ASSOCIATION OF CHEMISTRY TEACHERS

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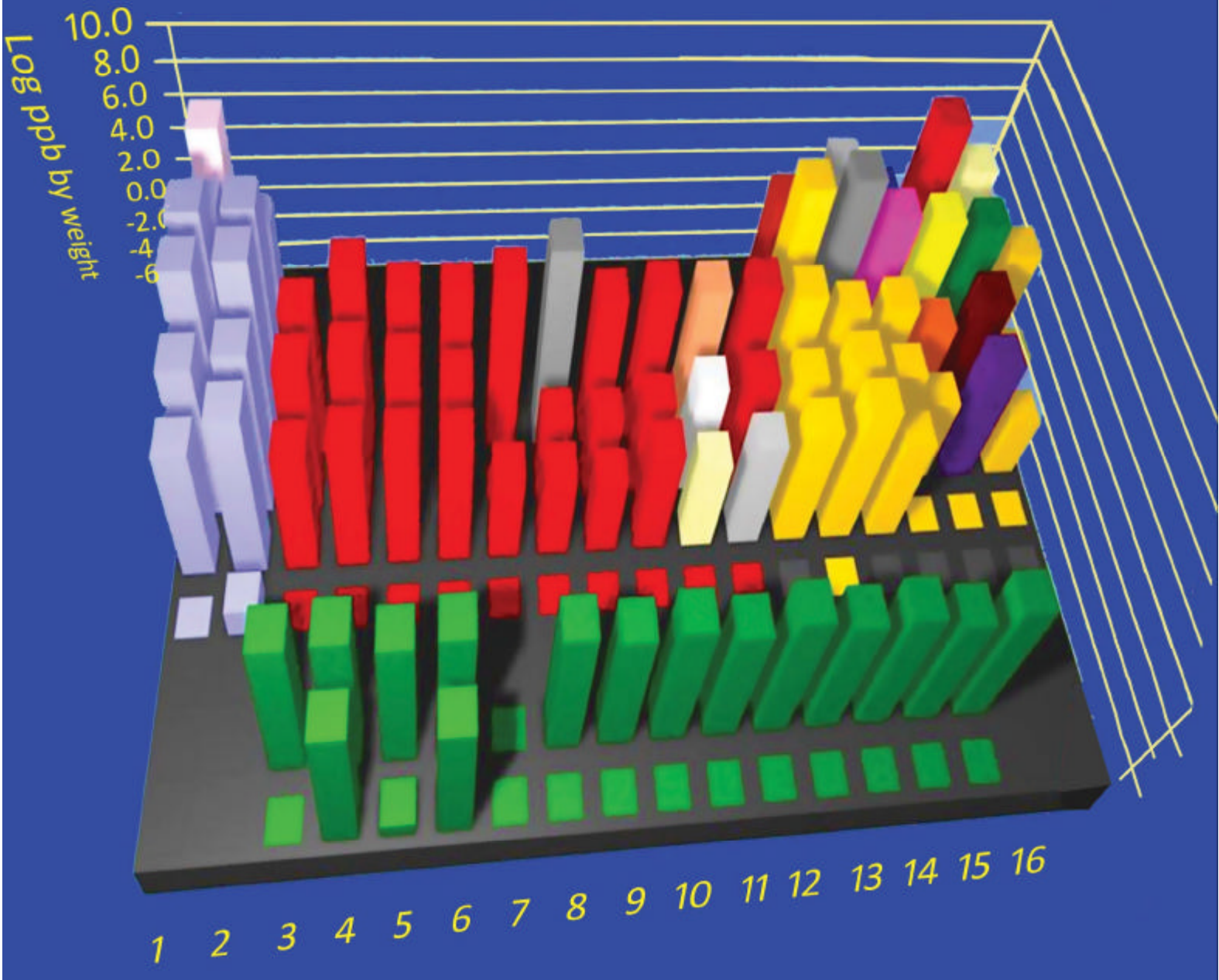


International Year of Periodic Table (IYPT-2019)

ACT News Letter, Issue 15

September – December, 2019

Association of Chemistry Teachers

Promoting Excellence in Chemistry Education

From the Editorial Desk... -

Dr. Mannam Krishnamurthy, Editor
Varsity Education Management Limited, Hyderabad

We are happy to inform that the contributions of ACT ranges from International Olympiads, organizing seminars, science exhibitions, workshops, expert invited talks, innovating conceptual science experiments, conferences, talent search examinations, training faculty and students etc. ACT proposes some new activities to be implemented.

We are bringing in the present issue of the news letter with the reports on the ACT activities, latest innovations, new trends, views and news. We have included two general articles one on Periodic Table and another on Energy, in the present issue. We have also included report on NCCT-2019 and subject reports on National Chemistry Events. Profiles of ACT-2019 award winners and reports on IYPT-2019 Celebrations organized by active ACT members were also given briefly.

We request you to participate and make ACT-CONTECH 2nd phase (31-01-2020) a grand success. We invite good suggestions and better contributions to get best output of the future issues of ACT News Letter.

Dr. B. Haribabu, ACT Life Member from Acharya Nagarjuna University, Guntur received 'Best Teacher Award of Andhra Pradesh State' from the Chief Minister Mr. Y.S. Jaganmohan Reddy, on the teacher's day 5th September 2019. Dr. A. Suresh, Education Minister of the State was also present. Dr. Haribabu has about two decades of teaching experience. He has guided 25 Ph.D. students and published 150 research papers.

Academic Participation of ACT Members

Prof. Sraddha Sinha, Secretary, ACT North Zone coordinated Inter College Science Fest Nirantar, at I.T. College, Lucknow on 14, September 2019. Prof. Alok Dhavan, Director IITR and Prof. Sudha Jain, past president of ACT participated as guests.

Dr. K.S. Rane, Life member ACT from Goa University, presented a report on huge amount of iron ore deposites around Goa and the related environmental problems, in Tarun Bharat on 16, September 2019.

Prof. Brijesh Pare, Vice president ACT Central Zone from J.N. PG College, Ujjain, organized a work shop, at Weham Girls School, Dehradun during 18-19, September 2019. School students participated in Structural designing.

Dr. Hemant Pande, Vice President ACT West Zone acted as a resource person in the IYPT-2019 Vidarbha activities organized by RTM Nagpur University on 4, October 2019.

Prof. M. Swaminathan, EC Member ACT from Kalasalingam University, Krishnakoil, Tamilnadu inaugurated the National Conference on 'Emerging Trends and Future Challenges in Chemical Sciences' at S.I.A.S. College, Thiruvannamalai on 25, October 2019. He also delivered an invited talk.

Prof. M.V. Basaveswara Rao, Life Member ACT from Krishna University PG Center, Nuzvid, AP State acted as Jury member for 'India International Science Festival', organised by D S T and Ministry of Earth Sciences, at Biswa Bangla Convention Centre, Kolkata during 5-8, November, 2019.

Dr. Mannam Krishnamurthy, EC Member ACT from Varsity Education Management Ltd., Hyderabad gave a presentation on 'Popularisation of Chemistry' in regional channel, 'Telugu Vakitlo', on 12, November 2019. This was uploaded in YouTube.

Dr. Md. Abdul Halim Shah, EC Member ACT from D.M. College of Science, Imphal chaired planery session of the National Conference on Science and Technology for Society, organized at Dhanamanjuri University, Imphal, Manipur State on 30, November 2019.

Dr. S.P. Singh, Secretary ACT East Zone from A.N. College, Patna delivered an invited talk at the conference organized by V.K.S. University, Ara, Bihar State on 10, December 2019.

