



# CATALYST

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Chemistry News Letter

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## New faculty



Ms. Priyanka P Kavalekar

## Teachers and Students Achievements

The second batch of autonomous students passed out in the year 2019. In Department of Chemistry Miss Niriksha Sudin Pai Kane stood first with a CGPA score of 9.25, Miss Shaik Farheen Bi, stood second with a CGPA score of 8.93 and Master Nimay R Kamat stood third with a CGPA score of 8.82. Currently these students are pursuing their Post Graduate studies at the School of Chemical Sciences, Goa University.



Niriksha Sudin Pai Kane



Shaik Farheen Bi



Nimay R Kamat

## Teachers' and students' activities

As a part of community outreach program, the department of chemistry organized the first lecture series for the students of rural village schooling in the Goa Educational Society at Balli, Fatorpa Goa on 10/08/19 under DBT Star college Scheme. The lecture was delivered by Ms. Daphne D'Silva a T.Y.BSc student accompanied by Dr. Manjita R. Porob and Ms. Padmini C. Panjikar.

As a part of community outreach program, The department of Chemistry organized an interschool event "STIMULUS" for special kids of invited schools on 24/08/19 under the DBT Star College Scheme. Convenor for the event was Dr. Manjita R. Porob.

Faculty members Dr. Roopa S. Belurkar, Ms. Padmini C. Raiker and student Sweta Thakkarkar attended a one day National Symposium at Dnyanprassak Mandal's College, Assagoa Goa on 27/09/2019. Ms. Padmini C. Raiker presented a poster entitled "I<sub>2</sub> Catalysed "on water" synthesis of 2-phenylH-imidazo[1,2-a]pyridines.

Dr. Lactina R. Gonsalves attended 18TH INTERNATIONAL ENTREPRENEURSHIP FORUM (IEF) CONFERENCE, Art, Technology, Design and sustainable entrepreneurial transformation from 16/12/19 to 18/12/19 at Sanskruti Bhavan, Goa.

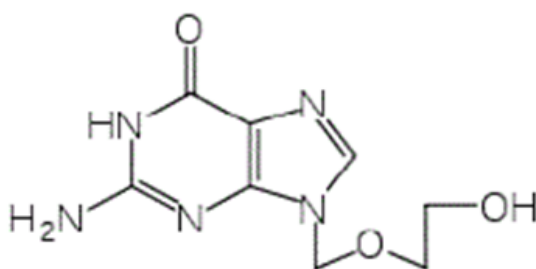
Two of the T.Y. B. Sc. students Sweta Thakkarkar and Sachin Salunke attended a certificate course in Industrial Analytical Techniques from 16/11/19 to 25/11/19 organized by P.E.S college, Ponda.

Department of Chemistry, organised a talk for undergraduate students and staff members on "How to learn and remember periodic table". The speaker was Prof. S. P. Kamat. It was held on 13/12/19 under DBT Star College Scheme.

Ms. Padmini C. Raiker, attended a National Conference "New Frontiers in Chemistry: from Fundamental to Applications" from 20/12/19 to 22/12/19 at BITS Pillani Goa. She also presented a poster entitled "An efficient and Green route to 2- Substituted Quinazolines in Aqueous Micellar Media"

### Avaclyr

Avaclyr (acyclovir) is a ophthalmic ointment. Acyclovir is a synthetic herpes simplex virus nucleoside analog DNA polymerase inhibitor. It is a white crystalline powder having molecular formula as  $C_8H_{11}N_5O_3$  with molecular weight of 225.2. It has maximum water solubility in water at 298K is 1.41mg / mL and have pKa as 2.52 and 9.35. The chemical name of avaclyr is 2-amino-1,9-dihydro-9[2-hydroxyethoxy]6H-purin-6-one. It is used for treatment of acute herpetic keratitis ( dendritic ulcer).



-Aarya Rao, SYB. Sc.

Source- <https://www.rxlist.com/avaclyr-drug.htm>

### Chemistry Poem

#### Wonders of chemistry

Chemical-Chemical everywhere,  
In a beaker, or in the air.  
Mixing that, twirling this  
Adding till I hear a hiss.

