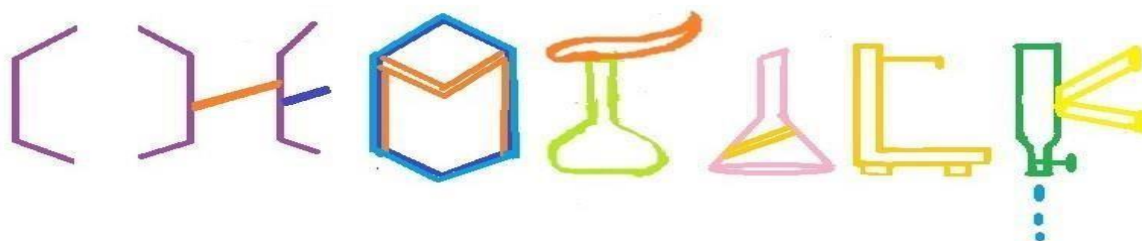


A.P.C.Mahalaxmi College For Women

Thoothukudi.

PG & Research Department of Chemistry



A Students 'Magazine

Edition I, Volume XIV

10/11/2024



---

This edition brings an article with chem Fact,. Besides this, Chem innovation and chemystery also discussed.

PG & Research Department of Chemistry, A.P.C.Mahalaxmi college for Women

## **From Editor's Desk**

Dear Readers,

As our Government has strongly enforced plastic ban, we have also tried to take a step towards environmental protection by publishing a novel method of plastic degradation. To give a new perspective of chemistry to readers, we have introduced chemfiction, i.e. a fictional story on chemistry. We assure that this edition will satisfy the expectation of the readers.

**- Editor**

## **Editorial**

Editor :**Dr.H.KohilaSubathra Christy**, M.Sc., M.Phil.,Ph.D.,

Head and Assistant Professor of Chemistry

### **Associate Editors :**

**Dr.D.ShanmugaPriya**, M.Sc., M.Phil., Ph.D

Assistant Professor of Chemistry

**Ms.P.Gurulakshmi**, M.Sc.,M.Phil.,B.Ed.,

Assistant Professor of Chemistry

### **Executive Editors :**

**S.Usha**(II B.Sc.), **R.P. Thanga Jothi**(I B.Sc.)

**M.Yuvarani** (III B.Sc.),**S.Santhiya** (III B.Sc.,)

### **Editorial Board :**

**Dr. P. Yokeswari Nithya**, M.Sc., M.Phil., Ph.D., Asst. Prof. of Chemistry

**Dr. S. Sankaravadivu**, M.sc.,Ph.D., Asst. Prof. of Chemistry

**Dr.C.StellaPackiam**, M.Sc., Ph.D., Asst. Prof. of Chemistry

**Dr. S.Kalaiarasi**, M.Sc., M.Phil., B.Ed.,Ph.D., Asst. Prof. of Chemistry

**Dr.T.Akkini Devi**, M.Sc.,M.Phil.,Ph.D., Asst. Prof. of Chemistry

**Mrs.J.Jeyapratha**, M.Sc., M.Phil.,Asst. Prof. of Chemistry

Publisher :**Department of Chemistry**,

A.P.C.Mahalaxmi College for Women, Thoothukudi.

Email : chemtalk123@gmail.com

## **DEPARTMENTAL ACTIVITIES**

Student Induction Programme was conducted by our department from 20.06.2024. The following topic of Awareness on Health by Dr. K. Jothilakshmi, Asst. Prof., of Commerce UA, A.P.C, Mahalaxmi College for Women, Thoothukudi. She spoke about how to get an awareness about health.

A Guest lecture was conducted at 3.00 p.m. on 26.06.2024. Dr. H. Kohila Subathra Christy, Head & Associate Professor of Chemistry welcomed the gathering. Dr. A. Mathavan, Head & Associate Professor of Chemistry, V.O. Chidambaram College, Thoothukudi delivered a talk on Thermodynamics. All UG and PG students attended the function. Dr. P. Yokeswari Nithya, Assistant Professor, Department of Chemistry, A.P.C. Mahalaxmi College for Women, Thoothukudi delivered the formal vote of thanks.