Prof. P.V.S. Machiraju, Vice president ACT South Zone from Pragati Engineering College, Surampalem gave a presentation at 'Mission ECO-NEXT Training program', P.B. Siddartha College, Vijayawada on 14, December 2019.

Dr. Gitimoni Deca, EC member ACT from Rangia College, Assam gave a radio talk on IYPT in assamese, broadcasted in AIR, Guwahati on 20, December 2019.

Dr. W.B. Gurnule, EC member ACT from Kamala Nehru Mahavidyalaya, Nagapur, received silver medal for his contribution to 'Material Science' from the President of Indian Association of Solid State and Allied Scientists at Hotel Emperial Nagapur on 20, December 2019.

Prof. D.C. Deka, President ACT and Vice Chancellor Mahabdev University, Assam delivered the Key-note presentation in 'IYPT 2019 Closure Event', organized by the Indian Astrobiology Research Foundation at Nehru Centre, Mumbai on 29, December 2019.

ACT Members at International Venues

Prof. D.V. Prabhu, General Secretary ACT from Wilson College, Mumbai acted as resource person at '6th Industrial Green Chemistry World Convention' organized at Indian Institute of Technology Bombay, during 16-18, October 2019. Prof. Prabu was with Dr. John Warner, Father of Green Chemistry on the concluding day of the conversion.

Dr. Hemant Pande, Vice President ACT West Zone from Hislop College, Nagapur, India acted as resource person at the celebrations of International Year of Periodic Table, organized at Qatar National Library Auditorium, Doha during 21-25, November 2019. Dr. Pande represented Science India Forum, in these celebrations.

Prof. Brijesh Pare, Vice President ACT Central Zone from Jawaharlal Nehru P.G. College, Ujjain, India acted as a resource person at 'Science Workshop for teachers and student', B.P. School, Qatar, during 28, November to 1, December 2019. A fullerene molecular model has been crafted by teachers during this workshop.

Dr. Mannam Krishnamurthy, ACT EC Member from Varsity Education Management Ltd., Hyderabad wrote a book chapter, 'Biopolymers and Biomedical Applications'. This was published in 'Composites of Biomedical Engineering: Series-C Volume 9, by Elsevier Publishing Company, 2019; edited by Valentina Grumezescu and Alexandru M. Grumezescu.

The ISBN for this e-Book is 978-012-81-8433-2. Dr. Kesana Surendra Babu from S.V.R.M. College, Nagaram, A.P. State and Dr. P.T.S.R.K. Prasad Rao from P.B. Siddartha College, Vijayawada, A.P. State, both ACT life members, are co-authors of this book chapter.

Periodic Table is the Foundation of Science

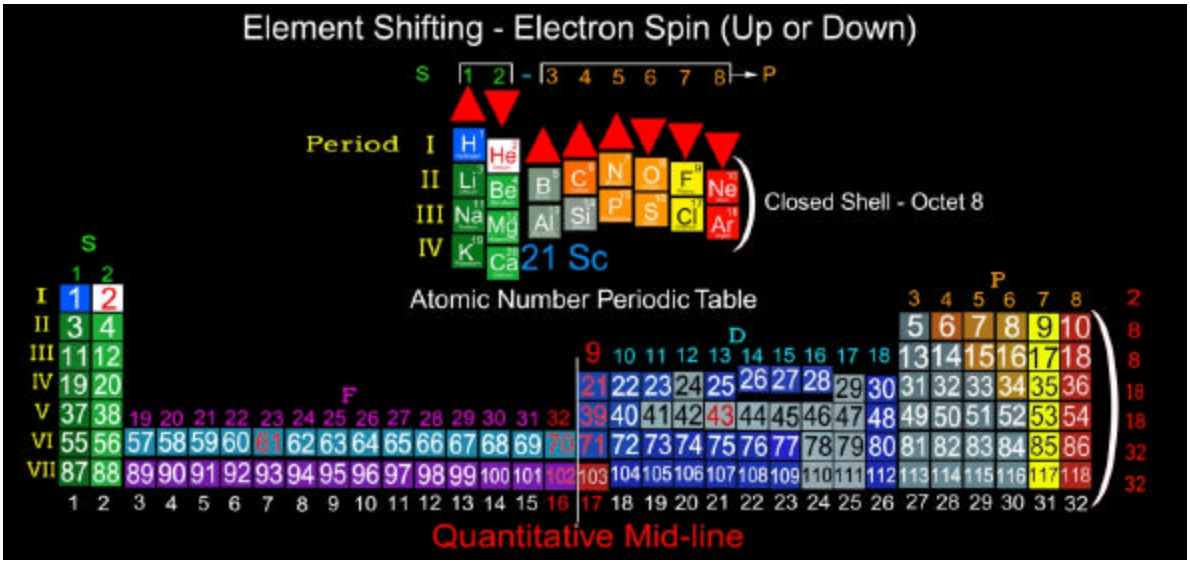
Justin Colburn
The Foundation Training Center, Littleton, Colorado, USA.

The Periodic Table of Elements is the cornerstone of Chemistry at the Foundation of all Science. If you could take everything in our Universe that we can see, touch, taste, smell and hear, breaking it down to it's most fundamental pieces, what you would be left with is The Periodic Table of Elements. Based strictly on simple, unchanging order of 2 fundamental particles, the Periodic Table reflects the number of protons and the electron configurations of atoms. The Periodic Table gets its predictive power from the very order that it is built with. The Periodic Table is a Universal language of science that transcends any barriers of race, religion, gender or beliefs.

To most people, the Periodic Table is nothing more than some nightmare chart from high school Chemistry class that their Teacher may have asked them to unsuccessfully memorize for an exam. More often than not, students get so frustrated and confused with Chemistry that they give up long before they ever learn the importance and significance of the Periodic Table of Elements to every aspect of our lives. The subject of Chemistry and knowledge of the Elements left in the dust before students ever learn that the Periodic Table is a window that reflects the Atoms that everything in the Universe is built with.

In reality, the Periodic Table is only slightly more difficult than simple counting and common sense logic. Unfortunately students are literally being shorthanded with a broken system that arbitrarily places 30 Elements out of order as the 'Standard' and creates far more confusion than there needs to be. The order of the Elements being so important that predictions of behavior, size and reactivity are made about Elements based on their location in the Periodic Table. Many of these predictions were made before the Elements themselves were discovered. The genius of Mendeleev, the Russian chemist credited with discovering the Periodic Law, was leaving empty spaces in his Periodic Table for undiscovered Elements. Confirming that the simple order of the Elements is the most fundamental organizing principle of matter there is.

If then, order is so important with regards to the placement of Elements in the Periodic Table and the Periodic Table is the cornerstone of the Central Science, Chemistry, why are 30 Elements still being placed out of order for no better reason than to 'Save paper space'? Why have the Lanthanides and Actinides been removed from the Periodic Table and excluded from the numbering system, while the rest of the Elements are inaccurately numbered (1-18).

