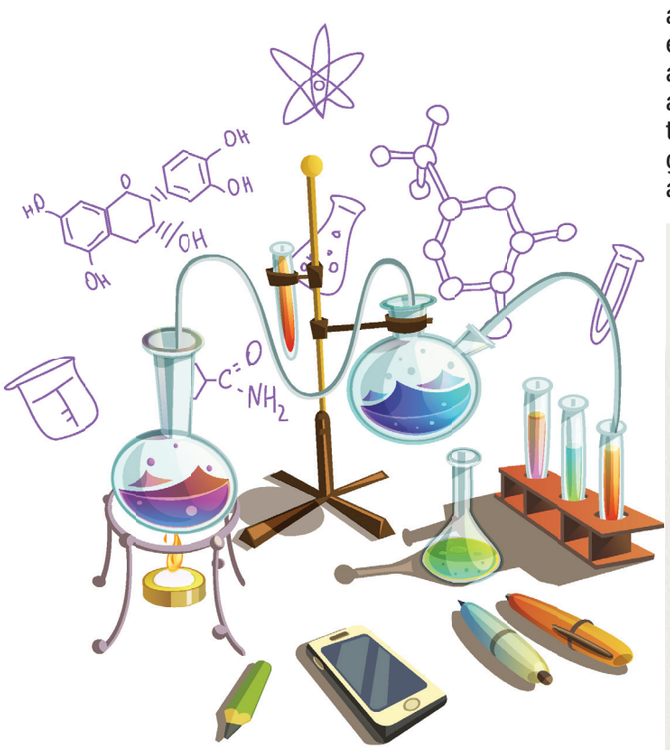
THANMATHRA

NEWSLETTER OF THE DEPARTMENT OF CHEMISTRY

SREE NARAYANA COLLEGE FOR WOMEN, KOLLAM

VOL. XV 2021

ISSUE No. 15



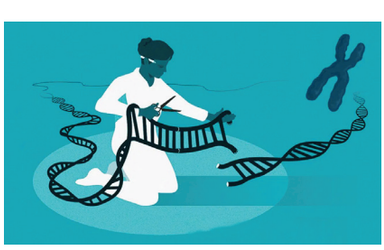
editorial

GENETIC SCISSORS:

A tool for rewriting the code of life

Emmanuelle Charpentier and Jennifer A. Doudna have discovered one of gene technology's sharpest tools: the CRISPR/Cas9 genetic scissors. Using these, researchers can change the DNA of animals, plants and microorganisms with extremely high precision. This technology has had a revolutionary impact on the life sciences, is contributing to new cancer therapies and may make the dream of curing inherited diseases come true.

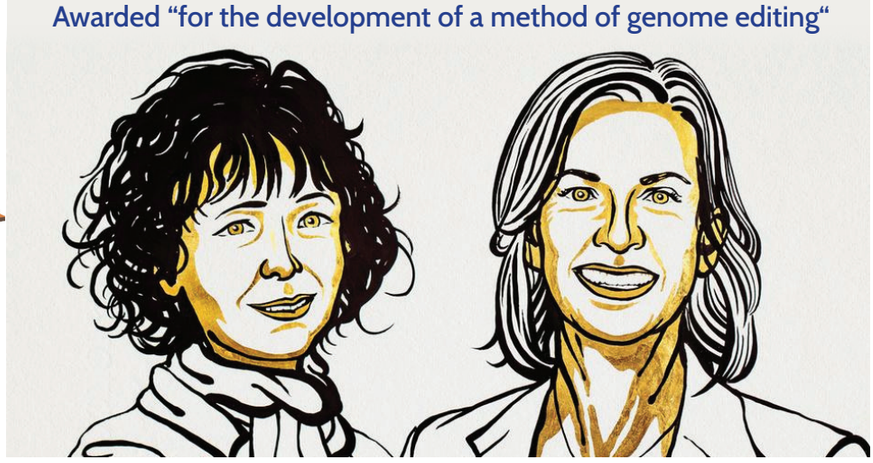
Researchers need to modify genes in cells if they are to find out about life's inner workings. This used to be time-consuming, difficult and sometimes impossible work. Using the CRISPR/Cas9 genetic scissors, it is now possible to change the code of life over the course of a few weeks. As so often in science, the discovery of these genetic scissors was unexpected. During Emmanuelle Charpentier's studies of Streptococcus pyogenes, one of the bacteria that cause the most harm to humanity, she discovered a previously unknown molecule, tracrRNA. Her work showed that tracrRNA is part of bacteria's ancient immune system, CRISPR/Cas, that disarms viruses by cleaving their DNA. Charpentier published her discovery in 2011. The same year, she initiated a collaboration with Jennifer Doudna, an experienced biochemist with vast knowledge of RNA. Together, they succeeded in recreating the bacteria's genetic scissors in a test tube and simplifying the scissors' molecular components so they were easier to use.



