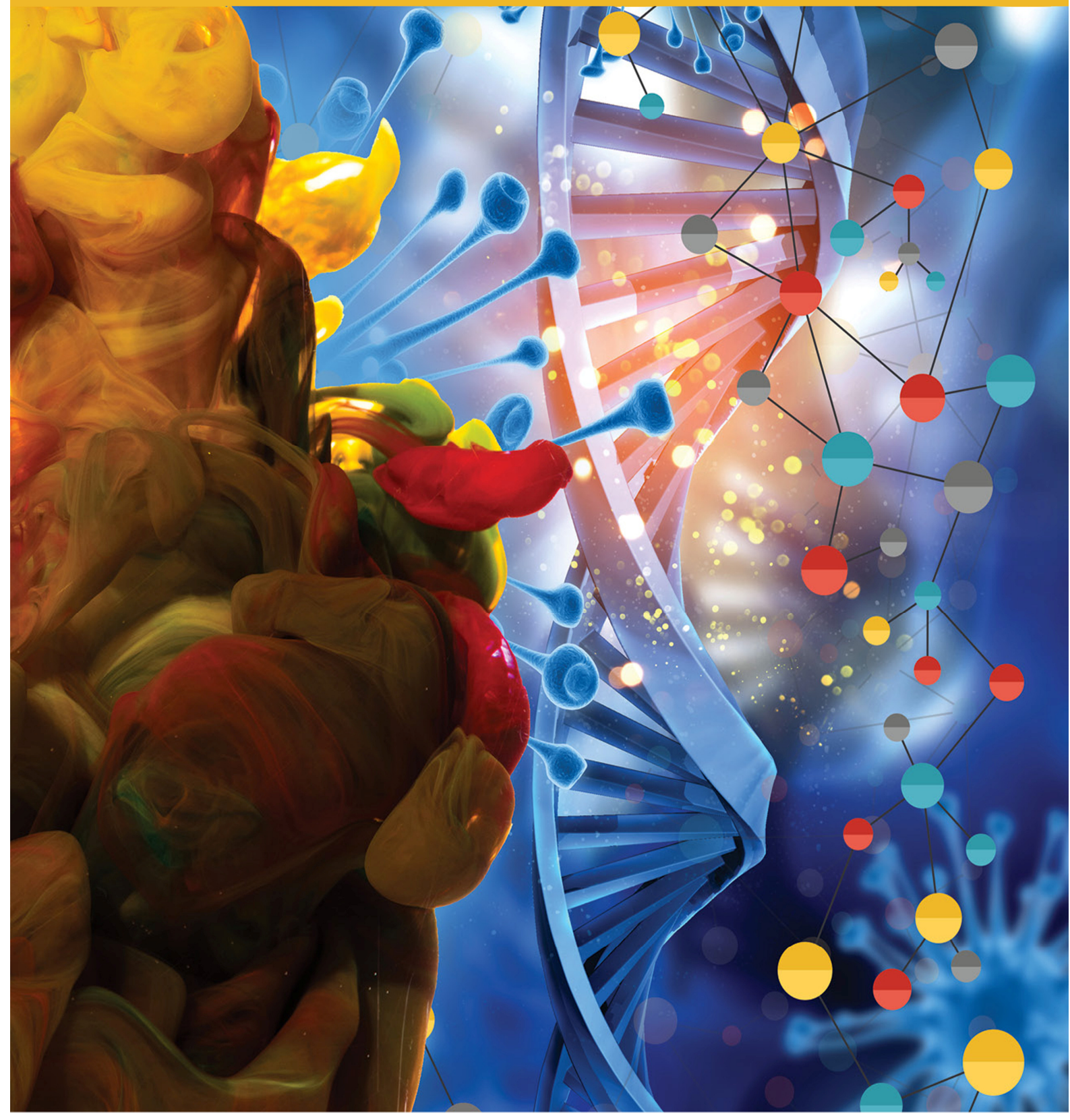




# ASSOCIATION OF CHEMISTRY TEACHERS

## NEWS LETTER

ISSUE : 11, MAY - AUGUST 2018



# ACT News Letter, Issue 11

May – August, 2018

• Contents of the News Letter Issue 11	2
• Taking Care of Air	3 - 4
• Low Cost Mini Science Laboratory	5
• Academic Participation of ACT members	6
• Report on International Chemistry Conference	7
• Subject Report on CHEMTASTIC 2018	8
• Report on National Seminar on Chemistry	9
• Reports on RSC-ACT Teacher Workshops	10 - 13
• Views, News and more	14 - 15
• Recent ACT Memberships	16 - 17