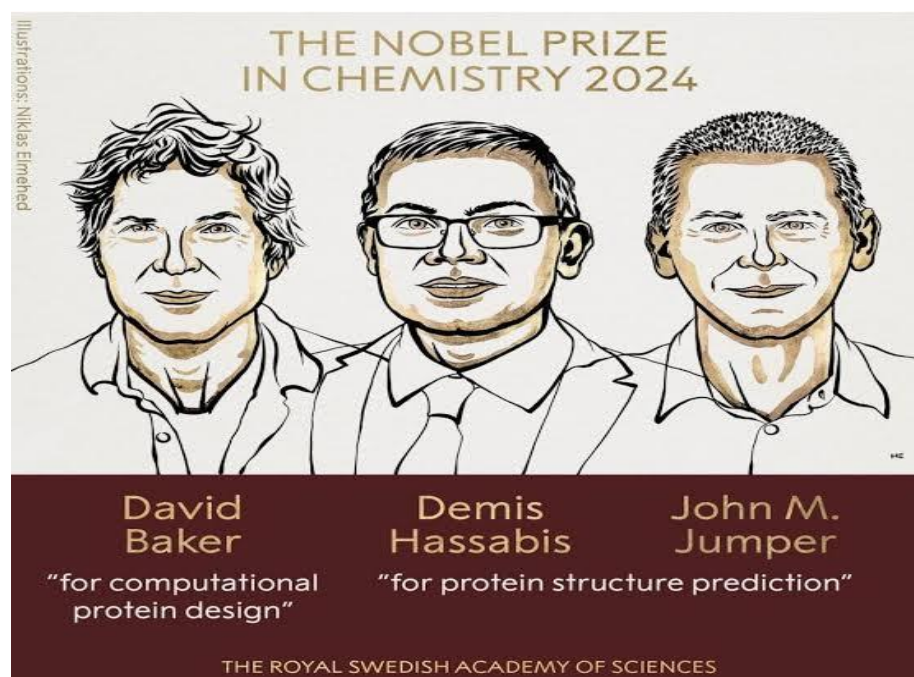
The 77<sup>th</sup> Independence Day was celebrated at the College premises by the Department of Chemistry on August 15<sup>th</sup>, 2025 at 8.30 a.m. Mr. V. Kandasamy, Retired Bank Manager, Central Bank of India, Member VOC Educational Society, Thoothukudi invited to hoist the National flag. To commemorate the sovereignty of our country the Chief guest unfurled the tricolor and accepted the guard of honour in the backdrop of melodious notes of the flag song along with the dignitaries and expressed the joy of freedom.

On behalf of the Chemistry association, an alumnae meet was conducted at 10.00 a.m on 15.08.2024. Dr. H. Kohila Subathra Christy, Head & Associate Professor of Chemistry welcomed the gathering. Alumni of various batches attended the function. Ms. M. Soundharya, Technical Counsulant in Mineman systems, Thoothukudi alumna of Chemistry shared her memories also and Games were conducted especially for alumni students. Dr.S.Sankaravadivu delivered the formal vote of thanks.

Dr. N. Rathna, Asssistant Professor of Physics, A.P.C. Mahalaxmi College for Women, Thoothukudi delivered a talk on Leverage Emerging Technologies to improve Water Resource Assessments on 30.08.2024 followed by Dr. H. Kohila Subathra Christy welcomed the gathering. She spoken about the emerging technologies to improve water resources and create an awareness among the studentsDr.S.Sankaravadivu delivered the formal vote of thanks.

## Nobel Laureates in Chemistry

. S.Sridevi (III B. Sc., Chemistry)



The Royal Swedish Academy of Sciences has decided to award the 2024 Nobel Prize in Chemistry for three scientists. According to a statement from the Academy, one half of the award will be given to David Baker “for computational protein design” and the other half jointly to Demis Hassabis and John M. Jumper “for protein structure prediction.”

David Baker, from the University of Washington, Seattle, won for his pioneering research in computational protein design. His team, according to the citation by the Nobel committee, successfully created entirely new proteins with uses in medicine, vaccines, and nanotechnology.

Demis Hassabis, CEO of Google DeepMind, and John Jumper, a senior researcher at DeepMind, shared the prize for their work on protein structure prediction. In 2020, they introduced AlphaFold2, an AI model that solved the complex issue of predicting how proteins fold, a challenge that had perplexed scientists for 50 years. Their AI system accurately predicted the structure of almost all known proteins, significantly advancing research in areas such as antibiotic resistance and enzyme design.

Both discoveries mark monumental steps in protein science. By allowing scientists to design and predict proteins, these advances promise, according to a press release from the Academy, to revolutionise fields like drug development and environmental solutions. The ability to manipulate and understand proteins opens vast possibilities for future scientific breakthroughs.

## Chem Fact

---

S.Usha (IIB. Sc., Chemistry)

- Hot peppers get their heat from a molecule called capsaicin. While the molecule acts as an irritant to mammals, including humans, birds lack the receptor responsible for the effect and are immune to the burning sensation from exposure.
- It's possible to die from drinking too much water, a lesser-known chemistry fact.
- The only solid elements that assume liquid form at room temperature are bromine and mercury. However, you can melt gallium by holding a lump in the warmth of your hand.
- Unlike many substances, water expands as it freezes, a well-known chemistry fact. An ice cube takes up about 9% more volume than the water used to make it.
- If you pour a handful of salt into a full glass of water, the water level will actually go down rather than overflowing the glass.
- Similarly, if you mix half a liter of alcohol and half a liter of water, the total volume of the liquid will be less than one liter.
- There is about 0.4 pound or 200 grams of salt (NaCl) in the average adult human body.
- A pure element takes many forms. For example, diamond and graphite both are forms of pure carbon.
- Many radioactive elements actually glow in the dark

## Chem Innovation

M.Santhiya (II B. Sc., Chemistry)

---

### Artificial Intelligence

AI streamlines research, development, and production through advanced computational techniques. Deep learning models analyze complex chemical structures and predict reactions to enable faster and more accurate discoveries. Reinforcement learning optimizes chemical processes by improving decision-making based on real-time data to enhance efficiency and reduce waste. In chemoinformatics, natural language processing (NLP) extracts insights from vast scientific literature and databases by discovering new materials and formulations. Additionally, digital twins create virtual simulations of chemical plant operations for process optimization to minimize downtime and improve overall operational efficiency.

