

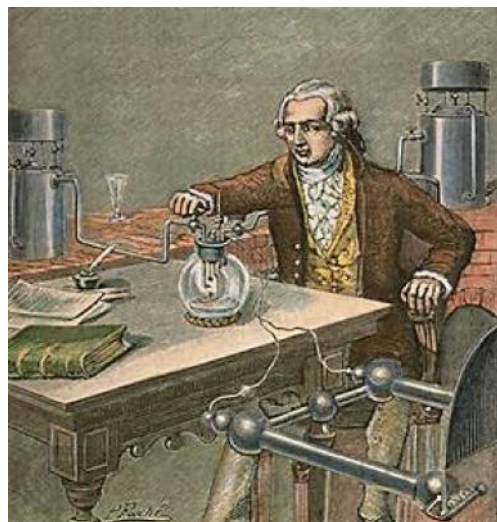
RED CARPET

Lavoisier- An epitome of Science and Humanity

-A.Sudha (I B.Sc) & B.Sahila Banu (I B.Sc)

Antonie Laurent Lavoisier, also known as the Father of Chemistry was born in Paris in August 26, 1743 to Jean Antonie Lavoisier and Emili Punctis His mother died when he was 5 years old. At the age between 11 and 18, he was educated at Quatre Nations in Paris.

He was very much attracted to the science lectures in addition to law lectures. In 1764, he published his first scientific paper. In the same year, he was selected to the French Academy of Sciences. At the age of 28, he married Marie Annie Pierrette Paulze who was fifteen years younger to him. She was very intelligent. She became Antonie's assistant, helping him with his experiments and publications.



Lavoisier was a humanitarian – he cared deeply about the people in his country and often devoted himself in improving their livelihood by agriculture, industry and science. He has discovered the elements Oxygen (1778), Hydrogen (1783), Silicon (1787) and Sulphur (1777). In 1766 (age 23), this remarkable Scientist was the recipient of a gold medal presented by the French emperor. The Chemist had written a well appreciated essay that suggested solutions to the difficulties of providing light to the roads in a city. Lavoisier was not only a great scientist but also a good social reformer.

A.P.C Mahalaxmi College for Women (Re-accredited by NAAC with 'A' Grade) Thoothukudi.

DEPARTMENT OF CHEMISTRY

CHEMTALK

A Students' magazine

Edition I, Volume I
23/02/2018



This edition brings to you an interesting article about a novel method for detection of bacteria. Besides these, Vogel's Inorganic qualitative analysis book and Lavoisier's humanity are also discussed.

From Editors Desk

Dear Readers,

We have immense pleasure in introducing our departmental biannual magazine 'CHEMTALK'. The magazine focuses on various fields of chemistry in an entirely new way which lures the readers towards modern chemistry. With a view of bringing out the inherent potential of our students, and also to develop scientific interest in the minds of budding chemists, we have enriched our magazine with interesting features. We hope the magazine will serve its purpose.

- *Editor*

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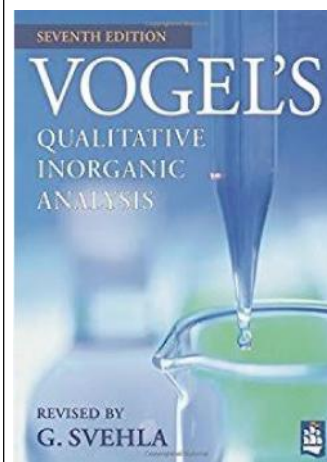
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EAGLE'S VIEW

Vogel's Qualitative Inorganic Analysis

- **S. Aishwarya (II B.Sc.,)**

Vogel Arthur Israel (1905-1966) British was an organic chemist born and educated in London. He spent his career at Woolwich Polytechnic from 1932. In 1934, he became head of the department of Chemistry. He has 11 books on Goodreads with 65 rating. His most popular book is Vogel's Qualitative Inorganic Analysis.



Vogel's Qualitative Inorganic Analysis provides an accurate knowledge about Spectrometric tests to quickly identify the metal ions. The author has explained clearly with elaborate information. Besides this, many experimental techniques and safe handling of poisonous gas and poisonous substance were added which are very much useful for the beginners. Not only the practical part, but also the theoretical part excels in providing explanation for many schematic analysis and gives clear and vast information about the procedure.