**Disclaimer :** The views expressed are that of the authors and ACT is not responsible in any way for them.

## Association of Chemistry Teachers Promoting Excellence in Chemistry Education

*From the Editorial Desk...* 

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**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 in the present issue. We have also included subject reports on International and National Chemistry Events. Reports on RSC-ACT teacher workshops were given briefly. Recent ACT memberships were also listed in this issue.

We invite good suggestions and better contributions from the readers to get best output of the future issues.



## Taking care of the air

While the threat remains largely invisible, pollution's effects in Delhi have become ever more obvious. On 5 December, 2017, the city's pollution caused players to vomit during a cricket match between India and Sri Lanka, stopping play. In winter, Delhi's problem is literally a burning issue. Outside the city, farmers burn waste straw. Inside, people burn wood and cow dung to keep warm and cook. And of course, more fossil fuel-burning cars are polluting the air year round, as they are everywhere in the world.



### Priorities up in the air

'If you look back there was a time when sulfur dioxide was a big issue, from burning sulfur-containing coal,' As well as dissolving to create acid rain that can damage trees and buildings, sulfur dioxide reacts to help create smog. In the early 1950s a five-day Great Smog was directly linked to the deaths of over 4000 Londoners.

Since then, as sulfur dioxide levels fell, other pollutant foes have become more obvious. One key type is particulate matter, or PM, usually written with a number indicating the particles' size. PM10 particles are below  $10\mu\text{m}$  in diameter. PM2.5 are those below  $2.5\mu\text{m}$  in diameter. For comparison, a human hair is typically  $50\text{--}70\mu\text{m}$  wide.

PM is a complex mixture of substances that get lodged in peoples' lungs, and are linked to heart and lung diseases. It is mainly produced in three ways. Some particles are released during burning, including in car engines. Others come from dusty materials found on surfaces like roads, like worn fragments of tyre. Finally, some are made in reactions between chemicals in the air, including sulfur dioxide and nitrogen oxides ( $\text{NO}_x$ ), and volatile organic chemicals.

India has clean air standards to tackle air pollution. Delhi has problems with PM partly because it is an inland city without the benefit of coastal winds, with lots of pollution sources. Delhi's problems are also partly due to how it deals with pollution.

### Driving into the wild blue yonder

Yet the story that study told about the impact of  $\text{NO}_x$  is complex, as is almost everything about these gases. Usually, nitrogen is too stable to react with oxygen. But at high temperatures, like those in car engines, they can combine to produce a variety of molecules, including NO and  $\text{NO}_2$ . On sunny days  $\text{NO}_2$  in particular breaks down in a photochemical reaction. This leads to a mazy network of reactions that form other substances, including ozone. Like PM, ozone can cause lung and heart damage if inhaled.

Source : *Education in Chemistry*, May 2018

However, NO also reacts with and removes ozone from the air, and NO accounts for more than four-fifths of NO<sub>x</sub> emissions from diesel vehicles. Therefore, the scientists looking at the Volkswagen scandal's effects found that, thanks to NO removing ozone, increased NO<sub>x</sub> emissions actually reduced the harm caused by increased PM2.5 emissions.

When you're at traffic lights or in a congested environment you get the highest exposure, but exposure is also driven by the choices you make,' he explains. 'If you keep your windows open at a traffic light you can expect a lot more emissions coming into your car. Or, if your windows are closed but you're sucking fresh air from outside at those congested places, you're sucking fumes inside. If you circulate air rather than taking the fresh inlet, and keep windows closed, that can reduce your exposure.'