### Practical Use Cases of AI in Chemicals

- **Process Optimization:** AI-driven algorithms continuously analyze real-time chemical process data to detect hidden patterns and inefficiencies. This advanced analysis allows chemical manufacturers to make dynamic adjustments to production parameters, optimize resource use, enhance yield, save cost, and minimize waste.
- **Predictive Maintenance:** AI tools monitor the performance of chemical processing equipment through continuous data collection for early detection of anomalies that indicate potential failures. By predicting maintenance needs before breakdowns occur, these tools prevent unplanned downtime, extend the operational lifespan of machinery, and reduce disruptions to production.
- **Quality Control:** AI-powered systems assess product quality by analyzing data from multiple stages of chemical production. This continuous monitoring ensures that each batch consistently meets the quality standards to reduce defects and rework, and enhance overall product reliability.

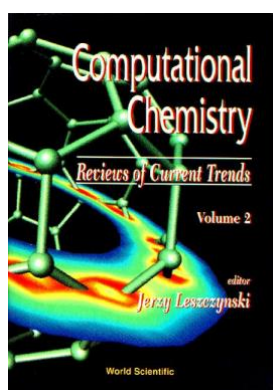
## Eagle View

**B.Vinothini (II M. Sc., Chemistry)**

---

### Computational Chemistry: Reviews of Current Trends

- Edited by:
- Jerzy Leszczynski (Jackson State University, USA)



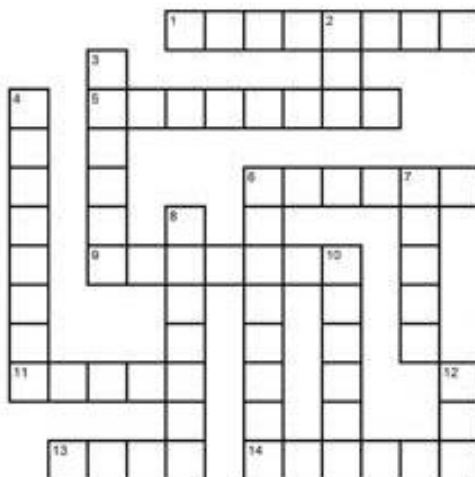
The contributions collected in this volume complement volume 1 of this series, disclosing results of current developments in methodologies and applications of computational chemistry methods. The covered topics include fundamentals and applications of propagator calculations, as well as recent developments in the computationally efficient and accurate SAC-CI method, which allows calculation of various electronic states at the same time. SAC-CI studies of excited states of large molecular systems like porphyrins are reviewed, and its application to investigations of surface phenomena is discussed. The book also features a review of recent work on quantum Monte Carlo simulations.

Furthermore, the book discusses the application of computational methods to biomolecules and, in particular, the application of the DFT methods to prediction of molecular structures and the IR spectrum of the DNA bases, as well as currently developed force field parameters and their application in molecular dynamics calculations of biologically important molecules. Lastly, there is a review of a quantum chemistry course which prepares students at the Department of Chemistry of ETH Zurich to perform their own ab initio studies.

## CHEMYSTERY

J.Kiruthika(I M. Sc. Chemistry)

---



### Across

1. The subatomic particle of an atom that has a negative charge is called a(n) \_\_\_\_\_.
5. A chemical \_\_\_\_\_ occurs when 2 or more molecules interact with each other causing the molecules to change.
6. The 4 fundamental states of matter are: solid, liquid, gas and \_\_\_\_\_.
9. The subatomic particle of an atom that does not have an electric charge is called a(n) \_\_\_\_\_.
11. The \_\_\_\_\_ gases are found in group 18 of the periodic table, the last column on the right (helium, neon, argon, krypton, xenon & radon).
13. The amount of matter in a object
14. Organic chemistry is the branch of chemistry that deals with compounds containing \_\_\_\_\_.

### Down

2. How many hydrogen atoms are in a molecule of water?
3. The positively charged subatomic particle in the nucleus of an atom is called a(n) \_\_\_\_\_.
4. The chemical element with atomic number 1, it's the first element in the periodic table.
6. The \_\_\_\_\_ table is a tabular arrangement of the elements.
7. A type of material that is considered a good conductor of electricity and heat
8. The central core of the atom containing protons and neutrons
10. The atomic \_\_\_\_\_ is the number of protons in an atom.
12. A charged atom or molecule (the number of electrons is not equal to the number of protons)

Please send your answers to [chemtalk123@gmail.com](mailto:chemtalk123@gmail.com). Cash award Rs.100 will be given to puzzle solver. The winner of the previous Chemystery puzzle is B.Vinothini (II M.Sc.).The Correct answers are **Across:** 2.Element 4.Product 5. Compound 8.Mixture 9.Flammable 10. State symbols  
**Down:** 1.Reactant 3.Solution 6.corrosive 7.atom