Aldehydes give a treat to my nose,  
I feel like running out of the lab,  
Ammonia and hydrogen sulphide gas  
Are the main cause.

Outside the lab its just pink,  
But inside its light pink, dark pink, magenta pink!!!  
Gasoline, Acetone, Chloroform are  
volatile liquids,  
Why is not chemistry added to that list?

Balancing your life is easier,  
Than balancing the chemical equations.  
Here there are less chemicals  
As compared to exceptions.

Switching colour of solutions  
seems like magic to world.  
But chemists are the magicians  
By whom this trick is learned.

People change colours as,  
Compounds change their oxidation  
state.

People seem unstable just like  
Compounds with incomplete octet.

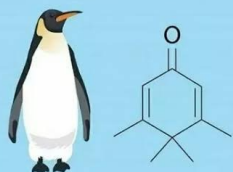
Copper carbonate is green,  
Copper sulphate is blue  
Chemistry is fun, sometimes boring too.

-by Komal Band, S.Y.B. Sc.

### Did You Know?

#### Did You Know?

Penguinone ( $C_{10}H_{14}O$ )  
is an organic compound and its  
name comes from the fact that it  
resembles a Penguin



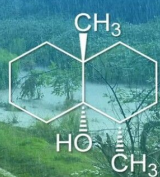
- Every hydrogen atom in your body is likely 13.5 billion years old because they were created at the birth of the universe.
- Superfluid Helium defies gravity and climbs on walls.
- Famed chemist Glenn Seaborg was the only person who could write his address in chemical elements.
- Air becomes liquid at  $-190^{\circ}C$

by Shanti M Mayekar, S.Y.B. Sc.

Source: <https://www.zmescience.com/>

#### The smell of rain

"Geosmin has a distinct earthy flavor and aroma, and is responsible for the earthy taste of beets and a contributor to the scent (petrichor) in the air when rain falls after a dry spell of weather. It is produced by a type of Actinobacteria."



## Latest update in chemistry– Depolymerisation

Polymeric materials have been accumulating in the environment for decades as a result of the linear way of consuming plastics. Unfortunately, the current approaches followed to treat such a large amount of plastic waste, mainly involving physical recycling or pyrolysis (decomposition by high temperature), are not efficient enough. Recently, chemical degradation has emerged as a long-term strategy towards reaching completely sustainable cycles where plastics are polymerised, depolymerised, and then re-polymerised with minimal changes in their quantity or final properties.

### Depolymerisation

The term depolymerization includes all situations in which reduction of macromolecular size occurs without change of chemical composition or alteration of the monomer unit structure. Advantage of this method is that it helps in the production of initial monomers that can be subsequently re-polymerised into high quality polymers, or innovative small molecules that can be used as high added-value building blocks for creating unique polymeric materials or other chemicals.

By Alexius Thomas, S.Y. B. Sc.

Source: <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/depolymerization>

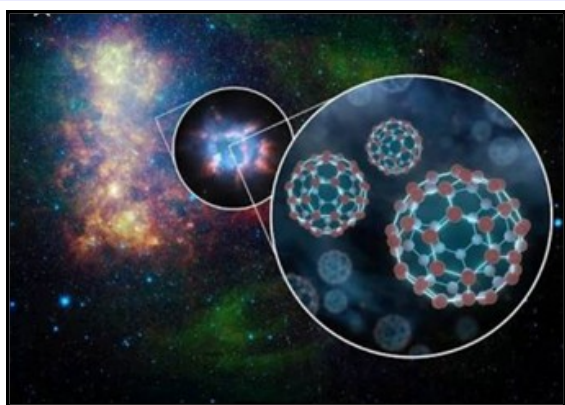
## Nobel Laureate- John B. Goodenough

The Nobel prize of the year 2019 went to John B. Goodenough, Stanley Whittingham and Akira Yoshino for his work on Lithium ion – batteries. It is because of their work, human life has become much easier by depending on various devices. In Lithium ion – batteries, as the battery discharges Lithium ions move from the negative electrode to the positive electrode through an electrolyte solution, then back again as the battery is re-charged. The battery is lightweight, rechargeable and powerful and is used for various electronics, it can also store significant amount of energy from solar and wind power thus decreasing the usage of fossil fuels. Goodenough is distinct among the trio as he is the oldest recipient of a noble prize in the long run of the program.