Everyone is affected by exposure to high levels of pollutants, and long-term exposure, healthy people don't normally feel any instant effect from moderate air pollution. However, it can cause problems for the elderly and younger people with medical conditions, especially lung and heart problems. That includes asthma.

### Soaring into the unknown

Parisa Ariya, from McGill University in Montreal, Canada, says we should start specifically tracking nanometre-size particles in the air. She bases that both on measurements of the air and evidence from the snow that often falls near her lab. 'Snow is a snapshot of atmospheric processes,' she explains. The falling snow captures substances in the air, and so testing fresh snowfall with techniques including mass spectrometry provides an easy way to study the atmosphere.

The McGill team has found many different types of nanoparticle, some from natural sources. Others, however, were manmade materials, ranging from those that are usually fairly harmless, such as titanium oxide, to the toxic metal cadmium. She is especially worried about toxic nanoparticles from electronic waste that is supposedly sent to be recycled, but which may not be.



We're not yet certain about the health threat these nanoparticles pose, Parisa explains, but they're likely to cause damage through chemical reactivity when they get into our systems. 'Because little particles have a greater surface to volume ratio, that provides a huge possibility for different types of chemistry, lots of weird things happen', she says. 'That's actually one reason we use them as catalysts.'

Many countries have largely dealt with problems caused by sulfur dioxide, and are getting to grips with NO<sub>x</sub> and PM, with more or less success. Now, to understand the nanoparticle problem and deal with it, international collaboration will be needed. That's because nanoparticles' size makes it easy for the wind to carry them long distances. 'They can be transported across the sea and have a potential impact regionally and globally.' This underlines just how connected we all are 'We all have one planet, we have one environment – and the atmosphere allows pollution to become really international.'

*Prasanth Kumar, student of IIT Delhi, is now running the Global Centre for Clean Air Research, University of Surrey, U.K.*

## Low Cost Mini Science Laboratory

**Dr. Dilip Yadav,**

Department of Chemistry,  
Sonopant Dandekar College, Palghar, Maharashtra.



Most schools in rural areas have inadequate science laboratories. Students often have to learn science without performing or even observing a single experiment. This leads to a debilitating lack of actual practical understanding of the subject which affects these students in later years. MSL eliminates this issue by providing all the facilities of a full-scale science lab in a more compact and affordable form. Design patent is filed for this lab. This lab is completely design in Sonopant Dandekar College, Palghar.

### What is MSL?

Mini Science Laboratory (MSL) has wooden box with 4 compartments, one foldable wing, one sliding wing and wheels. Foldable and sliding wings when fully opened provide 4 feet flat area for experimental purpose; it enables three students at a time to perform experiments. Four compartments contain chemistry experiment apparatus, chemicals, physics experiment apparatus, biology microscope, charts and apron. Wheels are provided for easy portability. There is also space provided for books, notebooks and writing material. Therefore, no need for a separate study table. MSL is equipped with specially designed 75 + secondary school science experiments.



### Benefits of MSL

Schools planning to construct a science lab can drastically reduce costs with MSL because it will cost only 15,000. Schools which cannot afford to spend to traditional laboratories can easily afford MSL. It allows teachers to conduct theory sessions as well as practical sessions within the same classrooms. It turns any classroom into a laboratory, with all the tools necessary to deliver interactive lessons on science-related subjects. MSL covers experiments in Chemistry, Physics and Biology subjects, as per secondary state boards and CBSE curriculum for students [Class 6 to 10].

### Schools that use MSL

Eight Mini Science Labs are donated to schools of Palghar district of Maharashtra with help of E for S NGO, Mumbai; Lions Club of Palghar and Parivartan Trust, Palghar.

### Whom to contact?

Dr. Dilip Yadav, Mob.: 8999653954 / 8806879821, Email : dilip.yadav20@gmail.com

### Cost of MSL?

Rs. 15,000/- including pen drive containing videos of experiments and experimental manuals.