In an epoch-making experiment, they then reprogrammed the genetic scissors. In their natural form, the scissors recognise DNA from viruses, but Charpentier and Doudna proved that they could be controlled so that they can cut any DNA molecule at a predetermined site. Where the DNA is cut it is then easy to rewrite the code of life. Since Charpentier and Doudna discovered the CRISPR/Cas9 genetic scissors in 2012 their use has exploded. This tool has contributed to many important discoveries in basic research, and plant researchers have been able to develop crops that withstand mould, pests and drought. In medicine, clinical trials of new cancer therapies are underway, and the dream of being able to cure inherited diseases is about to come true. These genetic scissors have taken the life sciences into a new epoch and, in many ways, are bringing the greatest benefit to humankind.

THE NOBEL PRIZE IN CHEMISTRY 2020

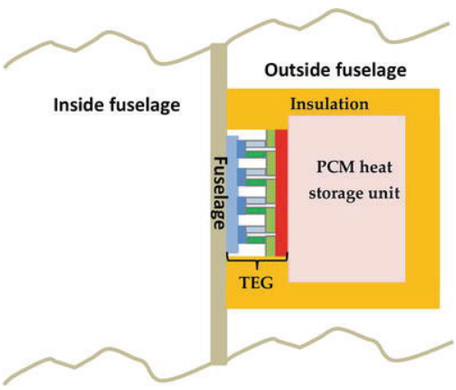
Awarded "for the development of a method of genome editing"



THERMOELECTRIC ENERGY HARVESTING:

BASIC PRINCIPLES AND APPLICATIONS

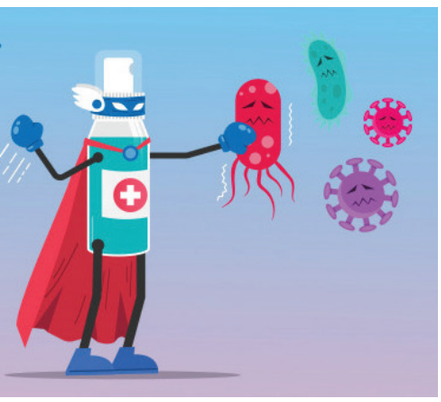
Green energy harvesting aims to supply electricity to electric or electronic systems from one or different energy sources present in the environment without grid connection or utilisation of batteries. The fundamental scientific discoveries applicable to thermoelectricity were discovered in the 1800s, with the most important for power generation being the Seebeck effect discovered by Thomas Seebeck in 1821.These energy sources are solar (photovoltaic), movements (kinetic), radio-frequencies and thermal energy (thermoelectricity). This effect describes the conversion of temperature gradient into electric power at the junctions of the thermoelectric elements of a thermoelectric generator (TEG) device. This device is a robust and highly reliable energy converter, which aims to generate electricity in applications in which the heat would be otherwise dissipated. The significant request for thermoelectric energy harvesting is justified by developing new thermoelectric materials and the design of new TEG devices. Moreover, the thermoelectric energy harvesting devices are used for waste heat harvesting in microscale applications. Potential TEG applications as energy harvesting modules are used in medical devices, sensors, buildings and consumer electronics



LEKSHMI J B
III DC CHEMISTRY

WHY CORONA VIRUS FEARS SOAP AND SANITIZERS?

Soap molecules have two different ends, a hydrophilic head that binds to water and a hydrophobic tail that reject water and binds to fat or oil.

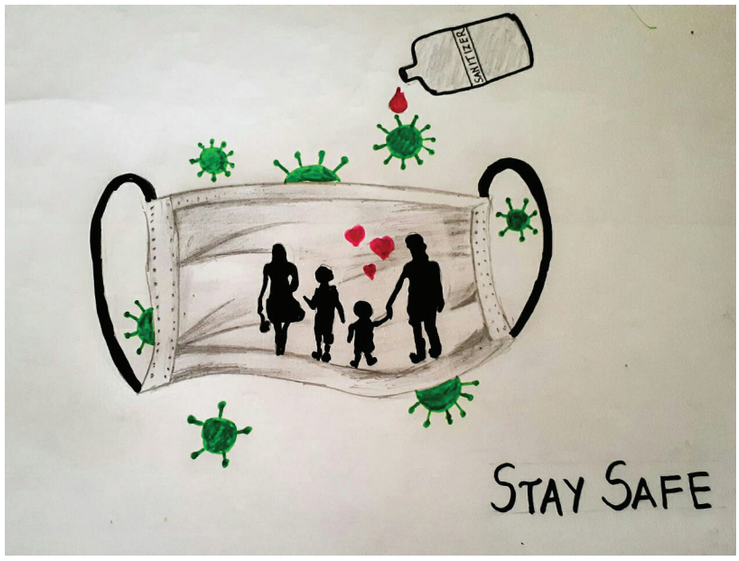


While trying to escape from the water, the tail is drawn to the fatty outer layer of the virus and splits open the virus or bacteria.

As the outer layer dissolves the viruses falls apart and dies. Scrubbing hands with water and soap create more soap bubbles that would disrupt the chemical bonds between viruses and surfaces, that would prevent them from sticking to the hands or surfaces.

So, scrubbing your hands for 20 seconds, which is nearly the time taking to Sing 'Happy Birthday 'twice, won't be in vain. All germs and viruses are washed away when you scrub and rinse your hands.