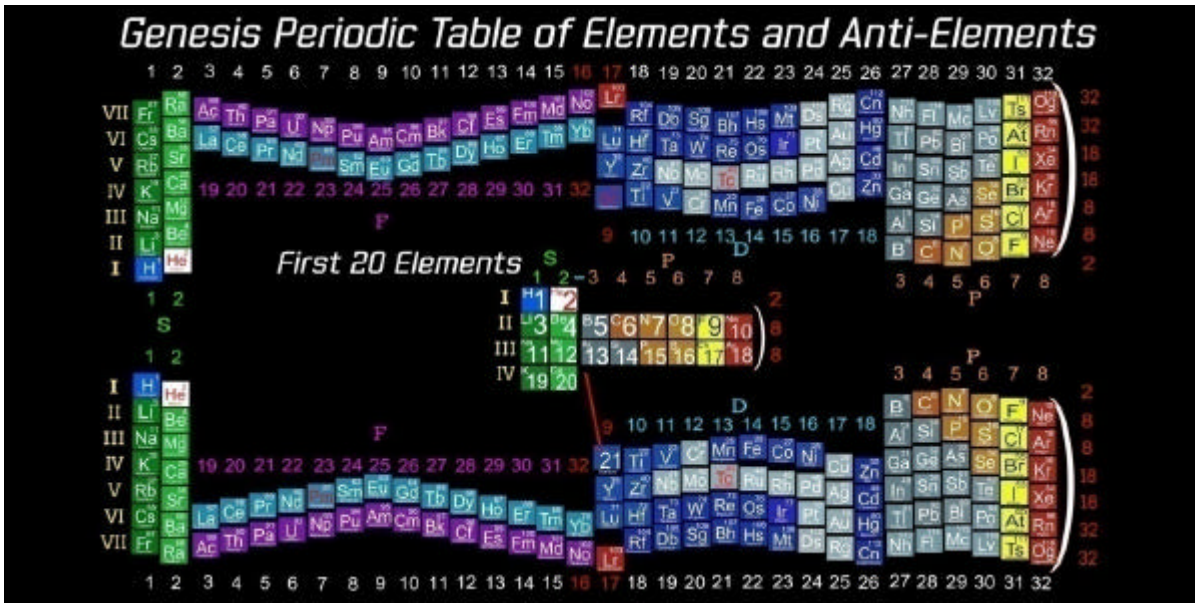


The broken Standard Periodic Table is telling new Chemistry students, whether consciously or unconsciously, that order is really not that important. Right away, if we are presenting to new students a broken system with 30 elements out of order, they might get the impression that the order of the Elements is somehow variable, when in fact, nothing could be further from the truth.

It's almost as if the ones responsible for the nomenclature and arrangement of this system don't want to make something as important as the Periodic Table of Elements, easy to learn and teach. This is not a matter of opinion or taste, it is simply a matter of truth. I am not blindly against using shorthanded notation or footnotes when appropriate but with the predictive power of the Periodic Table coming directly and exclusively from the order of the Elements, any misplacement of Elements could severely inhibit new discoveries. The arrangement of the Periodic Table cannot be compared to something arbitrary like the placement of furniture in your living room or how you organize clothes in your closet. Each Element is placed in it's unique position based on unchanging Quantitative Data and Atomic Structure meaning there is a finite number of ways to arrange the table without breaking the logic of simple order.

So, when Chemistry Teachers and organizations like the IUPAC distribute this broken system in our schools, it's like they are cutting the legs off their students and expecting them to run. It's like teaching students a new language, only giving them half of the alphabet and asking them to write a novel. This broken system must be fixed for the sake of preserving truth and clarity in the education of Science. It would be one thing if there was no better way and we just had to deal with a broken Periodic Table because nobody had a clear solution to fix it. This is not the case though! In a digital age of widescreen smartphones, widescreen computer monitors and widescreen Televisions, breaking the Periodic Table of Elements because the true arrangement is ‘too wide’ is flat out unacceptable.

This revision I am proposing to the Periodic Table is a major step towards fixing our education system. More useful and accurate Element information can be extracted by students from this system than can be from the Standard Periodic Table. You will undoubtedly discover push back from IUPAC if you advocate to fix their broken Standard Periodic Table because this is the information that the people in power do not want you to have. This is the knowledge that takes power away from the few and empowers the masses. Most importantly, this is what can reestablish the ancient Creation account of Genesis as truth and destroy the lie that is secular science driven by chaos, chance and random processes.



I am confident what you will discover is that the Genesis Periodic Table of Elements provides more useful information to the Chemistry student than other available Tables. I hope that you all find this interesting, informative and helpful whether learning or teaching the Periodic Table of Elements.

Energy of the Future

by *Sorit Gupto*

Source: Gobar Times (Down to Earth), 2019

Piu entered the house painting one summer afternoon and said, “I have no energy to do anything.”

She had come back from school and was completely exhausted. Her mother came to her rescue and handed her a glass saying, “This should energise you.”

It was glucose. Pie drank it all up and felt better.

“In some time, you will feel better,” said Piu’s mother.

And it was true! Pie did feel better in a while. She was ecstatic that things had sprung back to normal. She went up to Pom and said, “The drink had some magical quality Pom! I wonder what’s that?”

“The magic was because of the glucose in that drink. Glucose is our main source of instant energy,” explained Pom.

“I didn’t quite understand. Can you explain it to me?” said Piu.

Pom noded in agreement and said, “Let me tell you a story and it goes like this….”

“All living organisms need energy, but only plants have the ability to produce it. A plant produces its food using sunlight through the process of photosynthesis. Now since animals can’t produce their food, they have to depend on others. Animals that get their food solely from plants are called ….”

“Herbivores!” replied Piu.

“That is right Piu,” said Pom.

Piu smiled and then continued, “Animals that get food from other animals are known as carnivores and those that get food from plants and animals are known as omnivores, like us. Am I right, Pom?”

“Smart kid! The flow of energy from one organism to the other is what is referred to as the food cycle,” said Pom.

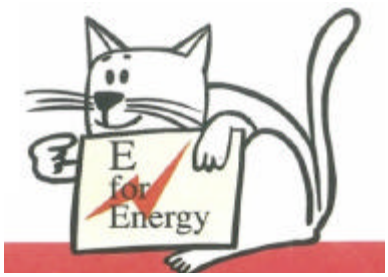
Piu had slipped into a reflective mode, so Pom broke the silence saying, “But you know Piu, food is not the only form of energy exchange in the world. The bulbs in our homes, our smartphones, cars, aeroplanes and industries do not eat food but they also need energy to carry out their tasks/activities.”

Feeling a little puzzled, Piu asked, “So, where do we, humans, get this energy to run our machines?”

“Simple, from other animals. First we used to get it from horses, elephants, camels, cows and even human,” said Pom.

“What! Even humans?” asked Piu to which Pom replied, “Yes, Piu. Even humans. Slaves used to haul wagons, cut crops and do all kinds of work for their ‘masters’. But soon this changed.”

Discovery of fossil fuels like coal, petroleum and natural gas paved the way for large scale consumption of energy.



"How did things change, Pom?" asked Piu again. Pom took a deep breath and said, "With the industrial revolution, beginning from the late 1700s, the world took a big leap in technology. The discovery of fossil fuels like coal, petroleum and natural gas paved the way for large-scale consumption of energy for electricity, transport, agriculture, industries, space research and so on. But there was one side effect."

"What was that?" said Piu.

"These fossil fuels, when burnt released carbon dioxide (CO_2), a greenhouse gas responsible for increasing global temperature. Industrialisation has led to atmospheric concentrations of CO_2, methane and nitrous oxide that are unprecedented in at least the last 800,000 years. And with rising global temperature came erratic weather events, rapid melting of snow and the increasing sea level," said Pom and then, the two fell silent.

After a while, Piu said, "But tell me something. What is the alternative? Don't tell me that we must stop using electricity and go back to the cave-dwelling days!"

Pom chuckled at Piu's innocent question and then said, "Not at all Piu! Scientists have already taken up this challenge of finding an alternative energy source that can power our appliances and gadgets without releasing CO_2. And in 1839, French physicist Alexandre-Edmond Beequerel found one such source and guess what it was?"

"The sun?" said Piu with a quizzical expression on her face.

