

# Department of Chemistry & Biochemistry

## ST. ALOYSIUS COLLEGE (AUTO.) JBP

DISHA  
VOL. X



**Patron**

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### MESSAGE FROM VICE PRINCIPAL

**C**hemistry - where we mix known substances and new unknown results evolve. These results take the human race further, step by step with every new discovery. It helps us to unlock the mysteries of our evolution, to find solutions to the questions of our past and present to build a better future. It leads us to new horizons of human life.



The Department of Chemistry, of St. Aloysius College is also dedicated to such a noble cause of encouraging young minds, evolving new scientists and instilling human values for the progress of our state and of the country at large.

I would like to congratulate all the members of the Department of Chemistry and Biochemistry for their unceasing efforts towards the progress of the Department, and especially all those who have worked hard in bringing out the Departmental News Letter DISHA.

May God Bless you.

**Fr. J. Ben Anton Rose**

### CHEMISTRY 2014 NOBEL PRIZE WINNERS



Eric Betzig

Stefan W. Hell

William E. Moerner

*The 2014 Chemistry Nobel prize has been given to three pioneers of biomedical imaging, whose work has enabled nanoscale features within cells to be captured in exquisite detail. Eric Betzig of Howard Hughes Medical Institute, US, Stefan Hell of the Max Planck Institute for Biophysical Chemistry, Germany, and WE Moerner of Stanford University, US, will share the prize for 'the development of super-resolved fluorescence microscopy'.*

*The techniques they developed enabled extremely high resolution images to be produced using optical microscopy. Their work circumvented the problem of the 'diffraction limit' the inability of light microscopy to distinguish between structures smaller than half the wavelength of visible light or about 200nm. This advance allowed nanoscale structures including individual molecules to be visualised within cells while they are still alive, something that isn't possible with techniques such as electron microscopy.*

**F. Arfeen Aalam**  
M.Sc. III Sem.

## CRUMPLED GRAPHENE COULD POWER FUTURE STRETCHABLE ELECTRONICS

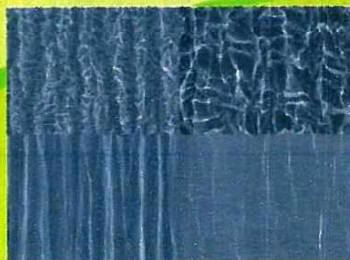
To form the crumpled graphene, a sheet of polymer material is stretched in both dimensions, then graphene paper is bonded to it.

When someone crumples a sheet of paper, that usually means it's about to be thrown away. But researchers have now found that crumpling a piece of graphene "paper" – a material formed by bonding together layers of the two-dimensional form of carbon – can actually yield new properties that could be useful for creating extremely stretchable supercapacitors to store energy for flexible electronic devices.

The development of flexible electronic devices, such as wearable or implantable biomedical sensors or monitoring devices, will require flexible power-storage systems. Like batteries, supercapacitors can store electrical energy, but they primarily do so electrostatically, rather than chemically – meaning they can deliver their energy faster than batteries can.

By crumpling a sheet of graphene paper into a chaotic mass of folds, they can make a supercapacitor that can easily be bent, folded, or stretched to as much as 800 percent of its original size.

The material can be crumpled and flattened up to 1,000 times. Graphene, a structure of pure carbon just one atom thick with its carbon atoms arranged in a hexagonal array, is one of the strongest materials known.



**Sr. Merlin**  
**M.Sc. I Sem.**

## THINGS TO DO WITH LIQUID NITROGEN

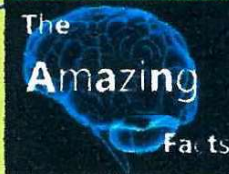
- Add a few drops of liquid nitrogen to a drink you want to cool. Examples include wine or soda. You'll get a cool fog effect, plus a cool drink.
- Freeze a banana in liquid nitrogen. You can use it to hammer a nail.
- Break an incandescent light bulb (type with a filament). Turn it on in the liquid nitrogen. Cool glow!
- Pour liquid nitrogen onto weeds to kill them. The plant will die, with no toxic residue or other harm to the soil.
- Fill a whistling-style teapot with liquid nitrogen. The liquid will boil, even if you set the tea kettle in a freezer.