ABHIJA B S
III DC CHEMISTRY
ANUPAMA S R
II DC CHEMISTRY



DRISHYA S DAS
II DC CHEMISTRY

CHEMIST MAKE TOUGH PLASTIC RECYCLABLE

New methods for producing thermoset plastic allow them to be broken down more easily after use. Thermoses, which include Epoxy, polyurethane and rubber used for tyres are found many products that have to be durable and heat-resistant, such as cars or electrical appliances. One drawback of these materials is they typically cannot be easily recycled or broken down after use, because the chemical bonds holding them together are stronger than those found in other materials such as thermoplastic.

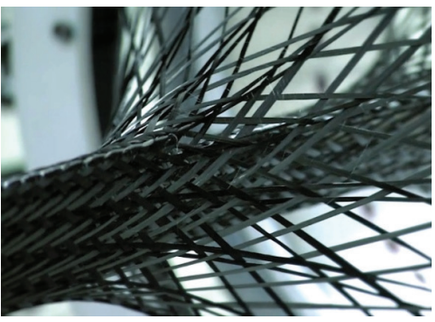
MIT Chemists have now developed a way to modify their most plastics with a chemical linker that makes the materials much easier to breakdown, but still allows them to retain the mechanical strength that makes them so useful.

In a steady appearance of today in 'Nature', the researchers showed that they could produce a degradable version of a thermoset plastic called pDCPD, break down into a powder to create more pDCPD.

They also proposed a theoretical model suggesting that their approach could be applicable to a wide range of plastics and other polymers, such as rubber. "This work unveils a fundamental design principle that we believe is general to any kind of thermoset with this basic architecture", says Jeremiah Johnson, a professor of chemistry at MIT and the senior author of the study Peyton Shieh, an American cancer society postdoctoral Fellow at MIT, is the first author of the paper.

AMMU B
III DC CHEMISTRY

CARBON FIBRES TODAY

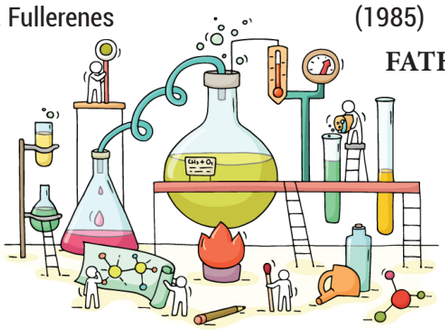


All commercial carbon fibres are produced today are basis on rayon, PAN or pitch. Rayon-based fibres were the first in commercial production in 1959, and they led the way to the earliest application, which were primarily Military. PAN-based fibres have replaced rayon -based fibres in most application, because they are superior in several respects, notably in tensile strength. Fibres from PAN fuelled the explosive growth of the carbon fibre industry since 1970, and they are now used in a wide array of applications such as aircrafts brakes, space structures, military and commercial plains, lithium batteries, sporting goods and structural reinforcement in construction materials. In the late 1970s Union Carbide formed a separate division as its primary carbon fibre producer; the business has since been sold to Amoco and then to Cytec, which is among a group of major carbon fibre manufactures that spans the globe. Pitch-based fibres are unique in their ability to achieve ultrahigh young's modulus and thermal conductivity and, therefore, have found an assured place in critical military and space application. But their high cost has kept production to a minimum; only a few a Japanese companies in addition to Cytec are currently making commercial mesophase fibres a lower modulus, non-graphitized mesophase pitch-based fibre, which is much lower in cost, is used extensively for aircraft brakes. The cost of making carbon fibres has been reduced drastically in the last twenty years, and researchers are bringing that cost down every day. As they do, many of the application once considered impossible will become reality. Carbon fibres are used sparingly in automotive applications, but someday entire body panels may be made from them. All high-speed aircraft have carbon fibre composite in their brakes and other critical parts, and in many aircraft, they are used as the primary structures and skins for entire planes. Carbon fibres could even be used to develop earthquake-proof buildings and bridges.

SHABNA S
III DC CHEMISTRY

IMPORTANT DISCOVERIES IN CHEMISTRY

1. Oxygen	(1770s)
2. Atomic Theory	(1808)
3. Atoms Combine Into Molecules	(1811 onward)
4. Synthesis of Urea	(1828)
5. Chemical Structure	(1850s)
6. Periodic Table of the Elements	(1860s - 1870s)
7. Electricity Transforms Chemicals	(1807 - 1810)
8. The Electron	(1897)
9. Electrons for Chemical Bonds	(1913 onward)
10. Atoms Have Signatures of Light	(1850s)
11. Radioactivity	(1890s - 1900s)
12. Plastics	(1869 and 1900s)
13. Fullerenes	(1985)