"Exactly! It was the sun," replied Pom excitedly and then proceeded to say, "And that's how the story of renewable energy began. Well, we are still in the nascent stage but we have travelled a long distance in a very short time. For example, harnessing solar energy was at best a science fiction plot a few decades ago but today it is as common as the newspaper! From trains to cars to street lights and toys, everything runs on solar energy."

"Yes! Finally, I know how my friend's toy dinosaur was walking without batteries. You just have to put it in a sunny place and that's it," said Piu.

Pom replied, "You are right Piu. And the most important aspect of solar power is that it does not emit CO_2. It is absolutely pollution-free!" Piu could not hold back her excitement at this and blurted out saying, "That's great! Now, I will ask my parents to get appliances and gadgets that run on solar energy."

Anatomy of Solar Panel

Energy sourced from the sun to generate electricity is called solar energy. This is done with the help of solar panels, each of which is lined up with either 60 or 72 photovoltaic cells that convert sunlight into electrical energy.

Globally, for every unit of power consumed, measured in KWH, 800 g to 1 kg CO_2 gets released into the atmosphere. Just ask for the electricity bill at home and check the units consumed. For example, if the monthly consumption is 450 units, then this would add up to 450 kg of CO_2 emissions. Now imagine that your house is operating completely on solar energy, you would save over 5,000 kg of CO_2 emissions in a year! Since energy conversion takes place at an atomic level, solar energy does not emit CO_2.

Conference on Recent Advances in Chemical Research

The Department of Chemistry, SRM Institute of Science and Technology, Ramapuram Campus, Chennai organized a National Conference on 'Recent Advances in Chemical Research' on 12th September 2019, in association with ACT, Mumbai. Dr. Helen P. Kavitha, Secretary, ACT South Zone coordinated this National event.

The Chief Guest Dr. Sulthan Ahamed Ismail, Director, Eco Science Research Foundation, Chennai inaugurated the event by lightning the Kuthuvilakku and delivered the key note speech on 'The Earth's Sake'. He stressed on the importance of organic manure and also encouraged the participants to go for innovative technologies in the field of agriculture for the upcoming years.

The first plenary lecture entitled 'Nuclear Power: A Green Energy' was delivered by Dr. C.V.S. Brahmananda Rao, Indira Gandhi Centre for Atomic Research, Kalpakkami. The second lecture entitled 'Pyrolysis of Plastic Waste' was delivered by Prof. Lima Rose Miranda, Alagappa College of Technology, Anna University, Chennai.

Around 100 participants have participated and presented their research papers in the field of Chemical Research, during the oral and poster sessions. In the valedictory function, best oral and poster presentation awards were given by Dr. S. Stanly, Professor, Sri Venkateswara College of Engineering, Chennai and Dr. B.R. Venkataraman, Associate Professor, Periyar EVR College, Tiruchirappalli. Positive feedback was given by the participants.

Conference on Emerging Trends in Material Science

The two day National Conference on 'National Conference on Emerging Trends in Material Science' was organized by the Government Arts College, Tiruvannamalai, during 26-27, September 2019. This conference was sponsored by Tamilnadu State Council for Higher Education and Association of Chemistry Teachers.

Dr. M. Balakrishnan, Organizing Secretary of the conference welcomed the delegates and participants. The Presidential address is given was by Dr. M. Subramani, Principal, Government Arts College and the theme of the conference was briefly presented by Dr. R. Ravisankar, Convener. The conference was inaugurated by Thiru K.S. Kandasamy, I.A.S District Collector, Tiruvannamalai, who also released the proceedings and delivered the inaugural address.

During the inaugural function the district collector gave the Life time Achievement award to Dr. M. Swaminathan, ACT EC member and Emeritus Professor, Kalasalingam Academy of Research and Education, Krishnankoil, who also gave the keynote address.

An invited talk on 'Natural Product As An Organic Capping Agent' was given by Dr. S.P. Rajasingh, Chikkanna Government Arts College, Tiruppur. Dr. M. Selvapandiyan, Periyar University PG Extension Centre, Dharmapuri gave a talk on 'Role of NaCl on the properties of Sulphamic Acid single crystals'.

Prof. Jayavel, Anna University, Chennai; Dr. S. Perucheralathan, NISER, Bhubaneswar; Dr. K Ganesan and V. Jaisankar, Presidency College, Chennai ; Dr. M.S. Pandian, SSN Institutions, Chennai; Dr. S. Jaya Kumar, RKM Vivekananda College, Mylapore and Dr. K.S. Kannan, EGSP Arts and Science College, Nagapatnam also gave invited talks.

Around 600 participants across the state participated in this conference. Totally 207 research abstracts were received and released in the form of conference proceeding. Dr. E. Murugan, Director - Guindy Campus, University of Madras, Chennai delivered valedictory address of the conference. The best oral and poster presentation prizes were distributed in the valedictory session.

Seminar on Chemical Speciation

A two day National Seminar on 'Chemical Speciation in Biology and Marine Environment' was organized by School of Chemistry, Andhra University, Visakhapatnam on 29-30, September 2019. This seminar was sponsored by ACT, Mumbai and A.P. Academy of Sciences.

The seminar was inaugurated by Prof. P.V.G.D. Prasad Reddy, Vice Chancellor of Andhra University. Dr. K. Basavaiah, Director School of Chemistry chaired the inaugural session. Key note address was delivered by Dr. D. Raghunadha Rao, President of A.P. Academy of Sciences.

There were plenary lectures by Dr. Mannam Krishnamurthy, ACT EC member from Varsity Education Management Ltd., Hyderabad; Prof. M.V.Basaveswara Rao, ACT Life member from Krishna University, Machilipatnam and Prof. P.V.S. Machiraju, Vice president ACT South Zone from Pragati Engineering College, Surampalem.

Plenary talks were also delivered by Dr. S.B. Choudhary, OCAMD, NRSC, Hyderabad; Prof. Y.V. Rami Reddy, S.V. University, Tirupathi; Dr. V. Ranga Rao, National Centre for Coastal Research, Chenni ; Prof. R. Sambasiva Rao and Prof. N.S. Sarma, Andhra University, Visakhapatnam.

Prof. G. Nageswara Rao, ACT Life member and former Vice Chancellor of Andhra University was falicitated by ACT, on his superannuation.

There were 3 invited talks and 66 oral presentations. Nearly 250 lecturers and research scholars participated in the seminar.

In the valedictory session awards were given to best paper presenters and certificates were distributed to all participants. Dr. P. Shyamala, Organising Secretary proposed vote of thanks at the end.

ACT Awards - 2019

Association of Chemistry Teachers Awards were presented at the National Convension of Chemistry Teachers (NCCT)-2019 on December 5, 2019, at Sant Gadge Baba Amravati University, Maharastra State.

The editorial board of ACT News Letter extends hearty congratulations to all the ACT award winners.

1

Best Woman Chemistry Teacher Award

Prof. Helen Kavitha
SRM Institute of Science and Technology
Ramapuram, Chennai.

Prof. Kavitha obtained her Ph.D from Bharathidasan University, Tiruchirappalli in 2000. She has 25 years of teaching and research experience. She has published 50 research papers and presented 90 papers in conferences. She has authored six books in Chemistry. Under her guidance, 6 students have been awarded Ph.D. degrees. She was the Principle Investigator for two research projects and was a visiting scientist at University of Mauritius.

2

Prof. P.R. Singh Award for Outstanding Contribution in Chemistry Education

Prof. M. Swaminathan
Kalasalingam Academy of Research and Education
Krishnankoil, Tamilnadu.

