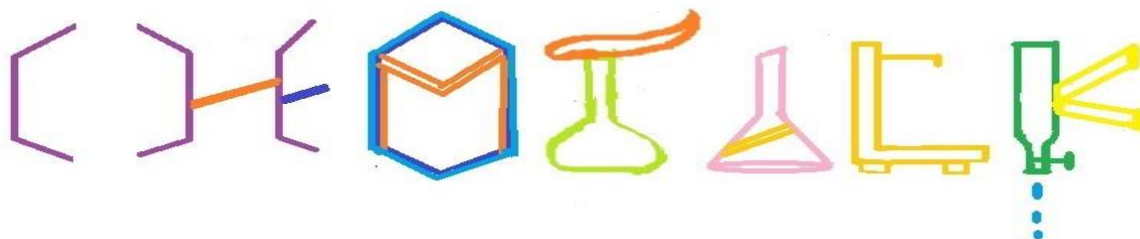


CHEMTALK 2023

A.P.C.Mahalaxmi College For Women

Thoothukudi.

Department of Chemistry



A Students' Magazine

Edition I, Volume XII

10/11/2023



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

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

Page 1

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

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DEPARTMENTAL ACTIVITIES

On behalf of Chemistry association, Dr. M. Kamalutheen, Associate Professor, Sadakthullah Appa College, Tirunelveli delivered a talk on How to become a Successful Entrepreneur on 30.12.2022 for chemistry students. The students gather more knowledge about innovation in chemistry as well as collect information for entrepreneur in various fields of Chemistry. He gave more information about successful Entrepreneur.

On behalf of the chemistry association, an alumnae Mrs. U. Selvi, Headmistress, Government Higher Secondary School, Kovilpatti delivered a talk about how to face problems in current situation. Alumnae shared their memories.

Department of Chemistry, A.P.C Mahalaxmi College for Women, Thoothukudi observed National Girl Child day by organising a gender equity programme on 24th January 2023 to create awareness about the rights of the girl child, to remove gender-based bias and education of girl child, child marriage, various schemes for the girl child and empowering the girl child. They also added up on sensitizing the participants on the ill effects of dowry, hazards of domestic violence and child labour. Dr.H.Kohila Subathra Christy, Head and Assistant Professor of Chemistry welcomed the guest and participants.

Mrs.K.Kalaiselvi, Panel Advocate, DLSA, Thoothukudi was the invited chief guest. In her speech, she said that the girls around the world continue to face unprecedented challenges to their education, their physical and mental wellness, and the protections needed for a life without violence. Girls with disabilities face additional barriers to accessing support and services. COVID-19 has worsened existing burdens on girls around the world and worn away important gains made over the last decade. With adversity, however, comes **resourcefulness, creativity, tenacity, and resilience**. The world's 600 million adolescent girls have shown time and time again that given the skills and the opportunities, they can be the **changemakers** driving progress in their communities, building back stronger for all, including women, boys and men. Dr.D.Shanmuga Priya, Assistant Professor of Chemistry, NSS Programme officer proposed the formal vote of thanks. All the chemistry students have actively participated in the programme.

The International Web Conference in “Recent Advancements in Chemical Sciences and Intellectual Property rights (RACSIPR ‘23) was organized by the PG and Research Department of Chemistry, A.P.C. Mahalaxmi College for Women. The main aim of this conference was to bring together leading academicians, researchers and students to exchange and share their experiences and research outputs on all aspects of Chemical Sciences. It was also meant to provide a premier interdisciplinary platform to present and discuss the most recent innovations, trends and concerns as well as practical challenges encountered and solutions adopted in the field of Chemical Sciences. The conference preparations started with the call for abstracts; 88 abstracts were received out of which 75 were accepted. Selected research abstracts have been compiled and edited in the form of Conference Proceedings with ISBN and published by Shanlax Publisher. The technical sessions followed the inaugural session and the main keynote lecture was delivered by Dr. N.S.K. Gowthaman, Post-Doctoral Researcher School of Engineering, Monash University, Malaysia. The conference comprised of three technical sessions, some of them scheduled concurrently. The first session on “Innovation, Invention and startup via IPR” was handled by Dr. T. Arockiadoss, Assistant Professor and Head i/c, Deputy Coordinator, Technology Support Centre, Madurai Kamaraj University, Madurai. “Carbon Quantum Dots: An Economical Sustainable Opto Electro-catalyst in Sensing Applications” was the topic delivered by Dr. N.S.K. Gowthaman Post-Doctoral Researcher School of Engineering, Monash University, Malaysia. The final technical session was handled by Dr. P. Pon Sathiesh Kumar, Senior Postdoctoral Researcher, POSTECH, South Korea on the topic “Supramolecular Approaches for the Advancements in Materials Chemistry”. The conference was structured to foster discussion between participants.