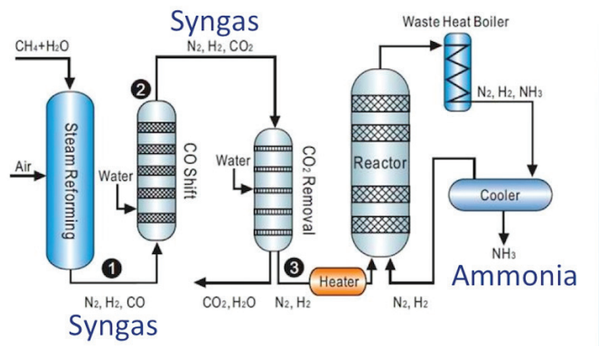


FATHIMA NOUSHAD
III DC CHEMISTRY

CHEMICAL REACTION THAT CHANGED THE WORLD

1.AMMONIA SYNTHESIS

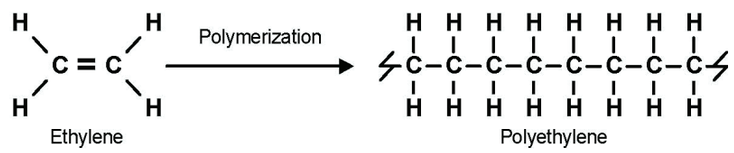
Nitrozen is one of the most important elements for life, perhaps behind only carbon. It is a key component in DNA, RNA, proteins, and chitin (a biological polymer similar to cellulose found in fungi, insects, lobsters, shrimp, and some fish). Nitrogen is also one of the most plentiful elements on Earth, making up approximately 78 percent of the Earth's atmosphere. However, nitrogen in the atmosphere exists in the form of N2, which is highly unreactive and not useful for most life-forms. Therefore, nitrogen must be fixed by converting it to more reactive forms, such as ammonia, nitrates, and nitrites. In nature, this is



usually done by specialized bacteria. These bacteria form a symbiotic (meaning that both organisms' benefit) relationship with many plants, living in nodules in the roots. However, not all plants form this relationship. Especially in the case of commercial farming, crops such as corn do not fix nitrogen but absorb it from the soil. If a crop that does not fix nitrogen is grown for several seasons, it will be necessary to add fertilizer. However, few naturally occurring materials have enough nitrogen to act as a fertilizer. Therefore, to meet increasing demands for food, it was necessary to find a better way to produce nitrogen fertilizer.

2.POLYMERIZATION OF POLYETHYLENE

Plastic revolutionized the world. As they are easily moulded, resistant to both heat and chemical attack, and cheap to make, plastics have become a ubiquitous material in everyday life—especially polyethylene. Coming in a variety of forms such as high-density polyethylene and low-density polyethylene, it is used in plastic bags, milk bottles, and



even bulletproof vests.

Polyethylene was accidentally discovered in 1933 by two scientist working for the Imperial Chemical Industries Research Laboratory while trying to react ethylene and benzaldehyde. Instead, a waxy material was discovered, which was found to be a polymer of ethylene. A polymer is a substance that is made up of many repeating units. Other polymers include cellulose and DNA

VRISANKA J
III DC CHEMISTRY

INTERESTING FACTS ABOUT CHEMISTRY

Chemistry is a fascinating subject full of unusual trivia, facts, and stats. Here are a few of the amazing ones.

- You cannot taste anything without saliva.
- Yes, it is possible to die from drinking too much water.
- Blue is the color of liquid oxygen.
- Chalk is made of trillions of microscopic skeleton fossils of plankton.
- Lemons have more sugar than strawberries.
- Air becomes liquid at -190° C.
- Gallium has a melting point of 29.76° C and can melt on the palm of your hand.
- Goldfish eyes perceive the visible spectrum, infrared, as well as the ultraviolet light.
- When you freeze seawater or saltwater, you get freshwater ice.
- If you expose a glass of water to space, it won't freeze; rather it will boil. The water vapor would, however, turn into ice soon afterward.
- DNA doesn't catch fire.
- Gold and copper are the only two metals devoid of having a silvery appearance.
- Every hydrogen atom in your body is likely 13.5 billion years old because they were created at the birth of the universe.

BHARATI B
III DC CHEMISTRY

Parvathy. D.S
II DC CHEMISTRY

CHEMISTRY RELATED QUOTES

"The meeting of two personalities is like the contact of two chemical substances, if there is any reaction, both are transformed. "
-Carl Jung

"No, this trick won't work...How on earth are you ever going to explain in terms of Chemistry and Physics so important a biological phenomenon as first love."
-Albert Einstein

"Chemistry can be good and bad thing. Chemistry is good when you make love with it. Chemistry is bad when you make crack with it."
-Adam Sandler

"To think is to practise brain chemistry. "
- Deepak Chopra

"All that glitters may not be gold, but at least it contains free electrons. "
-John Desmond Bernal

"Chemistry begins in the stars, the stars are the source of the chemical elements, which are the building blocks of matter and the core of our subject. "
-Peter Atkins

"There's nothing colder than Chemistry. "
-Anita Loos

"If you're in love and there's that chemistry, that's what it's all about. "
-Sanaa Lathan

"Science believe in things, not in person. "
-Marie Curie

"Undesirable Chemistry and horrific timing, they love each other. "
-Darnell Lamont Walker