**Shivani Choudhary**  
**B.Sc III Sem. (IMB)**

## !! AMAZING FACTS !!

### Did you know.....

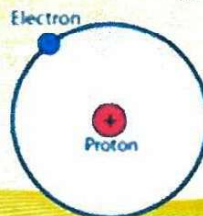
- It's possible to get sick or even die from drinking too much water.
- Some lipstick contains lead acetate or sugar of lead. This toxic lead compound makes the lipstick taste sweet.
- Goldfish eyes perceive not only the visible spectrum, but also infrared and ultraviolet light.
- Pearls, bones and teeth will dissolve in vinegar, which contains weak acetic acid.
- Mars is red because its surface is covered with iron oxide or rust.



**Priyanka Gupta**  
**B.Sc III Sem. (IMB)**

## !! HYDROGEN POEM !!

Hydrogen's screaming,  
I'm number one!  
I got one less proton,  
Than that helium...  
We're both really light,  
We both float in air,  
But I'm real combustible,  
Like poppa's arm hair!  
Elemental abundance?  
I am the most!  
In our whole universe,  
Just let me boast...  
Don't give me more protons,  
I like my lightweight,  
Atomic number is 1!  
And 1's really great!  
Periodic table?  
I sit in first place!  
I'm not really stable,  
But that's no disgrace...  
I am the first,  
And 1's really fine!  
I'll be number one,  
Until the day I combine



**Priyanka Gupta**  
**B.Sc III Sem. (IMB)**

## CHEMICAL CHANGE

Chemical Change

Atoms Changed

Properties different too

Chemical Change

I'm feeling strange

I've changed to something new.....

Chemical change

I'm feeling strange

my bonds.

I think they're breaking

Chemical change

I'm rearranged,

Like change that's caused by baking.....

Baking or burning

Combining things.

Making things react.

Like Na + Cl makes table salt

we know it's just a fact

Oxidize or use a flame

To make things hot,

Iron tends to oxidize

Makes a thing called rust

Chemical change

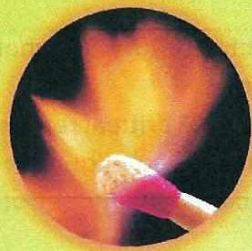
I'm feeling strange

I'm different, how about you?

Chemical Change

Changes things,

And gives us something new.



**Harsha Katri**

B.Sc. III Sem (IMB)

## I WONDER.....

### HOW ARE RAINS PRODUCED ARTIFICIALLY?

Many countries such as India depend on rains for agriculture. In times of less or no rainfall, such countries have to confront great misery. People often do not have enough drinking water too. To overcome this problem, scientists have found a way to produce artificial rains. This invention benefits not only farmers but common people as well.



However, artificial rains cannot be produced whenever we want. It is possible to do this only when air surrounding the clouds contains enough water vapour. When air contains adequate water vapour, dry ice (solid carbon dioxide) particles mixed with silver iodide is sprayed into the air through air planes. This increasing the water vapour content in the air. The water vapour gradually liquefies and falls as rain. This process is known as 'cloud seeding'.

Artificial rains can also be produced by a method called 'ground seeding'. In this process, artificial centres are established in area of high attitude, such as mountains and hills, to increase water vapour content in the air. Though very effective, artificial rains have not gained much popularity in India as it is highly expensive to produce them.

**Preeti Barman**

B.Sc. III SEM

Industrial Microbiology

## CHEMISTRY FUN

◆ What does cation love to chase

Ans. Anion

◆ Which solvent bottle when breaks makes a nice sound.

Ans. Acetone

◆ What happens when potassium iodide is added to a disulphide.

Ans. Iodine

◆ What is the name of 007's cousin who lives in the Arctic.