**\*Note :** You tube Search : Mini Science Lab (containing demos, experiments, feedbacks).

FB page: <http://fb.me/StudeskMiniLab>



## Academic Participation of ACT Members

**Dr. V. Narayana**, Coordinated the Second International Conference on 'Advances in New Materials', organised at Guindy Campus, University of Madras on 8-9 June 2017, partially supported by ACT.

**Dr. K. Surendra Babu**, Life member ACT and Director SVRM College, Nagarm participated as guest speaker of 'training programme' organized by ASCI at Central Marine Fisheries Research Institute, Karwar, Karnataka State, on 27<sup>th</sup> June 2018. Minister of State, Skill Development India, Mr. A. Kumar Hegde was the chief guest.

**Dr. Hemant Pande**, Vice president, Central Zone ACT participated and addressed a press conference related to VVM Examination Awards jointly organised by NCERT, Vigyan Prasara and Vigyan Bharati on July 16, 2018 at Ujjain.

Telugu version of **Prof. C.N.R. Rao's 'Nanoworld' book**, written and edited by **Dr. Mannam Krishnamurthy**, ACT EC member was released jointly by **Justice N. Balayogi**, High court, Hyderabad and **Prof. S. Vijayaraju**, Chairman, APH Education Council, Amaravati on 28<sup>th</sup> July 2018 at Repalle, A.P.

**Dr. M.R.R. Prasad**, Life Member ACT and Retd. Scientist ISRO, was nominated as Member of the editorial board of the Journal of Polymer Science and Engineering, En Press Publishers, LLC, Tustin, USA.

## ACT Members at International Venues



**Dr. Mannam Krishnamurthy**, Chief executive Dean, Varsity Education Mgmt. Ltd., Hyderabad and ACT EC Member participated in group discussion on 'Global Warming' at Princeton University, New Jersey, USA on 11<sup>th</sup> May 2018.



**Prof. Lakkaraju P.**, Georgian Court University, Lakewood, USA chaired the Dr. Andrew Bocarsly's group discussion. This group is working on 'methods of decreasing carbondioxide in the atmosphere'.



**Prof. Sraddha Sinha**, BB Das NITM, Lucknow and Secretary ACT North Zone gave a talk on 'molecular modeling approaches' at the 3<sup>rd</sup> International Conference on Obesity and Chronic diseases, at San Francisco, USA organised during 23-25 July



2018. **Dr. Antonio Gangemi**, University of Illinois, Chicago, USA chaired the session.

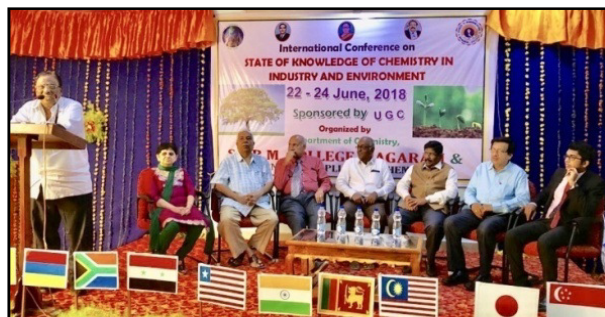
## Report on International Chemistry Conference

International Conference on 'State of Knowledge of Chemistry in Industry and Environment' was organized at S.V.R.M. College, Nagaram, A.P., India during 22-24 June 2018. This International event was sponsored by UGC. It was also supported financially by Coimbatore Institute of Technology and Association of Chemistry Teachers.

The inaugural session was chaired by **M. Sudhakara Rao, Convenor** and Life Member of ACT. **Prof. G. Nageswara Rao, Vice-chancellor**, Andhra University, Visakhapatnam was the Chief Guest. Prof. R.G. Prabhakar, Secretary, RTEI Society; Prof. M. Koteswara Rao, Dean, Acharya Nagarjuna University, Guntur; Prof. K.S. Rao, Chief Editor, Journal of Applicable Chemistry and Dr. G. Srinivas, Joint Secretary UGC were also present as other guests. Key note address was delivered by Santi Swarup Bhatnagar Awardee Dr. G. Narahari Sastry, I.I.C.T., Hyderabad.