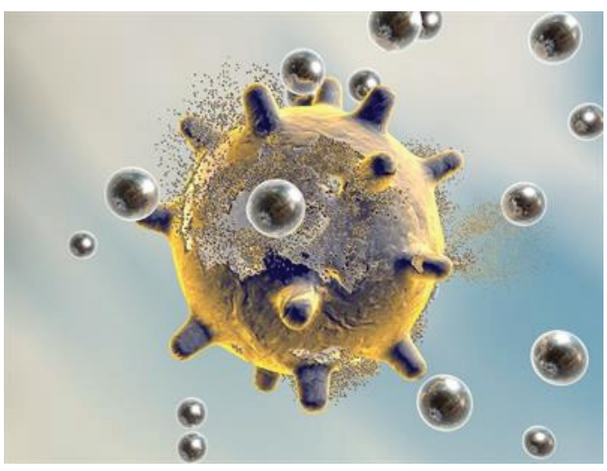
"A Scientific theory is a tool and not a creed. "
- J J Thomson

"Every great and deep difficulty bears in itself its own solution. It forces us to change our thinking in order to find it. "
-Niels Bohr

ASITHA R
III DC CHEMISTRY

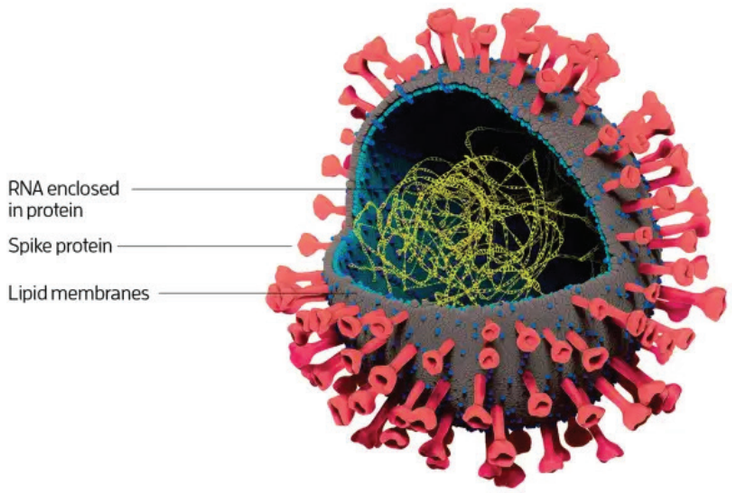
NANOTECHNOLOGY SOLUTIONS TO MITIGATE COVID-19:- DETECTION PROTECTION, MEDIATION

Coronavirus disease (Covid-19) is an infectious disease caused by severe acute respiratory syndrome. It is evident that the scientific community must come together to migrate the many clinical and public health management challenges. The Covid-19 outbreak poses global pressure on modern societies and particularly healthcare selected infrastructure. Nanotechnology brings new prospects for developing affordable and scalable detection methods, safe personal protection equipment and new effective medical solutions. Nanosensors are already a reality showing great ability to detect bacteria and viruses at very low concentration and thus warn clinicians even before symptoms have shown or on patients with very low viral leads. A nano-filter has been recently developed that is claimed to maintain filtering efficiency, even after hand washing, through the use of nanofibres. This reusable nano-filtered face mask could efficiency even after hand washing through the use of nanofibres. Researchers have been investigating the potential of using nanoparticle to treat bacterial and viral infections for years now. Gold nanoparticles, for example, are made to attack to viruses such as Ebola and influenza and by treating the particles with certain infrared wavelengths the nanoparticles can then destroy the structure of the virus. Nanoparticle can be used to deliver drugs as well. The following topics and their application for addressing Covid-19 challenges.



ADITHYA P S MEENAKSHI
II DC CHEMISTRY

COVID-19: THE CHEMISTRY OF A VIRUS

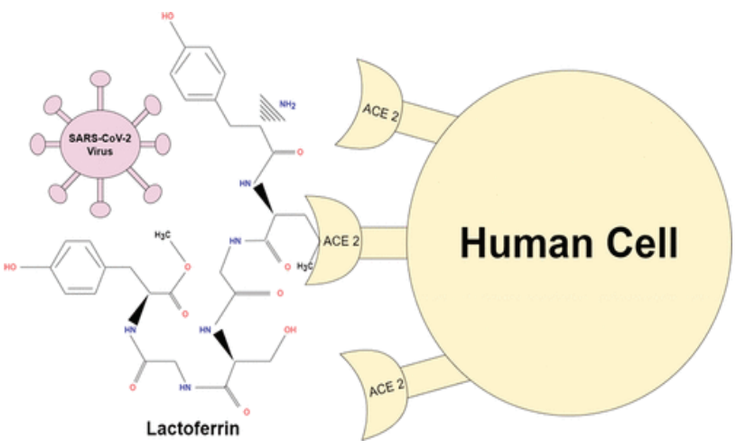


Most viruses consist of three components-genetic material, some proteins and a lipid layer.

In the case of SARS-cov-2(the virus responsible for the covid - 19 disease) the genetic material is a 30,000 repeat unit RNA, some of its proteins bind to, and protect, this RNA whilst others act as spikes to anchor to human cell and the lipid layer acts to protect the whole assembly. SARS-cov-2 consists of about 30,000 nucleotides repeat units in a single strand

R. LEKSHMI PRIYA
II DC CHEMISTRY

THE POTENTIAL OF ANTIMICROBIAL PEPTIDES AS AN ANTIVIRAL THERAPY AGAINST COVID-19



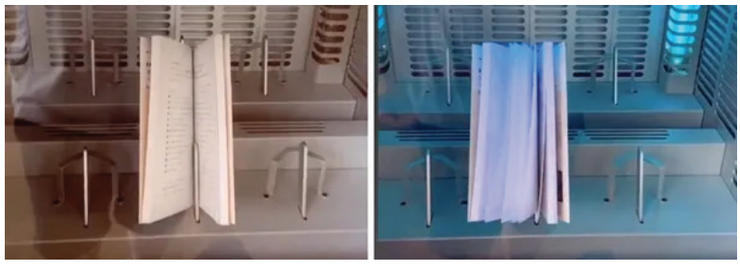
Antimicrobial peptides (AMPS) have been widely regarded as a premising solution to combat harmful microorganisms.