In the seventh edition, G.Svehla Ph.D., D.Sc., F.R.Sc. formerly Professor of Analytical Chemistry has given some additional and new information which is useful to the readers. Arranged alphabetically, the appendix provides a complete knowledge to prepare reagent and solution. Hence it serves as a reservoir of information for both students and teachers. The note worthy part of this book is the identification of anions and cations. The group separations are tabulated in order for better understanding and to perform the analysis with ease. Selected tests, separations and reactions of some less common ions are provided as separate chapters so that it will be very easy for the reader to identify or search what they want.

CHEM CURRENTZ

Low-cost chip for detecting bacteria in food and water

-R.Thivya Vanathi (III B.Sc) & R.Yamuna Karthika (III B.Sc)

Food scientist Lili He and colleagues at the University of Massachusetts Amherst reported that they have developed a rapid and low-cost method for detecting bacteria in water or a food sample. Once commercially available, it should be useful to cooks using fresh fruits and vegetables.



An Analytical Chemist and expert in finding methods for food contamination, Lili He says, “Most people around the world now a days like to eat raw vegetables and fruits. This gave us the idea that a speedy test done at home would be a good idea.”

With associate food science researcher Lynne McLandsborough and their students, Lili He reported on their new two-step method — one optical, one chemical — in two papers this year, one in a recent issue of Food Microbiology scheduled for publication in 2018, and an earlier one in the Royal Society of Chemistry’s journal, *Analytical Methods*.



For this work, they designed a sensitive and reliable bacteria-detecting chip that can test whether fresh spinach or apple juice is loaded with bacteria. The chip, used with a light microscope for optical detection, relies on what Lili He calls a “capture molecule,” 3-mercaptophenylboronic acid (3-MBA) that attracts and binds to any bacteria. The chemical detection method involves “Surface-Enhanced Raman Spectroscopy” (SERS) and relies on silver nanoparticles. The techniques are now in the patenting process.



Image credit: UMass Amherst

To deal with the food interference problem, the researchers designed the UMass Amherst chip to attract only microbes but not sugars, fats and proteins in food or dirt. The food compounds can be washed away with pH buffer which leaves only bacteria for visual counting with the smart phone microscope and app. This method can sense as few as 100 bacteria cells per 1 milliliter of solution, compared to a sensitivity of 10,000 cells as in other rapid methods.

Mr. UNKNOWN

Simple way to check milk adulteration

-A.Sudha (I B.Sc.)

1) Synthetic milk:

Synthetic milk is made by mixing chemicals and things like soap in natural milk. Synthetic milk can be easily identified by bad taste. It feels soapy when rubbed and turns yellowish when heated.



2) Water in milk:

Water in milk may not be bad for your health but definitely for your pocket. To check, put a drop of milk on your fist or any slanted surface and let it flow down. If the milk leaves a trail behind, it is not pure else its good.

3) Vanaspathi/Dalda:

Vanaspathi is not good for health if consumed in big quantity. To check if milk is adulterated with vanaspathi, add 2 tablespoon of hydrochloric acid and 1tbsp of milk. If the mixture turns red, it’s impure.

4) Starch:

If your vendor has added starch to milk you can detect it by adding 2 tablespoon of salt to 5ml of milk. Mixture will turn blue if milk is adulterated else it remains intact.

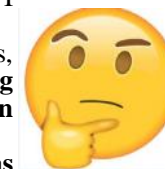
5) Urea:

Take a teaspoon of milk in a test tube. Add half teaspoon of soyabean or arhar powder. Mix the contents thoroughly by shaking the test tube. Dip a red litmus paper after half a minute. A change in colour from red to blue indicates the presence of urea in milk.

THINK A WHILE.....