Prof. Swaminathan received his Ph.D., from I.I.T., Kanpur. He has 43 years teaching experience, at Tamilnadu Government Colleges and Annamalai University. He has guided 20 students for Ph.D. and published 231 papers. He has written 2 reviews and 7 book chapters with publishers, Wiley, Elsevier and Springer. He has been placed in 'Who is Who in Fluorescence-2007. He acted as Scientific Observer for Indian Team at International Chemistry Olympiad, Hanoi, Vietnam-2014.

3

Dr. Uma Saiprakash Chemistry Popularisation Award

Dr. Subhash P. Singh
Department of Chemistry
A.N. College, Patna (Patliputra University)

Dr. S.P. Singh has 32 years of teaching experience. He has been Nodal Officer, MHRD-AISHE, DBT STAR College and B.Voc. (Agri) programs and examination controller of A.N. College. He has guided research students, published 26 articles and authored 5 books. He is a member of National advisory for organizing Science Exhibitions and Essay Competitions in Schools and Colleges. He has contributed in Curriculum Design and Laboratory kits at NCERT and Ministry of Education, Royal Government of Bhutan.

4

Prof. Lallan Singh Award for Best PG Chemistry Teacher (State Universities)

Prof. Mandava Venkata B. Rao
Dean, Faculty of Sciences
Krishna University, Machilipatnam, A.P. State.

Prof. Rao obtained his Ph.D. from North-Eastern Hill University, Shillong. He was a Post doctoral fellow at National Institute of Immunology, New Delhi and a visiting professor at National Tsing Hua University, Taiwan. He had published 403 research papers, one book and has 4 patents to his credit. He has guided 22 Ph.D. and 9 M.Phil. students. He received Andhra Pradesh State Government Best Teacher Award-2011 and ICC Prof. S.P. Hiremath Award-2017. He is now acting as Honorary Secretary of Andhra Pradesh Academy of Sciences.

5

Life Time Achievement Award

Dr. S.M. Khopkar
Professor Emeritus
Indian Institute of Technology, Bombay.

Prof. Khopkar was honoured with life time achievement award and gold medal from Indian Chemical Society, Indian Council of Chemist and Chromatography Society of India. Recently he was awarded Al Fred Nelson life time achievement award from USA. He has published 8 books and 400 research papers. He has successfully supervised 30 Ph.D. and 8 M.Tech. candidates in IIT, Mumbai. He was visiting fellow of UNESCO at Dalhousie University, Canada and Technical University of Wroclaw, Poland. He was a member of advisory committee (Chemistry) in Indira Gandhi National Open University. He is the Fellow of Maharashtra Academy of Sciences and several professional bodies as ICS, ICC, ISA, CRS, ISAS and SOCLEEN.

6

Life Time Achievement Award

Prof. Vasant S. Jamode
Former Pre-vice chancellor
SGB Amravati University, Maharastra State.

Professor Jamode acquired Gold Medal from Nagpur University and Ph.D. in 1978. He was Head of Chemistry Department and Vice Chancellor (I/C) of the S.G.B. Amravati University. He has to his credit 130 Research Papers and published three books, participated in 37 National and International Conferences. He has guided 24 students for Ph.D. and 27 for M.Phil. He received Utkrushta Seva Gaurav Purskar-2002' for his academic excellence by S.G.B. Amravati University. He was the recipient of Best Teacher Award-2005 by Government of Maharashtra. He has delivered number of guest lectures and popular lecturers in different venues. He is a member of Indian Science Congress and Indian Council of Chemists.

Report on NCCT-2019

National Convention of Chemistry Teachers (NCCT-19) was held at the Department of Chemistry, Sant Gadge Baba Amravati University, Amravati, Maharastra State during December 5-7, 2019. A three day National Conference on New Dimensions in Chemistry and Chemistry Education was also organized under the sponsorship of DST, DRDO, RSC-WIS, BRNS, INSA and ACT.

There was an overwhelming response to this conference through the participation of more than 285 delegates. Prof. Anand S. Aswar, Convener of the conference welcomed the dignitaries and delegates.

The Chief Guest of the Inaugural Function was Prof. J.N. Moorthy, Director, IISER, Thiruvananthapuram. The Guest of Honour was Dr. Roshan Kumar Yadav from Nepal. The Guests of Eminence were Prof. A.K. Singh, Former Vice-Chancellor, University of Allahabad; Prof. S. Satyanarayana, Former Vice-Chancellor, Osmania University, Hyderabad; Prof. N.S. Gajbhiye, Former Vice-Chancellor of Dr. H.S. Gour University, Sagar graced the occasion.

Dr. M.G. Chandekar, Vice-Chancellor, S.G.B. Amravati University was the Chair person, who started the proceedings in the gracious presence of *Prof. D.C. Deka,* President of ACT and *Prof. D.V. Prabhu,* General Secretary, ACT.

Prof. J.N. Moorthy gave a keynote address on 'Organic Chemistry: Control of organic reactivity and development of functional materials'. He emphasized the impact of human activity on the environment which is detrimental to human health.

Prof. A.K. Singh from IIT, Mumbai gave a plenary talk on 'New Imperatives for design and development of chemicals and chemical products'. He discussed the general practices of production and development of chemical compounds and target oriented synthesis.

There were two technical sessions of the conference on the first day. *Prof. S.S. Makone,* School of Chemical Sciences, Nanded; *Prof. M.V.B. Rao,* Krishna University, Machilipatnam; *Prof. S. Satyanarayana,* Osmania University, Hyderabad; *Prof. S.K. Gupta,* Gwalior; *Prof. P.M.S. Chauhan,* CDRI, Lucknow and *Prof. Man Singh,* CUG, Gandhinagar delivered their talks. A grand cultural event was also organized at the end of the first day.

Executive council meeting of ACT was held on 5th evening, which was chaired by Prof. D.C. Deka, Vice-chancellor, Mahabdev University, Assam. The general body meeting of ACT was conducted by Prof. D.V. Prabhu on 6th evening at the Chemistry Department of SGBA University, Amravati. Academic activities of ACT members were reviewed and useful future activities were proposed.

There were three technical sessions on the second day. *Prof. Shivaraj,* Osmania University, Hyderabad; *Prof. Ranjan Dey*, BITS, Goa; *Prof. M. Swaminathan*, Krishnankoil University; *Dr. R.N. Jadeja*, Vadodra ; *Prof. P.P.Wadgaonkar,* NCL, Pune; *Prof. V. Ravinder*, Kakatiya University, Warangal; *Dr. C.P. Vinod*, NCL, Pune and *Dr. Pushpal Ghosh*, Dr. H.C. Gour University, Sagar gave their respective talks.

There were two parallel sessions for oral and poster presentations of research papers. An exclusive session with a focus on inter-disciplinary chemistry approach was conducted. The eminent panelists highlighted on the non-existence of barriers between chemistry and other branches of science.

There were two technical sessions on third day. *Dr. Singanan Malairajan*, Chennai; *Dr. M.B. Gawande*, ICT Mumbai; *Dr. Santosh Shukla*, National Academy of Sciences, Allahabad; *Dr. G.R. Gupta*, ICT Mumbai; *Dr. Sudhanshu Sharma*, IIT Gandhinagar; *Dr. Sivaswaroop Pathaneni*, IGNOU, Nagpur and *Prof. S.A. Patil*, Karnataka University, Dharwad gave invited talks.

Prof. P.P. Mahulikar, North Maharastra University, Jalgaon gave a plenary talk on 'Green Synthesis' and Prof. N.S. Gajbhiye, IIT Kanpur gave another plenary talk on 'Nano-scale Multifunctional Materials'.

Valedictory session was chaired by Prof. R.S. Jaipurkar, Pro-Vice Chancellor, SGB Amravati University. Prof. P.P. Mahulikar, Pro-Vice Chancellor, KBC, NMU, Jalgaon was the Chief Guest. Dr. Sivaswaroop Pathaneni, Director, IGNOU Regional Centre, Nagpur was the Guest of Honour.