They are biologically active molecules produced by different organisms as an essential component of their innate immune response against invading pathogens.

Lactoferrin (LFs) one of the Amps is an iron-binding glycoprotein that is present in several mucosa secretion. The antiviral activities of LF exists against a wide range of human and animal viruses. LF was reported to have antiviral activities against SARS-COV-2 infection.

MALAVIKA P. M
II DC CHEMISTRY

YES! 'BOOK SANITIZER' IS A THING



We have seen various kinds of sanitizers. But pretty sure you must have not seen a sanitizer solely for books right?

This invention came about in Japan, a country known for some interesting creations in the past as well. It shows the book is kept in an electronic compartment. As soon as the start button is pressed the book goes through the sanitizing process. This is to remove the formities from the object and making it clean. Many of them called it 'useful'. One of them actually called it a 'book microwave' which could make sense.

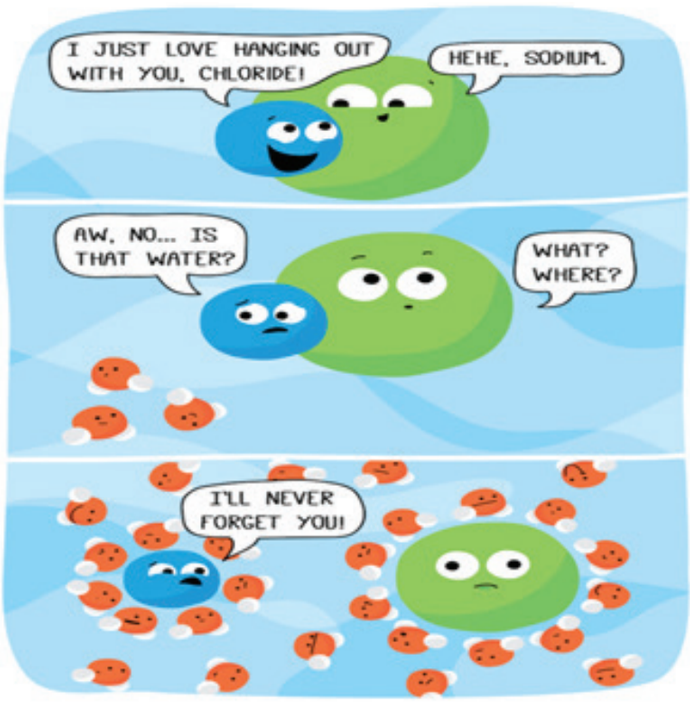
ADITYA. B. NATH
II DC chemistry

IRON REDOX CHEMISTRY AND ITS ENVIRONMENTAL IMPACT

Iron (Fe) is the most abundant redox-active element at the Earth's surface. It occurs in diverse host rock lithologies, sediments, and soils as accessory oxide and oxyhydroxide minerals and nanoparticles that can dominate the reactive mineral/water interfacial area. Furthermore, Fe oxide nanoparticles produced to exploit the catalytic properties of specific mineral surfaces continue to undergo rapid development and deployment for a variety of purposes, including environmental remediation. The structure, charge, and chemical dynamics at these interfaces with aqueous solutions strongly impact their interaction with other elements, organics, and contaminants. The influence of important environmental factors, especially the oxygen concentration, natural organic matter, microbes, etc., remain poorly understood. Key interfacial processes can be driven by both biotic and abiotic mechanisms. As a result of the abundance of Fe in the Earth's crust and the extremely low solubility of Fe(III) (oxyhydr) oxides, such minerals are abundant as primary and secondary phases in many natural environments, including soils, sediments, and marine and lacustrine waters, through precipitation from saturated solution or phase transformations from other Fe-bearing minerals. During formation, impurities (e.g., Mn, Ni, Cu, Si, rare earth elements, etc.) can be sequestered into particles through structural incorporation, adsorption, and surface precipitation.

Transformation of ferrihydrite, the typical poorly crystalline initial precipitate, into more stable crystalline phases, such as goethite and hematite, is one such incorporation pathway. Under certain redox conditions, the formation of green rust, a mixture of Fe(II) and Fe(III) (hydr)oxides and schwertmannite also become important. Redox processes are a central component of the environmental chemistry and biogeochemistry of Fe. On the one hand, aqueous Fe ions can form complexes with other minerals and organics, resulting in key redox reactivity changes and the other hand, Fe oxide minerals themselves can participate in redox reactions, making them critical players in many abiotic and biotic processes. The assembled advances collectively highlight the importance of Fe redox chemistry across fields of geochemistry and environmental engineering. Ongoing research into the roles of aqueous ions, organics, other minerals, and microorganisms on the formation and redox reactivity of Fe oxide minerals will continue to improve the fundamental understanding of these important environmental constituents.