Dr. Amir Hajiali, I.A. University, Tehran (Iran); Prof. Ashok Mishra, I.I.T., Chennai; Prof. Farid Khan, H.S. Gour University, Sagar; Prof. N.B. Patel, V.N.S. Gujarat University, Surat; Dr. Shivatharsiny Rasalingam, University of Jaffna (Sri Lanka); Prof. Sreekantha B.J., University of KwaZulu-Natal, Durban (South Africa); Prof. Nilima Rajurkar, Savitribai Pule University, Pune; Prof. D. Ashok, Osmania University, Hyderabad; Prof. M. Swaminathan, Kalasalingam University, Krishnakoil and Prof. K. Ramakrishna, GITAM, Visakhapatnam gave invited lectures.



There were 36 papers for oral presentation and 58 papers for poster presentation. About 150 delegates participated from more than 10 countries of the Globe. Prof. R.S. Rao, Andhra University, Visakhapatnam; Prof. Shivaraj, Osmania University, Hyderabad; Prof. PVS Machiraju, Pragati Institutions, Kakinada and Dr. KGC Senaratna, UvaWellassa University, Sri Lanka were in the panel discussion. Dr. K. Srinivasa Rao, GID Studies, Lucknow was chief guest on day 3 and gave valedictory address. Dr. K. Daruda, University of Yaounde (Cameroon) presented best paper presentation awards and Y. Leela Ramesh, GSS Academy, Pretoria (South Africa) presented academic awards. **Dr. Mannam Krishnamurthy, organizing secretary** and ACT EC member gave the conference report and proposed vote of thanks.



## CHEMTASTIC 2018: A fun filled Chemistry Activity

VES College of Pharmacy, Chembur and ACT jointly organized an unique event known as **3<sup>rd</sup> CHEMTASTIC 2018, an inter-college competition**, which included Chemistry based fun filled events, **on 28<sup>th</sup> July 2018, Dr. Rakesh Somani** acted as convener of the events.

A series of events were planned for Under graduates and Post graduate students which could boost their imagination power, artistic talent and of course chemistry interest. It focused on different areas of chemistry and activities namely CHEMSKIT (It gives the students to express their thoughts and understanding of chemistry by acting), CHEM-O-DOODLE (expertly designed chemistry related puzzles), CHEM-IN-MOTION (describing day to day chemistry to non-chemistry background made easier by innovative videos), CHEM-O-CHROME (have fun with chemistry with amazing colors in the form of Rangoli), PROCREATION (Model making or working reaction focusing on the theme of the event), CHEM-O-FACE (bring out the inner artist in you, grab your palettes) and CHEM-O-LOGO (use your creativity to design logo and tagline) which tested student's aptitude and their knowledge.



The Chief Guest for this event was **Dr. Anthony Crasto**, Senior Scientist, Glenmark Pharmaceuticals, Navi Mumbai, who inaugurated event with unveiling the logo of the event. In his motivational speech, Dr. Crasto encouraged students to learn chemistry subjects in special way and emphasized that they have a very bright future.

The event was well attended by 115 participants from more than 20 colleges falling under the jurisdiction of University of Mumbai.



Alluring Cash Prizes were given away to the winners during the valedictory function presided by **Dr. A. V. Karnik**, In-charge, Director, Garware Institute, University of Mumbai, Kalina Campus. The event was well attended by more than 200 participants.