By Reanne Gonsalves, S.Y. B. Sc.

<https://www.nobelprize.org/prizes/chemistry/2019/press-release/>

## Astrochemistry and Cosmochemistry



Astrochemistry and Cosmochemistry are the study of the chemical elements and chemical compounds, that can be found in the outerspace, in stars, planets, comets, meteorits, interstellar matter etc. Astrochemistry is closely linked with physics, specifically astrophysics. And there are more and more organic molecules in open space discovered, so that astro-biological aspects in this theme area find their way - not least with the question of the origin of life and for the existence of extraterrestrial life forms.

### Hydrogen peroxide found in clouds of cosmic gas and dust

The clouds are mostly made of hydrogen, but contain traces of other chemicals, and are prime targets. Telescopes such as APEX, which make observations of light at millimetre- and submillimetre-wavelengths, are ideal for detecting the signals from these molecules. Astronomers using the APEX telescope to observe this region discovered hydrogen peroxide molecules in interstellar space for the first time. Hydrogen peroxide is

The key molecule for both astronomers and chemists. Hydrogen peroxide is thought to form in space on the surfaces of cosmic dust grains — very fine particles similar to sand and soot — when hydrogen (H) is added to oxygen molecules (O<sub>2</sub>). A further reaction of the hydrogen peroxide with more hydrogen is one way to produce water. This new detection of hydrogen peroxide will therefore help astronomers better understand the formation of water in the Universe.

By Dwana Martins (S.Y. BSc)  
Source: <https://www.internetchemistry.com/chemistry/cosmochemistry.htm>

**Freshers' party**

The students of third year and second year B. Sc. organized Freshers' party for the first year students on 20<sup>th</sup> July 2019. The function was a fun fare which included games for the first year students as well for the teachers. All the students had a great fun during the event.

**Eminent Alumnus**

Dr. Fraddry D'Souza graduated from Department of Chemistry, Parvatibai Chowgule College of Arts & Science, in the year 1994. Dr. Fraddry D'Souza is a Fellow & Area Convenor at The Coastal Ecology and Marine Resources Centre, TERI-Goa office, pursuing his interest in coastal resources management, aquaculture, coastal pollution, water management and biodiversity assessment. He has a Masters degree in Biochemistry. He has worked at National Institute of Oceanography (NIO) as JRF/CSIR-SRF and completed his doctorate in Microbiology. He was awarded an Erasmus Mundus Scholarship for the "Joint European Masters in Water and Coastal Management programme" at Portugal and Spain Universities. He has also worked at TNO Science and Industry, The Netherlands, for five years on applied marine research. He has published more than 20 research papers in different national and international Journals.

**Chemistry Quiz**

- A. Which of the following non metals is not a poor conductor of electricity?
1. Sulphur
  2. Selenium
  3. Bromine
  4. Phosphorous
- B. The relationship between atomic masses and physical properties of elements was obtained by
1. Pauling
  2. Mendeleev
  3. Lothar Meyer
  4. Robert Brown
- C. Chemical used in photography is
1. Sodium Oxalate
  2. Sodium Sulphite
  3. Sodium Sulphate
  4. Sodium Thiosulphate
- D. Why is Tetra Ethyl Lead (TEL) added to petrol?
1. To increase boiling point
  2. To increase flash point
  3. To increase anti-knocking rating
  4. To prevent freezing
- E. The first organic compound synthesized in the laboratory was
1. Acetic acid
  2. Urea
  3. Ethylene
  4. Methane

By Shivani Samant, S.Y. B. Sc.

<http://www.meritexam.com/general-awareness/chemistry/questions/3-19>

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