KADAMBARICHAND M.R
III DC CHEMISTRY



Reshma J,
II DC Chemistry

INTERESTING FACTS ABOUT CHEMISTRY

- Lightening strikes produce ozone, hence the characteristic smell after lightening storms
- The only two non silvery metals are gold and copper.
- Water expands when freezes, unlike other substances
- Glass is actually a liquid , it just flows very very slowly
- Diamond and graphite are both entirely made of carbon and nothing else.
- One inch of rain equals ten inches of snow
- Your cars airbags are packed with salt sodium azide, which is very toxic
- Mars is red because of iron oxide
- Air becomes liquid at -190 degree celcius
- A rubber tire is technically a single giant, polymerized molecule.

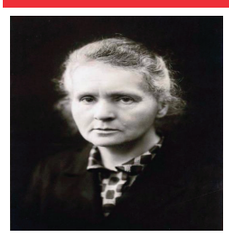
Parvathy Remadevi Biju
III DC CHEMISTRY

NEW MASK MATERIAL CAN REMOVE VIRUS-SIZE NANOPARTICLES

The scientists around the world are scrambling to adapt their research to find solutions to the many problems raised by the COVID-19 pandemic sweeping the world, not the least being a face mask shortage. QUT process engineer Dr. Thomas Rainey and his research team are stepping up work on a nanoparticle-removing new material and they were developed a biodegradable anti-pollution mask. They have developed and tested a highly breathable nanocellulose material that can remove particles smaller than 100 nm, the size of viruses. They have tested this material thoroughly and found it to be more efficient in its ability to remove virus-size nanoparticles than the high-quality commercially available masks. Dr. Rainey said the team also tested the new material for breathability

Aarcha J
II DC Chemistry

WOMENS IN CHEMISTRY



MARIE SKLODOWSKA CURIE
(1867-1934)

Carried out pioneering research on radioactivity. The first woman to win a Nobel Prize, and the only person to win a Nobel Prize in two different sciences, Chemistry and Physics.

ALICE AUGUSTA BALL
(1892-1916)
Developed and injectable oil which was the most effective treatment for leprosy until the 1940s. She died before the results of her work were published.

GERRY THERESA CORI
(1896-1957)
Helped establishing how glycogen is broken down in muscles then remade and stored as an energy source. She jointly won 1947 Nobel Prize in Chemistry for her work.

IDA EVA NODDACK
(1896-1978)
She was the first person to propose the idea of nuclear fission which she suggested in 1934. She was the co discoverer of Uranium in 1925.

IRENE JOLIOT CURIE
(1897-1956)
Daughter of Marie Curie A joint Nobel Prize in emistry winner in 1935 with Frederic Joliot-Curie the discovery and work on artificial radioactivity.

KATHLEEN LONSDALE
(1903-1971)
Pioneered use of X-ray to study crystals, and also used the technique to confirm that a benzene ring is flat. A form of carbon, Lonsdaleite, is named after her.

DOROTHY MARY HODGKIN
(1910-1994)
Used X-ray crystallography to determine the structure of vitamin B_{12} for which she won the 1964 Nobel prize in Chemistry. She went on to decipher the structure of insulin.

GERTRUDE BELLE ELION
(1918-1999)
Develop the numerous drugs including the first immunosuppressive drugs used for organ transplants. Jointly won the 1988 Nobel Prize in medicine or physiology.

ROSALIND FRANKLIN
(1920-1958)
Made x-ray diffraction image of DNA crucial in alloying DNA's structure to be discerned. This contribution wasn't fully acknowledged until after her death.

MARIE MAYNARD DALY
(1921-2003)
Thought to have been the first black American woman to earn a PhD in chemistry, in 1947. She later researched effects of cigarette smoke on the lungs.

STEPHANIE KWOLEK
(1923-2014)

Developed the polymer Kevlar and won many awards for her work on polymer chemistry. Also developed the 'nylon rope trick' chemistry demonstration.

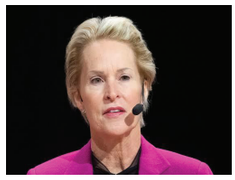
TU YOUYOU (1930)

She is a Chinese pharmaceutical chemist and malariologist. She discovered artemisinin and dihydroartemisinin, used to treat malaria, For that she received the 2015 Nobel Prize in Physiology or Medicine jointly with William C. Campbell and Satoshi Ōmura.

GLORIA LONG ANDERSON
1938
She is the Fuller E. Callaway Professor of Chemistry at Morris Brown College, and its Vice President for Academic Affairs. She was a pioneer in the field of nuclear magnetic resonance spectroscopy, and is known for her studies of fluorine-19 and solid rocket propellants.

ADA E. YONATH
1939

She is an Israeli crystallographer best known for her pioneering work on the structure of the ribosome. In 2009, she received the Nobel Prize in Chemistry along with Venkatraman Ramakrishnan and Thomas A.



