



CHEMISTRY NEWS LETTER

ALLCHEMISTRY

BJR Govt. Degree College, Bazarghat, Nampally, Hyd.

VOL - I

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The future of chemistry ...

Chemistry is a very old discipline, with reference to chemical transformations and debate about the nature of matter dating back to the times of the ancient Egyptians and Greeks. Modern chemistry began to emerge from alchemy in the seventeenth and eighteenth centuries, thanks to scholars such as Boyle and Lavoisier, leading to rapid advances in the following two centuries. In this News letter leading chemists with a broad spectrum of interests look to the future and share their vision for how their own fields may develop in the coming years. Of late research is increasingly interdisciplinary and the articles are on traditional areas of chemistry, including energy, nanotechnology and sustainable chemistry etc. This issue includes articles of international, national scientists along with faculty and student contributions. In this context the ALLCHEMISTRY (ALL+CHEMISTRY+MY) is a small step towards inculcating scientific temper and innovative thinking in student community.



Dr. Viplov Dutt Shukla

I am glad to know that the Department of Chemistry, Babu Jagjeevan Ram Government Degree College, is bringing out a Newsletter "ALCHEMY".

A Newsletter usually holds mirror to the activities that take place in an institution. A look at what we did helps us to reassess our priorities and move forward with determination. The significance of documentation is the need of the hour. Events well documented not only remain in the pages of history but act as a catalyst for the posterity.

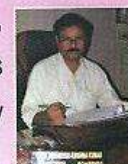
As "ALCHEMY" includes latest developments in the field of chemistry and write-ups eminent, it is worth reading and preserving.

I wish the faculty and students all the best in their endeavor.



Prof. S. Satyanarayana
Vice - Chancellor,
Osmania University, Hyderabad.

I am happy to inform that, Department of chemistry, BJRGDC is publishing "ALLCHEMISTRY" chemistry news letter, The college has come with an innovative and eco-friendly concept publishing news letter as limited printouts along with "e-chemistry newsletter" on the college website www.bjrgdc.in. I wish, the motto of bringing out the chemistry newsletter to enhance scientific temper among budding chemists and keep the students in pace with recent developments in the world of chemistry will be fulfilled. I congratulate the department of chemistry.



Dr. K. Jagadeesh Krishna Kumar
Principal, BJR Govt. Degree College,
Bazarghat, Nampally, Hyderabad.

Curcumin: "The Indian spice for Life"

Curcumin is an orange-yellow component of turmeric powder, derived from rhizome of the plant *Curcuma longa*. Turmeric (Haldi called in Hindi Language) and named by British as curry spice. It has been widely used to treat various illnesses in the Indian subcontinent from the ancient times with no side effects. Since the time of Ayurveda (1900 BC) numerous therapeutic activities have been assigned to turmeric for a wide variety of diseases and conditions. It is also extensively used by women in Hindu religious ceremonies. The major chemical principle of turmeric is curcuminoids which impart characteristic yellow color to it. Curcumin was first isolated in 1815 and structure was delineated in 1910.



Dr. Nampally Sreenivasachary
Senior Scientist
AC Immune, Switzerland

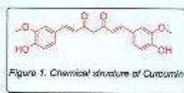


Figure 1. Chemical structure of Curcumin

The IUPAC Name of the of curcumin is (1E,6E)-1,7-bis(4-hydroxy-3-methoxyphenyl)hepta-1,6-diene-3,5-dione.

Two other major curcuminoids desmethoxycurcumin and bis-demethoxycurcumin are present in turmeric power. The curcuminoids are natural phenols that are responsible for the yellow color of turmeric. Curcumin can exist in several tautomeric forms, including a 1,3-diketo form and two equivalent enol forms.

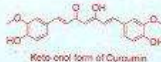
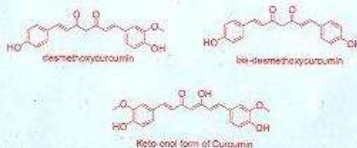


Figure 2. Curcumin analogues

Uses of curcumin: Health purposes, it has been widely used as a house-hold medicine. The long list of uses includes antiseptic, analgesic, anti-inflammatory, antioxidant, anti-malarial, insect-repellent, skin diseases, pulmonary, and gastrointestinal systems, aches, pains, wounds, and sprains.

Importance of Green chemistry

The society is dependent in many ways on the chemical industry to maintain the standards of living and improve the quality of lives. It is producing lot of life saving drugs, agricultural pesticides and fungicides, polymers, detergents, petroleum additives and so forth. But unfortunately all the advances come with a tag of 'pollution'. Green chemistry, also called as sustainable chemistry, an approach to the synthesis, processing and use of chemicals focuses on the reduction, recycling and limiting the use of hazardous chemicals. The green chemistry is part of a larger movement ultimately leading to a green economy for sustainable development, business and living practices. It deals with fundamental issues such as pollution prevention, atom economy and toxicity reduction.