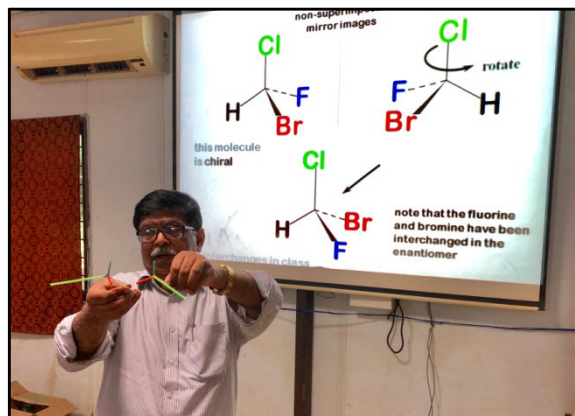
Dr. Supriya Shidhaye, Principal, who is the main guiding and supportive force for such initiatives, welcomed guests and explained objectives of the event. Prof. Jharana Das, Coordinator of VESCOP appreciated the efforts. Shri B.L. Boolani, Founder trustee of college also encouraged students and thanked them for participation in such large number.



## Seminar on Popularization of Chemistry Concepts

A National Seminar on 'Popularization of Chemistry Concepts' was jointly organised by Association of Chemistry Teachers and Rajiv Gandhi University of Knowledge Technologies, AP State at International Institute of Information Technology (IIIT), Nuzvid on **14, August 2018**. **Dr. Mannam Krishnamurthy EC Member of ACT acted as convener** of the seminar.

Mr. K. Ravindra Kumar, ACT Life member chaired the inaugural session in the forenoon. **Prof. V. Venkata Dasu of IIT Guwahati** and present director of IIIT Nuzvid gave keynote address. In his address, Prof. Dasu highlighted the importance of Concepts of Chemistry and the need of Popularization of Chemistry, so that the young generation acquire the knowledge and understanding.



There were three invited talks in the technical session, scheduled in the afternoon. **Prof. P.V.V. Satyanarayana, Acharya Nagarjuna University, Guntur** gave a talk on 'Understanding isomerism with the help of models'. Prof. M. Krishnamurthy, Varsity Education Management Limited, Hyderabad gave a presentation on 'Visual Learning Chemistry with the help of animation'. **Mr. K. Ravindra Kumar, Sri Chaitanya Educational Institutions, Vijayawada** gave a demo presentation on 'Learning concepts through physical experimentation'.

About 200 PU students selected from IIIT Nuzvid & Srikakulam and 20 chemistry faculty members participated in the seminar. Some of them interacted with guest speakers.



One hour online competition on 'Chemistry in day-to-day life' was conducted to two batches of each one thousand RGUKT PU students on 13<sup>th</sup> August 2018. Two merit performances were judged. They were awarded with ACT prizes and certificates of merit.

Dr. I. Ramakanth, Associate Dean, IIIT, Nuzvid coordinated the academics of the event, Dr. S. Asiri Naidu, Academic Dean, IIIT, Srikakulam coordinated the arrangements and Dr. (Mrs.) U. Vijayasree, HOD, Chemistry, IIIT, Nuzvid proposed vote of thanks.

## Reports on RSC-ACT Teacher workshops

**RSC-ACT Science Teachers Training Workshop** under the banner of **Yusuf Hamied Inspirational Chemistry Programme** was organized on 1-2, May 2018 at **The Scindia School, The Fort, Gwalior** in collaboration of **Royal Society of Chemistry** and **Association of Chemistry Teachers**.

**Dr. Madhav Deo Saraswat**, Principal, The Scindia School, inaugurated the workshop by lighting the lamp. He reiterated his faith in Science teachers who can make a difference in the lives of science students. **Dr. Umesh Chandra Jain**, ACT EC Member and workshop coordinator, addressed the teachers of different Schools of Gwalior and emphasized on the need of innovative teaching methods.



**Prof. Brijesh Pare**, Vice president ACT Central zone delivered a lecture on the topic “How to Teach Chemistry in an effective and interesting way.”

The workshop focused on three key points: common misconceptions and difficulties students experience understanding the particle nature of matter, helping the teachers use diagnostic questions to challenge common misconceptions and use of a range of active learning techniques to teach about the particle nature of matter. The programme covered the safety measures to be followed in the Chemistry Lab. It was followed by small activities in the Chemistry Lab.