FRANCES HAMILTON ARNOLD
1956

She is an American chemical engineer and Nobel Laureate. In 2018, she received the Nobel Prize in Chemistry for pioneering the use of directed evolution to engineer enzymes.

JENNIFER DOUDNA
1964

She is an American Biochemist known for the pioneering work in CRISPR gene editing for which she was awarded 2020 Nobel Prize in chemistry.

EMMMANULLE CHARPENTIER
1968

Charpentier is best known for her Nobel winning work (2020) of deciphering the molecular mechanisms of a bacterial immune system called CRIPSR/case 9, and repurposing it into a tool for genome editing.

II MSc CHEMISTRY

Report on Departmental Activities and achievements

Post graduate and Research Department of Chemistry organized so many activities in the academic year 2020-2021. Being a research department under University of Kerala the researchers and faculties of the department participated in various conferences and presented papers in the year 2020-2021.

- During the outbreak of COVID-19, the department of chemistry in March 2020 has initiated a small-scale production of Hand Sanitizer and distributed free of cost to students and staff of our college, railway station; Kollam, valuation camp of University of Kerala at SN College for women, Kollam and Aghathi Mandiram, Mundakkal, Kollam etc.
- As a part of International Webinar Series 'Crossroads 2020', organized by Sree Narayana College for women, Kollam in association with IQAC, a session on the topic 'Nanotechnology against COVID-19' was conducted by Department of chemistry, Sree Narayana College for women, Kollam on 23rd July 2020 from 2:30 pm to 4:00 pm. The session was handled by eminent academic researcher, Dr. Debora Puglia, University of Perugia, Italy.
- Our department has conducted an International webinar on the topic 'How to publish scientific papers: why you win or lose' in Association with the Research committee of the College on 31-10-2020. The talk was delivered by Dr. Mohammad reza Seab, Invited lecturer, University of Tehran, Iran.
- Every year Department of Chemistry is organizing a One-day Meal Programme at Mundakkal Agathi Mandiram. In the current pandemic situation of Covid-19 there was an exclusion of student arrival and food distribution. Instead, the faculties went to the Agathi Mandiram on 28/12/2020 and donated money for food.
- The department also assist the deserving students by giving them special training for IIT JAM.

Achievements of Students and Faculties

- II DC students Midhula A S and Nehinsha L S represented from Chemistry department in College Thiruvathira team and the team got first prize in University Kalolsavam.
- II DC student Jyothika P got second prize for English story writing in University Kalolsavam.
- II DC students Archana Anilkumar and Nehinsha L S represented from Chemistry department in College Roll ball team and got third prize in Intercollege Roll ball competition.
- MSc students Anu S, Anjana Krishna S V and Safna A S secured 1st, 2nd and 3rd rank in Kerala University PG Examination 2020.
- Saiga S secured A+ grade (CGP - 9.037) in Kerala University UG Examination 2020.
- PhD degree was awarded to two of our research scholars; Renjini S (Assistant Professor, Department of Chemistry, SNCW Kollam) and Pinky Abraham (Assistant Professor, Department of Chemistry, SG Coolege Kottarakkara) in 2020.
- Dr. Archana S R got IASc-INSA-NASI Summer Research Fellowship in 2020

Archana Anilkumar
II DC Chemistry

Midhula A S
II DC Chemistry

Nehinsha L S
II DC Chemistry

Jyothika P
II DC Chemistry

Anu. S
Ist Rank MSc

Safna A S
IIIrd Rank MSc

Anjana Krishna S V
IInd Rank MSc

Sariga R
UG Topper (9.037)

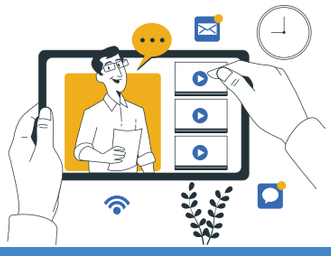
Achievements of Students and Faculties

Sanitising students hands while entering to college to attend university examination

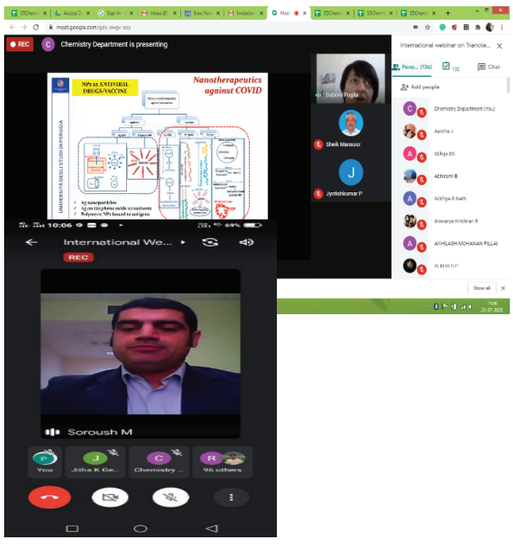
One batch of hand sanitiser handed over to Aghathi Mandiram, Mundakkal, Kollam

One batch of hand sanitiser handed over to station master, railway station, Kollam.

SANITISER PRODUCTION AND DISTRIBUTION



DURING INTERNATIONAL WEBINARS



ONE DAY MEAL PROGRAMME AT AGATHI MANDIRAM MUNDACKAL