The response for the conference was very encouraging and it was well received by the participating delegates. As a process of encouragement to the oral and poster presentations, three prizes in each category were given for the best presentations. The conference was concluded with a vote of thanks by Dr. Jagruti M. Barabde, Organizing Secretary, NCCT-2019.

IYPT-2019 Celebrations by ACT

International Year of Periodic Table was celebrated at G.S.R.M.M. Post Graduate College, Lucknow on 7, September, 2019. These celebrations were coordinated by *Prof. Sraddha Sinha,* Secretary ACT North Zone. *Dr. Seema Josh* delivered an invited talk on the properties of elements. Prizes were distributed to winner students of Quiz competitions.

150 Years of Periodic Table was celebrated at Rangia College, Assam on 20, September 2019. *Dr. Githimoni Deka,* ACT EC member coordinated these celebrations. She gave a presentation on Development of Periodic Table. A wall magazine, 'DELRIN' was inaugurated by the Chemistry Department, as a token of the IYPT-2019 activity.

IYPT-2019 was celebrated at Dr. Rajendra Prashad Memorial Degree College, Lucknow, on 24, September 2019. *Dr. Archana Sexena* coordinated the celebrations and gave an inaugural speech. *Dr. Vandana Grover* and *Prof. Sraddha Sinha,* from BB Das NIIT, Lucknow gave invited talks on Periodic Table of Elements.

International Year of Periodic Table was celebrate at S.J.N.M. Post Graduate College, Lucknow on 3, October 2019. *Dr. D.K. Awasthi,* Head of the Chemistry Department coordinated these celebrations. *Prof. Sraddha Sinha,* Secretary ACT North Zone, from BB Das NIIT, Lucknow gave a lecture on Periodic Table of Elements.

IYPT-2019 activity was organized at Global Institute of Pharmaceutical Education, Kashipur, Uttarakhand, on 5, October 2019. *Prof. Sraddha Sinha,* from B.B. Das NIIT, Lucknow co-ordinated this activity on behalf of ACT. Later, she gave a lecture on History and Development of Periodic Table.

International year of the Periodic Table celebrations were organized at Vidyardhi, Ambedkar Nagar, Vijayawada on 19, October 2019. This event was coordinated by *Dr. Mannam Krishnamurthy,* ACT EC member. A 'Quiz competition on Chemical Elements' was held. There was a representation from 8 schools and 96 students were selected on merit basis for the lecture session.

The afternoon academic session was started by a prayer with the names of all chemical elements. *Mr. U. Lakshmana Suri,* from Sri Chaitanya College, Gudavalli, gave a lecture on 'The Development of Periodic Table' and *Dr. M. Krishnamurthy* gave a talk on 'Periodicity of Elements'.

Mr. M. Surendra Nath, Managing Director, Grand Minerva Vijayawada was the Chief Guest in the concluding session, who gave an inspirational message to the students. Copies of Telugu version of Prof. C.N.R.Rao's Nanoworld Book were distributed free to all teacher and student participants.

IYPT-2019 was celebrated at Kalasalingam University, Krishnan Koyal, on 19, October 2019. *Prof. M. Swaminathan,* ACT EC member coordinated the celebrations. Two programmes one for school students and another for college students were organized.

A state level technical symposium 'Aromon 2.0' was specially designed for the celebrations.

Prof. S. Bala Subrahmanyam, Honorary Secretary, Royal Society of Chemistry, South India was the Chief Guest for these celebrations. About 220 students participated in the celebrations. 'Experiments on joy of understanding chemistry' and Guest lectures on Periodic Table were among the activities of the event. A written quiz competition was also conducted.

A one day seminar on 'Importance of periodic table in Science Education' was organized as a part of IYPT-2019 activity at MLSM College, Darbhanga on 25, October 2019. *Prof. P.M. Mishra,* Vice president, ACT East Zone coordinated the celebrations and seminar presentations. Certificates were distributed to all student participants.

150th Anniversary of Periodic Table was celebrated at Raja Singh College, Siwan, Bihar on 12, November 2019. A one day seminar on Periodic Table was organized by *Dr. Manoj Kumar,* Life member of ACT. *Dr. Uday Pandey,* Principal of the college inaugurated the celebrations. *Dr. V.K. Tiwari,* Life member ACT and Principal, RBGR College, Maharajganj was the chief guest and key-note speaker. Certificates of participation and prizes were distributed.

IYPT-2019 was celebrated at Uttar Betna High School, Maharipara, Goreswar, Assam, on 15, November 2019, in collaboration with Aryabhatta Science Centre, Goreswar. IYPT celebrations were coordinated by *Dr. Hari Sankar Kakati,* EC Member of ACT. *Prof. Pannnalal Goswami,* Cotton Univerity, Guwahati delivered a popular talk on 150 years of periodic table.

A teacher's workshop on 'Chemistry Education' was organized as a part of IYPT-2019 celebrations at Jai Narain Inter College, Kanpur on 16, November 2019. Teachers of about 15 CBSE Schools participated in the workshop. *Prof. Amar Srivastava,* EC Member ACT from DAV P.G. College, Kanpur acted as resource person and delivered a talk on the Journey of Periodic Table of Elements. *Sh. Arun Sharma* from Central Board of Secondary Education also acted as resource person.

Special observation programme on International Year of Periodic Table was organized at Chemistry Department of D.M. University, Imphal on 18, November 2019. *Dr. Md. Abdul Halim Shah,* EC Member ACT coordinated the programme. He gave a presentation on periodic table of elements and involved in the discussions of the observations of the participants.

IYPT-2019 was celebrated at College of Commerce, Arts & Science, Patna on 28, November 2019. *Prof. T.K. Sandilya,* Principal of the College inaugurated the function. *Prof. A.K. Nag,* Life member ACT was the convenor and *Dr. Dimple Kumari,* Life Member ACT was the coordinator. More than one hundred and fifty students participated in oral presentations and poster display. Model presentations were witnessed by *Prof. Kalpana Shahi,* Life Member of ACT.

IYPT-2019 event was organized at Y.R.L. Degree College, Samalkot, A.P. State on 29, November 2019. *Dr. T. Manikyam* chaired the inaugural event and *Mrs. T. Lavanya* Principal gave a brief note on the useful nature of such events. The event was coordinated by *Prof. P.V.S. Machiraju,* Vice president ACT South Zone. Essay writing and elocution competitions were conducted for 125 student participants. Prizes for competitions winners and Certificates for all participants were presented on behalf of ACT.

IYPT-2019 was celebrated at D.L.R. College, G.Mamidada, A.P. State on 30, November 2019. *Dr. T. Srinivasa Reddy* Principal and *Prof. P.V.S. Machiraju* from Pragati Engineering College delivered talks on Periodic Table. *Prof. Machiraju* presented a memento to the college and certificates to all 100 student participants on behalf of ACT.

International Year of Periodic Table of Elements-2019 was celebrated at S.V.R.M. College, Nagaram, Guntur Dist., A.P. State on 3, December 2019. The event was supported financially by RT Education Improvement Society and academically by ACT, Mumbai.

Mr. G. Srinivasa Rao, ACT Life member and principal of the college chaired the academic session in the afternoon. *Prof. Murthy Chavali,* MC Education Training Centre, Tenali was the chief guest, who gave a presentation on the development of periodic table.

Dr. Mannam Krishnamurthy, ACT EC member from Varsity Education Management Ltd., Hyderabad and convener of the celebrations gave a presentation on periodicity in chemical properties.

