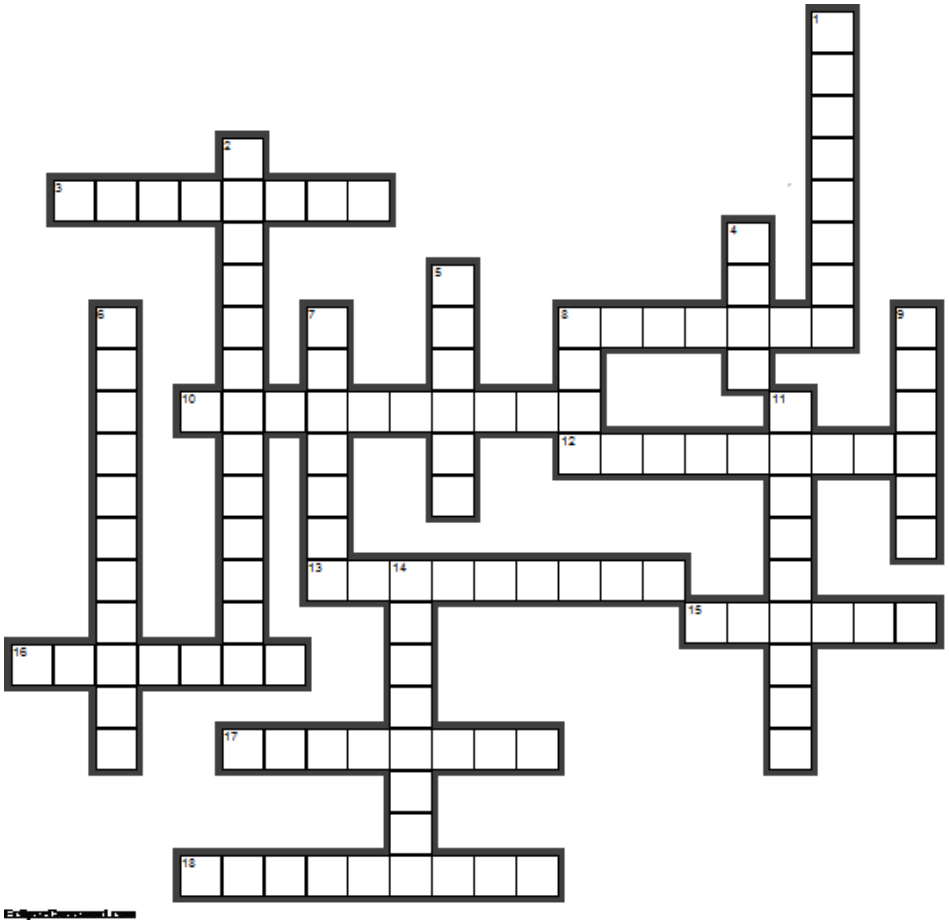
Tired of poring over numerous equations and listening to long winded lectures? Here's something to help you chill out and win a cool bag of goodies at the same time! The General Quiz is to bring out the buzzer addict in you with all teams expected to give fast answers to smart questions. If you think you are good at it, we will find out just how good you are at Alchemy 2012.

Format:
No prior registration required.
Teams of 2 members each. Must be from the same college necessarily.
Preliminary round will be in written format from which 6 to 8 teams
will be short listed for the finals.
The finals will be held in the infi-bounce format with prizes awarded
to the top 3 teams.
In all matters regarding the quiz, the decision of the quiz master
will be final and binding.

Solutions for Crossword-2



Crossword -3



Across

3. This is determined by the amount of material going through the column (8)
8. Expansion of liquid due to passage of vapour or gas (7)
10. Product stream taken off the top of the column (10)
12. A conduit that directs liquid from one tray to another (9)
13. The operation performed by the bottom section of a column (9)
15. Made up of two components (6)
16. Caused by low vapour flow (7)
17. An alternative to the use of trays or plates (8)
18. A liquid mixture which when vaporised, produces the same composition as the liquid (9)

Down

1. Brought about by build up of liquid (8)
2. Operation performed by the top section of a column (13)
4. Ensures that there is sufficient liquid on a distillation tray (4)
5. Liquid that is fed back to the top of the column (6)
6. Liquid carried by vapour up to the tray above (11)
7. Product stream taken off the bottom of a column (7)
8. The mixture that is to be separated (4)
9. Distillation operations require lots of this (6)
11. Used to cool vapour coming off the top of the column (9)
14. Used to raise vapour (8)