The paper presentation session was chaired by Dr. Chandralekha, Head and Assistant Professor of Chemistry, Kamaraj College, Thoothukudi. Faculties, research scholars and students from the host institution and other institutions presented their research work enthusiastically. Best presenter awards were given to participants in four categories i.e, Faculty, research scholar, PG students and UG students based on novelty, presentation and response to questions. The one day virtual Conference ended with a valedictory session. The welcome speech in the session was delivered by Dr.P.Yokeswari Nithya, Assistant Professor of Chemistry. This was followed by a valedictory address by Dr.Chandralekha, Head and Assistant Professor of Chemistry, Kamaraj College, Thoothukudi. A few delegates gave a feedback on the Conference and the session

concluded with a vote of thanks proposed by Dr.S.Sankaravadivu, Assistant Professor of Chemistry

Nobel Laureates in Chemistry 2023

T.Subbulakshmi-(II M. Sc. Chemistry)

Moungi G. Bawendi

Massachusetts Institute of Technology (MIT), Cambridge, MA, USA

Louis E. Brus

Columbia University, New York, NY, USA

Aleksey Yekimov

Nanocrystals Technology Inc., New York, NY, USA



“for the discovery and synthesis of quantum dots”

They planted an important seed for nanotechnology

The Nobel Prize in Chemistry 2023 rewards the discovery and development of *quantum dots*, nanoparticles so tiny that their size determines their properties. These smallest components of nanotechnology now spread their light from televisions and LED lamps, and can also guide surgeons when they remove tumour tissue, among many other things. The Nobel Laureates in Chemistry 2023 have succeeded in producing particles so small that their properties are determined by quantum phenomena. The particles, which are called quantum dots, are now of great importance in nanotechnology.

“Quantum dots have many fascinating and unusual properties. Importantly, they have different colours depending on their size,” says Johan Åqvist, Chair of the Nobel Committee for Chemistry. Physicists had long known that in theory size-dependent quantum effects could arise in nanoparticles, but at that time it was almost impossible to sculpt in nanodimensions. Therefore, few people believed that this knowledge would be put to practical use.

However, in the early 1980s, **Aleksey Yekimov** succeeded in creating size-dependent quantum effects in coloured glass. The colour came from nanoparticles of copper chloride and Yekimov demonstrated that the particle size affected the colour of the glass via quantum effects. A few years later, **Louis Brus** was the first scientist in the world to prove size-dependent quantum effects in particles floating freely in a fluid. In 1993, **Moungi Bawendi** revolutionised the chemical production of quantum dots, resulting in almost perfect particles. This high quality was necessary for them to be utilised in applications.

Quantum dots now illuminate computer monitors and television screens based on QLED technology. They also add nuance to the light of some LED lamps, and biochemists and doctors use them to map biological tissue.

Quantum dots are thus bringing the greatest benefit to humankind. Researchers believe that in the future they could contribute to flexible electronics, tiny sensors, thinner solar cells and encrypted quantum communication – so we have just started exploring the potential of these tiny particles.

Chem Innovation

K.Abitha (III B. Sc., Chemistry)

New Method Verifies Carbon Capture in Concrete

Carbon capture is essential to reduce the impact of human carbon dioxide emissions on our climate. Researchers at the University of Tokyo and Nagoya University in Japan have developed a method to confirm whether carbon in concrete originates from the raw materials, or from carbon in the air which has been trapped when it reacts with the concrete to form the mineral calcium carbonate. By measuring the ratio of certain carbon isotopes in concrete that had been exposed to the air and concrete that hadn't, the team could successfully verify that direct air carbon capture had occurred. This method could be useful for the industrial sector and countries looking to offset their carbon emissions.

