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February 2021 **Chemistry News Letter** **Vol: 05 Issue: 02**

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Students Achievements

Outstanding Students of the Academic Year 2019-2020:

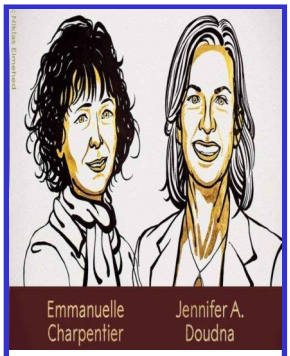
1. Naique Ulaksha Pracaxa (left) secured top rank by scoring 9.283 cgpa .
2. Pereira Rachel (middle) secured second rank by scoring 9.208 cgpa.
3. Bidokundi Sangeeta Basuraj (right) secured third rank by scoring 9.192 cgpa.

Adriel Antao, TYBSc , Secured First place in the State Level Online Intercollegiate Elocution Competition organized by the Department of Chemistry, Ravi S. Naik College of Arts and Science, Farmagudi, Ponda- Goa.

Teacher Achievements

Dr. Roopa S. Belurkar

- National Webinar on “Chromatography: Multifaceted Analytical Technique” held on 14th & 15th July 2020 organised by Smt.Devkiba Mohansinhji Chauhan College of Commerce and Science,SILVASSA U. T. OF DADRA & NAGAR HAVELI AND DAMAN & DIU.
- Attended the International webinar on “International Symposium on Materials Science and Innovation for Sustainable Society” organised by Nanomaterial Research Center, Meijo University, DCT’s Dhempe College of Arts & Science and Government College of Arts, Science and Commerce, Khandola, under Cluster of Colleges for Research in Chemistry Goa on 26th & 27th August, 2020, Goa - India.
- Participated in the National level webinar on 'Chemical and Laboratory Safety on 22nd July 2020 at CARMEL COLLEGE OF ARTS, SCIENCE AND COMMERCE FOR WOMEN.
- Participated in the webinar ‘An overview of the current COVID 19 pandemic & Role of Ayurvedic Medicinal Plants in the Mitigation of Epidemics' organized by the Department of Chemistry, Sahrdaya College of Advanced Studies, Kodakara on 7th October 2020.
- Attended National Conference (virtual) on "Nanomaterials for Environmental Applications" (NFEA-2020) organised by Post-Graduate department of Chemistry, P.E.S.'s R.S.N. College of Arts and Science, Farmagudi, Ponda - Goa on 28th & 29th December, 2020.
- Attended National Conference (virtual) on "Nanomaterials for Environmental Applications" (NFEA-2020) organised by Post-Graduate department of Chemistry, P.E.S.'s R.S.N. College of Arts and Science, Farmagudi, Ponda - Goa on 28th & 29th December, 2020.



Nobel Prize in Chemistry awarded to Emmanuelle Charpentier and Jennifer A Doudna

Priyanka Bidaye alias Priyanka Talak, P

Ph.D: Goa University, Goa (August 2007 – December 2011)

[Thesis Title]: Synthesis and catalytic applications of titania based nanomaterials and their composites

AREA OF INTEREST

- Heterogeneous Catalysis.
- Materials Chemistry.
- Mesoporous Materials.
- Photocatalysis.
- Nanomaterials/Composites.

Pratibha Bakre, PhD.

Ph.D: Goa University, Goa (December 2013 – December 2018)

[Thesis Title]: Synthesis, Properties and Applications of Nano Metal Oxides and Nano Composites.

Pratibha V. Bakre has several research publications and also presented several papers in **National / International Symposia**

Dr. Manjita Porob

1. Dr. Manjita Porob organized a virtual talk entitled **"My career journey in Chemistry – from academics to academics"** on 19/12/2020 for TYBSc students by our alumnus Dr. Hari Kadam, Assistant Professor, School of Chemical Sciences, Goa University.
2. Dr. Manjita Porob organized a virtual talk on **"Career opportunities in Pharmaceutical sector"** on 19/12/2020 for TYBSc students by *Shri. Bhasker Napte QC head, Manisha Analytical lab– Mumbai.*

Activities attended 2020 – 2021:

- Webinar on "International Symposium on Materials Science and Innovation for Sustainable Society" organised by Nanomaterial Research Center, Meijo University, DCT's Dhempe College of Arts & Science and Government College of Arts, Science and Commerce, Khandola, under Cluster of Colleges for Research in Chemistry Goa on 26th & 27th August, 2020, Goa – India.
- Participated in International webcon on recent advances in Chemistry education and Chemical research organised by Association of Chemistry teachers C% Homi Bhabha centre of science Education Mumbai and Department of Chemistry MLSM college, Darbhanga, Bihar India from 29/11/20- 1/12/20
- Attended National Conference (virtual) on "Nanomaterials for Environmental Applications " organized by PG Department of Chemistry, P.E.S's R.S.N college of Arts and Science, Farmagudi Ponda Goa from 28/12/20- 29/12/20.