Dr. N Ravikumar Reddy
principal scientist
Seven Life Sciences Ltd

The principles of green chemistry are prevent waste, design safer chemicals and products, design less hazardous chemical syntheses, use renewable feed stocks, use catalysts, avoid chemical derivatives, maximize atom economy, use safer solvents and reaction conditions, increase energy efficiency, design chemicals and products to degrade after use, analyze in real time to prevent pollution and minimize the potential for accidents.

In India, awareness is growing but still in a stage of infancy. We need to work for its betterment by encouraging the practices of green chemistry. Promotion of environmentally friendly products and methodologies, evaluate the greenness of process and products, using greener solvents for processes is the need of the hour. Promote green chemistry through education by introducing in curriculum, encourage the research and spread the concept via conferences, work shops and symposia. It is the time for 'think green' culture.

Chem-Tech:

A Nanocontact Sensor for Heavy Metal Ion Detection

The threat of heavy metal pollution is a serious environmental concern, Nano contact sensor is a miniaturized and cost effective, which is particularly suitable for an initial onsite screening test of polluted samples, thus leading to early warning and prevention of heavy metal ion pollution in ground water and other water samples. The principle in nanocontact involves electrochemical deposition of even a few metal ions into the gap between the nanoelectrodes to form NANOCONTACT, thus triggering a quantum jump in the electrical conductance. Thus it helps in detecting heavy metal ion pollution in water.

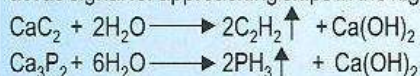


A. Dayanand,
Lecturer in Chemistry,
BJR GDC, Hyderabad

Chem-query:

What is Holm's signal? What compounds are used in this?

Answer: $\text{CaC}_2 + \text{Ca}_3\text{P}_2$ compounds are used in Holm's signal. This mixture is through into sea water both undergo hydrolysis producing acetylene gas, phosphene gas. PH_3 (phosphene) carry trace quantities of diphosphene (P_2H_4). P_2H_4 is highly inflammable catches fire generally big flames on the surface of water. These flames act as signal for approaching ships in the nights.



Smt. A. Vasantha,
Lecturer in Chemistry
BJR GDC, Nampally, Hyd



Question: Why Do Onions Make You Cry?

Answer: . When you cut an onion, you break cells, releasing their contents. Amino acid sulfoxides form sulphuric acids. Enzymes that were kept separate now are free to mix with the sulphuric acids to produce propanethiol S-oxide, a volatile sulfur compound that wafts upward toward your eyes. This gas reacts with the water in your tears to form sulfuric acid. The sulphuric acid burns, stimulating your eyes to release more tears to wash the irritant away. Refrigerating your onion before cutting it (slows reactions and changes the chemistry inside the onion) or by cutting the onion under water reduces the effect.



K. Swathi
B.Sc.(BZC) - III Year

Do You Know

What Are the Elements in the Human Body?

Answer: Most of the human body is made up of water, H_2O , with cells consisting of 65-90% water by weight. Therefore, it isn't surprising that most of a human body's mass is oxygen. Carbon, the basic unit for organic molecules, comes in second. 99% of the mass of the human body is made up of just six elements: oxygen, carbon, hydrogen, nitrogen, calcium, and phosphorus.

1. Oxygen (65%)
2. Carbon (18%)
3. Hydrogen (10%)
4. Nitrogen (3%)
5. Calcium (1.5%)
6. Phosphorus (1.0%)
7. Potassium (0.35%)
8. Sulfur (0.25%)
9. Sodium (0.15%)
10. Magnesium (0.05%)
11. Copper, Zinc, Selenium, Molybdenum, Fluorine, Chlorine, Iodine, Manganese, Cobalt, Iron (0.70%)
12. Lithium, Strontium, Aluminum, Silicon, Lead, Vanadium, Arsenic, Bromine (trace amounts)



Asfia Begum
B.Sc.(BZC) - III Year

DEPARTMENTAL ACTIVITIES



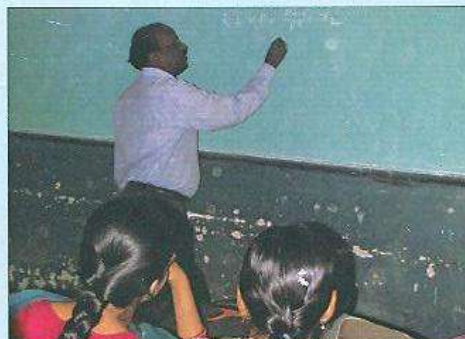
CCMB Director Dr. Mohan Rao after interacting with students of BJR GDC in CCMB on the eve of CSIR day



Best Innovative exhibit award for mentor received by Dr. Shukla at Vanitha Maha Vidyalaya, Nampally, Hyderabad.



Student Seminar presented by Ms. Shahnaz Nilofer under the guidance of A. Vasantha and A. Dayanand



Dr. E. Yadaiah Lecturer in Chemistry New Govt. Degree College, Khairathabad during Extension lecture



Dr. Shukla Presenting Extension Lecture at IPD Govt. College for Women



Best Innovative exhibit award received by Tejaswini Batta at Vanitha Maha Vidyalaya, Nampally, Hyderabad.