An essay writing competition was held in the forenoon session for P.G. and U.G. students. There were about 200 participants. Best performances of the competitions were awarded with prizes. All participants were given with a free chart of periodic table of elements.

IYPT-2019 event was organized at P.R. Government College, Kakinada on 5, December 2019. *Prof. P.V.S. Machiraju,* Vice president of ACT South Zone coordinated the event in which more than 300 students participated. *Dr. C. Krishna,* Principal of the college inaugurated the event. *Dr. T. Vara Prasad* and *Dr. D. Rama Rao* gave presentations. Prizes, merit certificates and periodic table sheets were presented to the participants.

IYPT-2019 program was organized by Department of Chemistry, Nitishwar College, Muzaffarpur, Bihar on 14, December 2019. *Prof. Manoj Kumar,* Principal of the College inaugurated the program. *Prof. H.C. Roy,* Bihar University, Muzaffarpur delivered the key-note address. *Dr. Abhay Nand Srivastava* coordinated the event and briefed on the IYPT-2019. *Prof. Anand Swarup Singh* highlighted the properties of systematic arrangement of chemical elements.

A competition to write Modern Periodic Table correctly was organized by Chemistry Department, T.N.B. College, Bhagalpur, Bihar on 17, December 2019, as a part of IYPT-2019 Celebrations. *Dr. Rajiv Kumar Singh,* ACT Life member coordinated the celebrations. More than 50 students participated. Seven winners were awarded with prizes by *Dr. Behal Ahmed* and *Dr. Garima Tripathi.*

IYPT-2019 celebrations were made successfully at Pragati Engineering College, Surampalem, Institutional member of ACT, on 19, December 2019. *Dr. S. Sambu Prasad,* Principal presided over the inaugural session and *Dr. M. Balaiah,* Head of basic sciences and Humanities gave an address.

Prof. P.V.S. Machiraju, Vice president ACT South zone coordinated the celebrations and delivered a talk on the importance of chemical elements. Prizes were given to winners of elocution competition. Charts of periodic table and certificates were distributed to all 200 participants.

IYPT-2019 event was organized by the Department of Chemistry, A.N. College, Patna on 20, December 2019. *Dr. Subhash Singh,* Secretary ACT East Zone coordinated the event. 118 students with white apron tagged with specific elements took part in the periodic table march. This was followed by poster exhibition.

Prof. Bihari Singh, former principal of the college was the Chief guest. *Prof. S.K. Sarma,* Dean (Sciences), Pataliputra University and *Prof. Girish K. Sinha,* HOD, PG Chemistry Department were guests of honour. *Prof. A.K. Nag* from CoCAS and *Prof. Tripti Gangwar,* HOD, Chemistry Department witnessed the occasion.

Soft copies of brief description of the represented elements starting from their discovery, to demerits, merits and applications will be compiled to submit to ACT-Mumbai.

International Year of Periodic Table programme was organized at Srinivasa Institute of Engineering and Technology, Cheyyeru, A.P. State on 21, December 2019. *Dr. M. Narendra Kumar,* Principal of the college inaugurated the programme, chaired the academic session and gave a message to the student participants.

More than 350 students and 20 Teaching faculty members participated in the programme which was coordinated by *M. Krishna Karthik.* Prizes were given to winners of writing and vocal competitions and certificates to all participants.

Prof. P.V.S. Machiraju, Vice president ACT South Zone gave a lecture on the 'Development of Periodic Table' and *Dr. Mannam Krishnamurthy,* ACT EC member delivered a talk on 'Chemical Periodicity'.

Report on National Chemistry Day Celebrations

National Chemistry Day was celebrated jointly by S.R.M. Institute of Science and Technology and ACT at Ramapuram School, Chennai on 10, December 2019.

Prof. Helen Kavitha, Secretary ACT South Zone coordinated the celebrations and hoisted the National flag in the school assembly. She gave a brief talk on the importance of chemistry and food adultration.

Demonstrations were also organized, on finding out the food adultrations, as a part of the celebrations. A quiz competition was conducted. Prizes and certificates were distributed to the winners. There were more than 100 students participated in the celebrations.

National Chemistry Day was celebrated at Academic Heights Public School, Morena, Madhya Pradesh State on 10, December 2019.

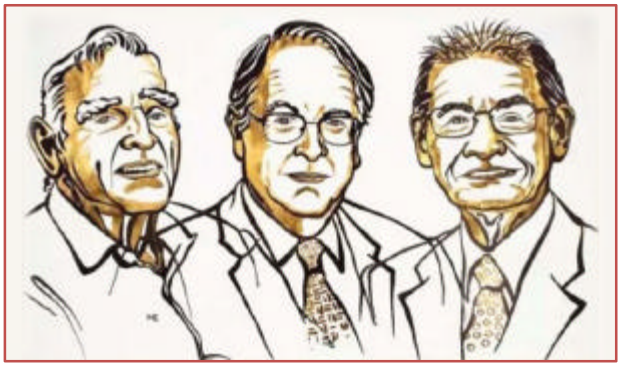
Dr. Umesh Chandra Jain, ACT EC member and principal of the School coordinated the celebrations on behalf of ACT. Mrs. Renu Nahar, President JCI, Gwalior was the Chief guest of the National Chemistry Day.

An intra-school science exhibition based on chemistry concepts was organized. About 60 models were exhibited, under the supervision of Mr. Ravindra Mishra.

School Director Mr. Umendra Agarwal delivered concluding address and distributed prizes to the winner of the competitions.

International Year of Periodic Table (IYPT-2019) was also celebrated by conducting chemistry quiz and essay competitions on Chemistry in Daily Life. About 500 school students enjoyed these celebrations.

The Nobel Prize in Chemistry 2019

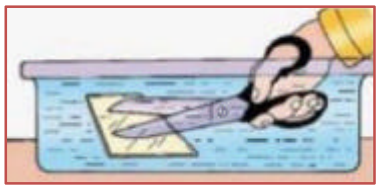


The 2019 Nobel Prize in Chemistry has been awarded to John B Goodenough, M Stanley Whittingham and Akira Yoshino for the development of lithium-ion batteries.

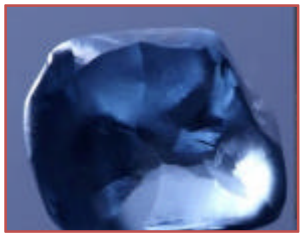
Lithium ion batteries are used globally to power the portable electronics that we use to communicate, work, study, listen to music and search for knowledge. Lithium ion batteries have also enabled the development of long range electric cars and the storage of energy from renewable sources.

Cutting Glass is Easy

A sheet of glass can be cut easily, like cutting a paper board. The only thing that is to be maintained is water. The glass sheet, the scissor and also the working had must be totally immersed under water, making the process easy.



Biggest Blue Diamond



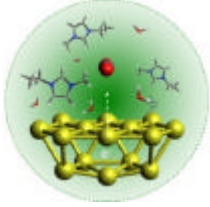
World's biggest blue diamond was recently exhibited by Okavango Diamond Company of Botswana. The diamond has a weight of more than four grams. The blue colour appearance of the diamond is due to boron mineral associated.

Electricity Generation from Salted Clothes

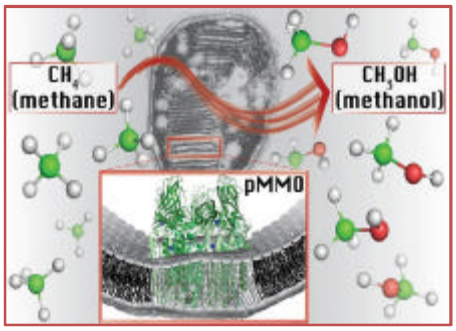
Drying of clothes, after immersing them in salt water was found useful in the generation of electricity. This was reported by Prof. Suman Chakravarthy of I.I.T. Kharagpur recently. The nano channels present in the clothes will help the ions to creap up, thereby eco-friendly electricity is generated.