-A.Saranya (II B.Sc.,)

1. Two things are infinite: the universe and the human stupidity; I am not sure about the universe. - **Albert Einstein**
2. It is strange that only extraordinary men make the discoveries, which later appear to be easy and simple. - **Georg C.Lichtenberg**
3. There is no law except the law that there is no law. - **John Archibald Wheeler**
4. Falsity intellectual action is intellectual immorality - **Thomas Chrowder Chamberlin**
5. Science without religion is lame, religion without science is blind -**Albert Einstein**
6. A man who dares to waste one hour of time has not discovered the value of life - **Charles Darwin**
7. The good thing about science is that it is true whether or not you believe in it - **Neil deGrasse Tyson**
8. You cannot teach a man anything; you can help him discover it in himself - **Galileo**



CHEMYSTERY

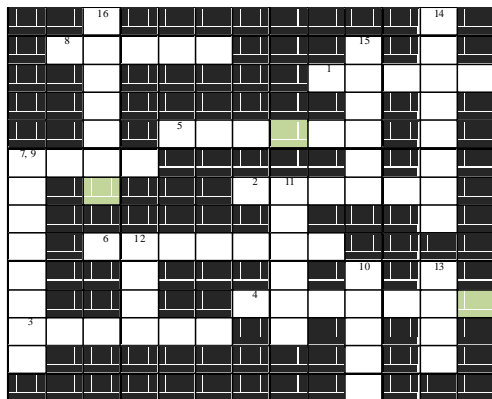
-M.Uma Devi (III B.Sc.,)

Right to left:

1. Name of stranger gas.
2. Hydrated Alumino silicate or clay.
3. Class of light sub atomic particles. The electrons belong to this class.
4. Chloropicrin is also known as ____.
5. A nucleus of hydrogen isotope Tritium.
6. The regular dimensional arrangement formed in crystals.
7. Calcium and Phosphate content in human body.
8. Alloy of 70% Cu and 30% Zn.

Top to bottom:

9. Inorganic Benzene.
10. Sodium chloride solution.
11. Alloy of Aluminium used in sea ship.
12. Foul air (Nitrogen).
13. Pure Magnesium silicate.
14. Carbonyl chloride is also known as ____.
15. Nucleus and inner shell of electron of an atom.
16. The only liquid non-metal.



Send in your answers to chemtalk123@gmail.com
 Cash award of Rs.100 will be given to puzzle solver. If there is more than one correct answer, the first one will be given the cash prize. Please provide your name, course and College name along with your mail.

Departmental Activities

Inauguration of Chemistry Association:

Chemistry Association was inaugurated on 21.08.2017. Ms.M.Uma Devi of III B.Sc., Chemistry and Ms.P.J.Divya Devi of II B.Sc., Chemistry was elected as President and Secretary respectively.

Guest lecture:

A Career guidance programme was organised on 28.07.2017. Ms.T.Vidhya, Assistant Professor of Chemistry, Holycross Engineering College, Vagaikulam, addressed the students on “**How to clear CSIR-NET and SET Exam**”. Alumni Meet was also conducted on the same day.

A guest lecture was organised on 06.02.2018 and Dr.R. Rama Subramanian, Assistant Professor of Chemistry, V.O.C. Engineering College, Anna university campus, Thoothukudi, delivered a lecture on “**Co-crystals**”.

Industrial visit:

III UG and PG students of chemistry went on an **Industrial visit to NLC** Tamil Nadu Power Limited, Thoothukudi, on 15.12.2017.

Student Centered Programme was organised on 29.12.2017 and various competitions like Bridal makeup, Hair do, Mehendi, Quiz and Connection were conducted. Dr.D.Shanmuga Priya, Assistant Professor of Chemistry and Ms.V.Selva Lakshmi, Lawyer, served as the judges for the same.

International conference:

2nd International Conference on “Material Science and Technology” was organized on 23.02.2018. Dr.M.Kamalutheen, Dean of Sciences, Head and Associate Professor of Chemistry, Sadakthullah Appa College, Tirunelveli inaugurated the seminar. Dr.Shinisha Sujesh, Lecturer, Department of Applied Sciences, Muscat, Oman, Dr.E.Vadivel, Assistant Professor, PG Department of Chemistry Research Centre, Dynanprassark Mandal’s College of Arts, Science and Commerce, Mapusa, Goa and Dr.N.Jeyakumaran, Associate Professor of Physics, VHNSN College, Virudhunagar were the invited resource persons and 100 students from various Colleges were participated. Poster presentation competition was also conducted.