Ms.Padmini C. Raiker

Article entitled "Mn(I)- Catalyzed Mechanochemical C-H bond Activation: C-2 Selective Alkenylation of Indoles" has been published in one of the American Chemical Society's highest cited journal ACS Sustainable Chemistry and Engineering with an impact factor of 7.6.

Dr. Mayuri M. Naik

- Participated in the 1st Online Refresher Course in Chemistry organised by UGC-HRDC, Gujarat University, Ahmedabad from 28/09/2020 to 11/10/2020 (14 days) and obtained Grade A.
- Participated in the Faculty Development Program conducted by Goa State Innovation Council (GSInC) through Zoom Meeting App on 19th , 20th , 26th and 27th November, 2020 from 10.00 am to 5.00 pm.
- Participated in National webinar on Emerging trends and Technology in chemistry Supported by world bank and Organized by MPHEQIP and Department of Chemistry, Govt. S.S.P. College Waraseoni, Dist-Balaghat (M.P.) on 24th December, 2020.
- Attended National Conference (virtual) on "Nanomaterials for Environmental Applications" (NFEA-2020) organised by Post-Graduate department of Chemistry, P.E.S.'s R.S.N. College of Arts and Science, Farmagudi, Ponda - Goa on 28th & 29th December, 2020.
- Participated in Online National Webinar on "How to write Research Proposal to Various Funding Agencies" on 12th January 2021 from 12:00 to 01:00 pm. It was organized by IQAC initiative Research Committee, Anandibai Raorane Arts, Commerce and Science College, Vaibhavwadi.

Do you know?~ Ms. Siddhi Deelip Naik

1. Only one letter doesn't appear in the periodic table!
   It's the letter **J**
   Go ahead and double check.
2. The rarest naturally occurring element in the Earth's crust may be Astatine. The entire crust appears to contain about 28 grams of element.
3. Mars is red because it's surface
   contains a lot of iron oxide or rust.
4. If you inhale Helium it causes the timbre of the voice to change making it higher. Xenon on the other hand, lowers the timbre.
5. The airbag in cars can save your life, but they are actually made of highly toxic substance called sodium azide.

ROLE OF CHEMISTRY IN COMBATING COVID-19 ~ Ms. Sania Jakati

Chemistry is an exhilarating branch of science which is applicable to us in almost everything we do. Especially in the days of pandemic, it has tried it's 100% to contribute for the well being of humanity. Chemists across the world have tried their level best, pushing themselves beyond their capacity limits to meet the aggressive rise in demand for better quality protective equipment's like gloves, masks , disinfectants , diagnostic tests , intensive care unit medicines etc. Most importantly it has played a key role in understanding everything from structure of virus to pathogenesis, isolation of vaccines and therapies and in development of materials and techniques used by basic researchers, virologists and clinicians.

Talking about medicines Chloroquine is an antimalarial drug and Hydroxychloroquine, an analogue of chloroquine was initially used for the treatment of COVID-19 . But then in October 2020, the FDA approved the antiviral drug remdesivir to treat COVID-19 in hospitalized adult and pediatric patients. Remdesivir binds to the viral RNA-dependent RNA polymerase, inhibiting viral replication through premature termination of RNA transcription. It has demonstrated in vitro activity against severe acute respiratory syndrome coronavirus .

Coming to the vaccine to combat the deadly disease COVID-19, Moderna a US based pharmaceutical and biotechnological company for drug discovery and drug delivery in association with United States National Institute of Allergy and infectious diseases (NAID) and Biomedical Advanced Research and Development Authority (BARDA) has developed Moderna COVID-19 vaccine code named as mRNA-1273. It has produced quite positive results and is being used by many countries as most of the countries say that it meets the "strict standards of safety, efficacy and quality" of the Medicines and Healthcare Products Regulatory Agency.

Discussing about the ingredients of this vaccine , it includes the following ingredients :
1)mRNA – Like the Pfizer BioNTech vaccine, Moderna's also uses mRNA technology to build antibodies against COVID-19.
2)Lipids – The Moderna vaccine also requires lipids to help deliver the mRNA to the cells. SM-102; 1,2-dimyristoyl-rac-glycero3-methoxypolyethylene glycol-2000 [PEG2000-DMG] ; cholesterol ;1,2-distearoyl-snglycero-3-phosphocholine [DSPC]

The remaining ingredients (below), including acids, acid stabilizers, salt and sugar all work together to maintain the stability of the vaccine after it's produced.

3)Acids -Acetic acid.
4)Acid stabilizers -Tromethamine & Tromethamine hydrochloride
5) Salt-Sodium acetate .
6) Sugar - Sucrose.