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EAGLE VIEW

B.Vinothini (I M. Sc., Chemistry)

Nanomaterials: Science and Applications

By

[Deborah M. Kane](#), [Adam Micolich](#), [Peter Roger](#)



Nanomaterials: Science and Applications reports up-to-the-minute research on nanoparticles for drug delivery and applications in nanomedicine, nanoelectronics, and microelectromechanical systems (MEMS) for biosensors; melanin as a nano-based future material; nanostructured materials for solar cell applications; the world of quantum dots illustrated by CdSe; and gas transport and transport-based applications of electrospun nanofibers. The research is

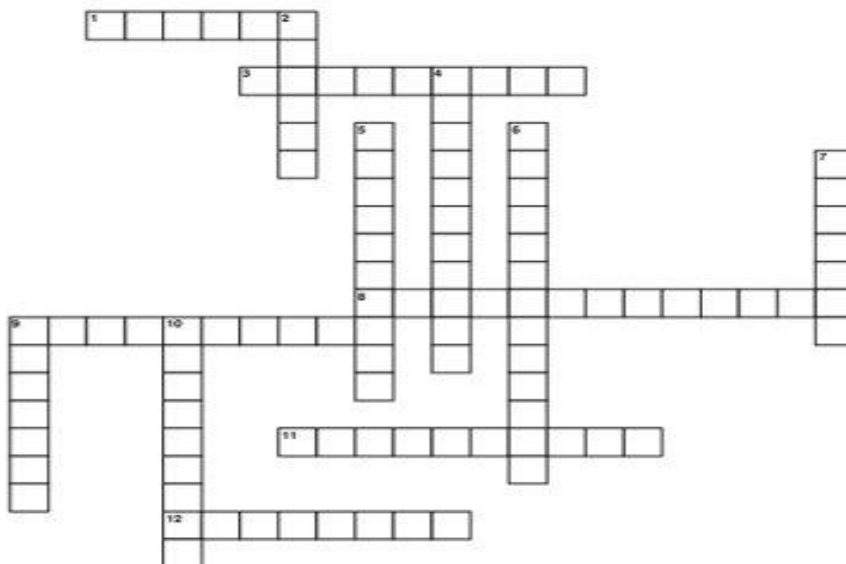
primarily undertaken within Australia and gives an excellent overview of topics in advanced nanomaterials and structures and their applications.

The reader also gets a tutorial introduction to the computer software used to generate 3D illustrations that are used throughout the book. The first authors are early-career researchers from the Australian Nanotechnology Network

CHEMYSTERY

-S.Subbu Shanmuga Priyadharshini (II M. Sc. Chemistry)

Real Life Chemistry



Across

- [1] process that increases the pH of a lake to help the organisms that live there
 [3] process by which oxygen causes metal to break down
 [6] the greatest worry of acid rain is the _____ of oceans
 [9] acid rain is also known as acid _____
 [11] _____ gas is a type of substance leads to the warming of the Earth's surface (2 words)
 [12] _____ oxides cause acid deposition

Down

- [2] _____ warming increase in the Earth's average temperature (2 words)
 [4] _____ metal is an inexpensive substance coating an object to prevent corrosion (2 words)
 [5] human made substances that lead to acid deposition
 [6] the process of coating a metal with another metal to more permanently protect it from the environment
 [7] another term for the corrosion of metal
 [9] sulfur _____ is a pollutant
 [10] process that removes sulfur from coal before it is burned

Please send your answers to chemtalk123@gmail.com. Cash award Rs.100 will be given to puzzle solver. The winner of the previous Chemystery puzzle is S.Suba Lakshmi (II M.Sc.).The Correct answers are 1.Acid 2.Bitter 3.Sour 4.Hydronium 5.Acidity 6.water 7.Blue 8.P^H 9.Hydrochloric 10.Litmus 11.Ion 12.Neutralisation 13.Alkalinity 14.Salt 15.Lye 16.Crystal 17.Red