Artificial Photosynthesis Transforms Carbon dioxide

Chemists at the University of Illinois have successfully produced fuels using water, carbon dioxide and visible light through artificial photosynthesis. By converting carbon dioxide into more complex molecules like propane, green energy technology is now one step closer to using excess CO_2 to store solar energy in the form of chemical bonds, for use when the sun is not shining and in times of peak demand.



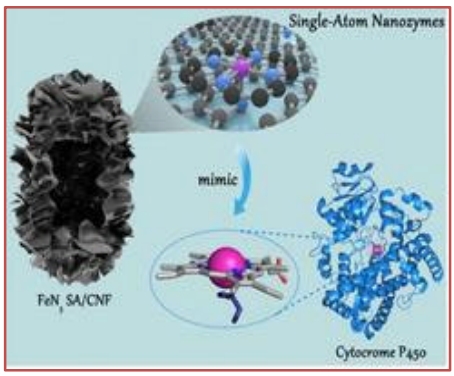
Bacteria turn Methane into Methanol



Known for their ability to remove methane from the environment and convert it into a usable fuel, methanotrophic bacteria have long fascinated researchers. But how, exactly, these bacteria naturally perform such a complex reaction has been a mystery.

Now an interdisciplinary team at Northwestern University has found that the enzyme responsible for the methane-methanol conversion catalyzes this reaction at a site that contains just one copper ion.

New Class of Single-Atom Nanozymes



Catalytic nanomaterials with enzyme-like characteristics, offer the advantage of low cost, high stability, tunable catalytic activity and ease of mass production. For these reasons, they have been widely applied in biosensing, therapeutics and environmental protection.

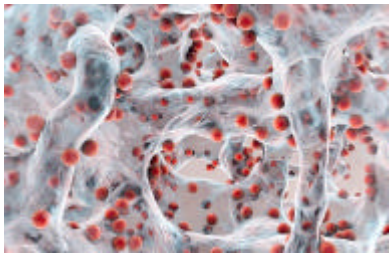
A research team from the Changchun Institute of Applied Chemistry of the Chinese Academy of Sciences discovered a new class of single-atom nanozymes, which integrates state-of-the-art single-atom technology with intrinsic enzyme-like active sites.

Initial Success with Iron Ion Battery

IIT Madras researchers have for the first time fabricated a rechargeable iron ion battery using mild steel as the anode. The iron ion battery is cost-effective and the amount of energy that can be stored in the battery is also high. While lithium ions are the charge carriers in lithium ion battery, the Fe^{2+} ions perform that function in the case of iron ion battery.

With the world turning its attention to electric vehicles, the focus is on developing batteries that are cheaper.

Bacteria can Degrade Plastics

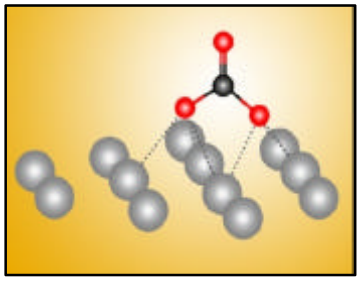


Research works from Siv Nadar University, Greater Nodia made to invent two types of bacteria, DR11 and DR14, to degrade plastics. The degradation is effective, if plastics are kept under moit soil. The work was published in Royal Society of Chemistry Advances. In view of a constant increase in non-degradable plastic deposites, this type of work may find potential utility in future.

Engine runs with Water

An engine was developed to run with water by Mechanical Engineer, S. Kumara Swami of Coimbatore. This type of engine can split water into its components. It uses hydrogen as fuel, leaving oxygen to the atmosphere. Thus, this engine is helpful in minimizing environmental pollution.

A 'Silver Bullet' for conversion of Carbon dioxide



Fossil fuels are the lifeblood of modern societies, but their increased use releases carbon dioxide, a climate-warming greenhouse gas, faster than plants can recycle it via photosynthesis.

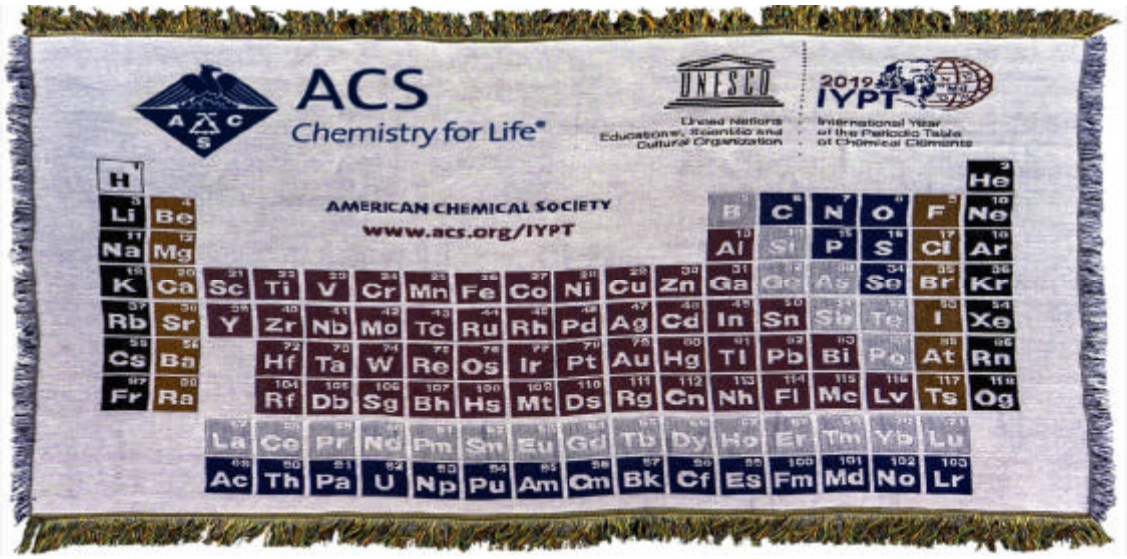
Now, a powerful combination of experiment and theory has revealed atomic-level details about how silver helps transform carbon dioxide gas into a reusable form. The results, reported in the journal Nature Communications, will help in the design of more efficient metal catalysts.

Dean of Indian Origin at M.I.T., U.S.A.

Indian born Prof. Anantha Chandrakasan is the new Dean of the World's Best Engineering College, Massachusatts Institute of Technology, MIT, Cambridge, United States of America.

All Indians feel proud as World's best Google and Microsoft are already controlled by Indians. Now this time Education.

IYPT-2019 Gifts from ACS



Year 2019 was declared as International Year of Periodic Table of Chemical Elements (IYPT-2019) by UNESCO on the completion of 150 years of the first periodic table by Mendeleev and 100 years of starting IUPAC. As a part of the IYPT-2019 Celebrations, the American Chemical Society (ACS) gave a blanket printed with 118 elements of the periodic table to all its members on roles.

Active members of ACT organized more than 25 IYPT-2019 events. These events were concluded, with enthusiastic academic spirits and knowledge consolidation.

We conclude the present issue of the ACT News Letter here ☞

ASSOCIATION OF CHEMISTRY TEACHERS

(Promoting Excellence in Chemistry Education)

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Congratulations to INDIAN TEAM

India won Six Gold Medals in the International Junior Science Olympaid, organised at Doha, Qatar, 3-12 December 2019

India is the best performing award winner country

ACT NEWS LETTER

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