Ans. Polar bond

◆ Why do you turn to the chemist to solve your problem

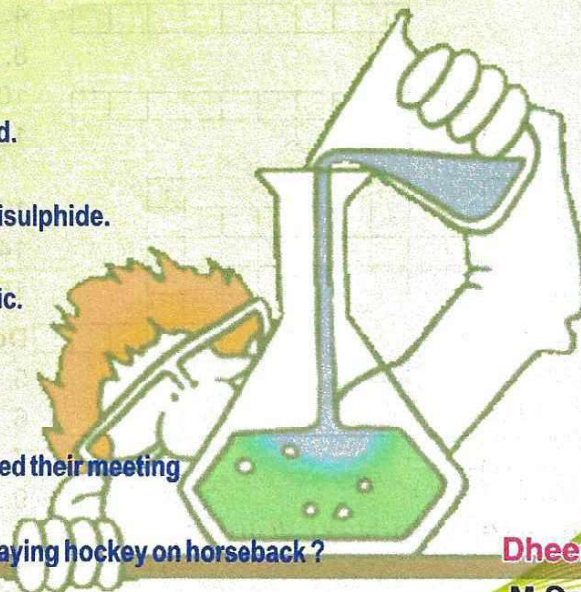
Ans. He has all the solutions.

◆ What did copper say to other metals when they finished their meeting

Ans. Cu

◆ What do you call an element that spends all its time playing hockey on horseback?

Ans. Polonium



**Dheeraj Patel**

M.Sc. III Sem

# Departmental Activities



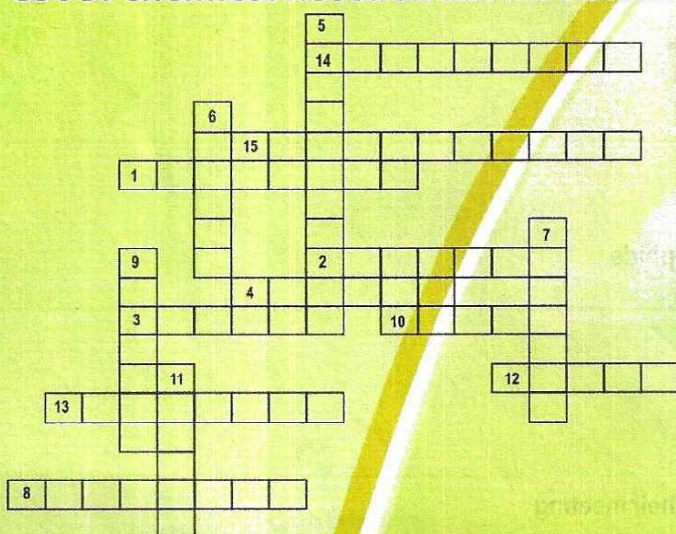
## ONGOING RESEARCH ACTIVITIES OF DEPARTMENT

### Papers Published by :-

- Dr. Smarika Lawrence & Dr. Anjali D'Souza "A systematic review on Mercury toxicity and removal Processing".
- Dr. Shweta Likhitkar "An in-vitro experimental approach to study magnetically targeted release of methotrexate from super paramagnetic starch nanoparticles."
- Dr. Amita Chattri, Dr. Smarika Lawrence & Dr. Anjali D'Souza "A critical review on the state of art of water pollution by heavy metals and fluoride ions and defluoridation technique."
- Dr. Sutapa Roy & Dr. Anjali D'Souza "Synthesis and Biocidal activity of Co(II) and Zn(II) complexes of sulfa drugs Schiff bases."
- Dr. Bhuvaneswari Sundaram and Ms. Minakshi Joshi attended a National Workshop at Govt. Model Science College, Jabalpur
- Dr. Anjali D'souza had participated as a resource person in a Teachers Training Program in Chemistry held at Department of Chemistry, Govt. Model Science College, Jabalpur

## BRAIN TEASER

Complete the Puzzle using the clues about Chemical Reaction shown below:



### Across

1. Metal reacts with acid to produce this gas
2. Non-metal found in liquid state.
3. Lead pencils are made up of this non-metnal.
4. Nature of oxides of non-metals
8. Colour of Compound formed on corrosion of copper.
10. Metal reacts with water slowly.
12. When iron nails are dropped into copper sulphate solution the solution colour changes from blue to...
13. Non-metal used as disinfectant for water.
14. Metal used for wrapping food materials.
15. Non-metal stored under water.

### Down

5. Iron present in our body is in the form of .....
6. Very reactive metal which can be cut with knife.
7. Metal used in thermometers.
9. Property due to which metal can be changed into thin wire.
11. Non-metal used as an antiseptic.

**Note : Answers in Next Volume**

Pankaj Baghel  
M.Sc. III Sem.