How it works?
The Moderna vaccine works by injecting a small part of the COVID-19 virus' genetic code, which triggers an immune response and creates antibodies in the human body able to fight the virus. The dosage for this specific vaccine requires two doses to be given. It is recommended to administer the second dose 28 days after the first. It is approved for use in people 18 years and over, and it can be used by pregnant and breastfeeding women following a discussion with their healthcare provider on the benefits and risks. It can be stored at -20 degree Celsius for up to six months.

The only shortcoming of this vaccine is it needs to be stored at very low temperature as it is not stable at high temperatures. Anyways our scientists are working hard to resolve such issues and it will be rectified soon. We must say that we are very lucky to belong to the family of such a scintillating branch of science.

Reference :
https://www.google.com/amp/s/www.cnbc.com/amp/2021/01/08/uk-regulator-approves-moderna-covid-vaccine.html
https://www.healthline.com/health-news/heres-exactly-where-were-at-with-vaccines-and-treatments-for-covid-19#COVID-19-vaccines
https://www.health.harvard.edu/diseases-and-conditions/treatments-for-covid-19
https://www.hackensackmeridianhealth.org/HealthU/2021/01/11/a-simple-breakdown-of-the-ingredients-in-the-covid-vaccines/
https://www1.racgp.org.au/newsgp/clinical/four-things-about-mrna-covid-vaccines-researchers

WHY CARBON? ~ Mr. M. Ruveen

Carbon is a chemical element like any other element in the periodic table in group 14 and with atomic number 6. Carbon is tetravalent which means it can share 4 electrons with other element to form a bond. Silicon, Germanium, Tin and Lead also are tetravalent but due to carbon's small size and high charge by size ratio it can form multiple bonds and long chains with itself called as catenation and also has a tendency to polymerize and form polymers which are very useful like polythene which is a polymer of ethene (CH2CH2), this makes it special and different from other elements. Carbon is very well known for its abundancy and for its diverse nature in forming compounds. Carbon is 15th most abundant element in earth's crust and 4th most abundant element in universe by mass. Carbon has different allotropes some of the common and famous ones are Graphite, Diamond and Fullerene. Carbon compounds are very important for our living, it makes up the cell and other structures of organisms and carry out life process. Carbon is everywhere the paper we use, the ink we use, the air we breathe, the skin we are made up of any more places. Carbon makes up for 15% of human body which involves Glucose, Proteins, Sugar etc. Carbon due to its special and different properties demands for a separate study on it. There is a lot of science behind carbon and its speciality which makes it quite interesting to be studied.

Life is a chemistry ~Ms. Elvisha Colaco

Life is a chemistry

Life starts with a nuclear fusion
If you don't make it right, you get an explosion...
Life is as difficult as korbe's reaction
You have to balance both the sides of the equation...

We all struggle, to achieve nobel gas configuration
We unwind and ease out, to attain denaturation...
And yet we have to join ourselves, through polymerisation
And in this process, we face a lot of saturation...

You may find many states of yourself, like that of detrium
You try to change yourself and maintain an equilibrium...
There is no point, being colourless and odourless like that of helium
You need to give away, to be like sodium and potassium...

Keep your heart and soul always positive, like that of proton
Always, form bonds with others, like that of an electron...
Go out of your way, to be conductive like silicon
And sometimes, hold the atom stronger, like that of a neutron...

-**Elvisha Colaco**
SYBSc Chemistry

Eminent Alumnus

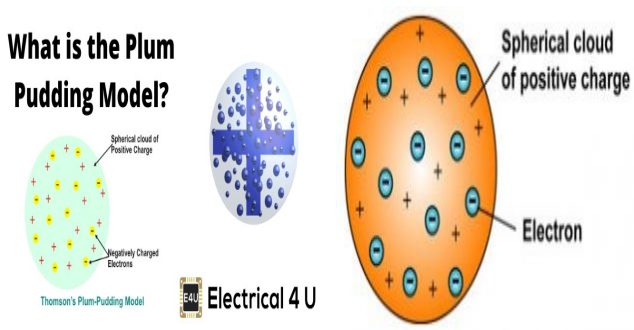
Mr. Anurag Madhukar Naik
MSc- Analytical Chemistry
Teaching experience: 2 years teaching for bachelors chemistry
Currently working as lecturer for BSc and MSc At Dr. A. V. Baliga college of Arts & Science, Karnataka.

He was the _GS of our college for two consecutive years.

Chemistry History~ Ms. Khushi Nitin Prabhu Desai

30TH April:- The discovery of the Electron- Sir Joseph J. Thomson
Birth- 18th December 1856
Death- 30th August 1940

Thomson discovered the electron found the first evidence for isotopes of stables elements and won the Nobel Prize in physics for investigating on the conduction of electricity by gases. Thomson generated a cathode ray in a tube with partial vacuum, he showed the rays were deflected by an electric field. Comparing this with how much they deflected by magnetic field he deduced that cathode rays were made of negatively charged particles which he termed Corpuscles. The discovery lead to his plum pudding model of the atom with electrons scattered throughout a cloud of positive charge.



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