Over the Two Days programme, thirty five teachers attended the Workshop. The Workshop was successfully concluded with the giving away of Certificates and vote of thanks by Ms. Sangeeta Jain (HOD Science, The Scindia School).

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RSC-ACT Workshop was also organised at **Regional Institute of Education, Azmer** on 10-11, May 2018, coordinated by **Prof. V.P. Singh**.

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A two day **Inspirational Chemistry Workshop** was organized on 17-18, May 2018 by the Department of Chemistry, **A.N. College, Patna** in collaboration with **RSC and ACT**.

The programme was inaugurated by the Principal of the College **Prof. Shashi Pratap Shahi** by lighting the lamp along with Prof. Poornima Shekhar Singh, Prof Ajay Kumar, Dr. Anju Kumari Gupta and members of the Chemistry faculty. **Dr. Indira Nair** from Bangalore was the RSC Resource Person of the Workshop. The aim of this Workshop was to endow teachers with new tools for delivering, engaging and conducting effective chemistry lessons and to support the holistic approach to teacher professional development. **Dr. Subhash Prasad Singh**, Secretary ACT, Eastern zone and coordinator conducted the proceeding of the Inaugural session and **Prof. Tripti Gangwar** extended vote of thanks.





The practical experiments were supported by Dr. Anil Kumar Singh and Dr. Brameshwar. At the end of the workshop the participants were found to be able to access resources on the Royal Society of Chemistry website, explore the ideas behind students' understanding of chemical reactions, develop and use of resources to help students write equations and formulae with fun and frolic. Three different RSC Books on the said units were distributed to participants along with participation certificates.

RSC-ACT Workshop was also organised at **K.C. International School, Meerut** on 23-24, May 2018, coordinated by Principal **Sudhansu Shekhar**.

RSC-ACT Workshop was also organised at **Dr. M.P.S. World Bhopal Sahayog School, Agra** on 28-29 May 2018, coordinated by Principal **Charles Ckarance**.

RSC-ACT Workshop was also organised at **Bhopal Sahayog, Bhopal** on 22-23, June 2018, coordinated by **Prof. Brijesh Pare**, Vice President ACT.

RSC-ACT Workshop was also organised at **Madhav Science PG College, Ujjain** on 25-26, June 2018, coordinated by **Prof. Brijesh Pare**, Vice President ACT.

The Department of Chemistry, Hindu College, University of Delhi, has organised two days 'Inspirational Chemistry Teacher Training Programme' in collaboration with ACT on 18-19, July 2018 at **Hindu College, Delhi**. The program was inaugurated by the Chief Guest **Mr. Brij Bhushan Sharma** (IPS), Additional Director General Police, Bhopal, Madhya Pradesh, along with Prof. Brijesh Pare, Vice President ACT, Ms. Jaya Swaminathan, RSC resource person and **Dr. Neera Sharma**, Coordinator.

Shri B.B. Sharma shared his views and inspired teachers in his inaugural speech, followed by popular science talk "Could Chemistry Learning be Fun" by **Prof. Brijesh Pare**. Three interactive sessions were conducted on both the days.



About 70 Chemistry teachers had participated. The curriculum of the programme was a blend of motivational talks, interactive sessions for teaching methodologies and practical hands-on session in chemistry laboratory. Participants have also learnt the micro scale techniques to perform around 13 chemistry experiments in the laboratory. The overall holistic approach of the workshop was to promote active teaching-learning techniques in the classroom to help the students develop their knowledge, understanding and enthusiasm for Chemistry.

The participating teachers found the training interactive and engaging and appreciated the overall conduct of the workshop. The programme ended with the valedictory function in which Chief Guest **Mr. A. P. Sharma, Principal of Birla Public School, Doha, Qatar**, motivated the audience with his highly inspirational speech, followed by feedback and certificate distribution session.

Royal Society of Chemistry organized a workshop on 'Experimental Chemistry for School Teachers' in association with ACT and Department of Chemistry, **SRM Institute of Science and Technology, Ramapuram** Campus on 10-11 August 2018. The objective of the workshop is to train the school teachers with various education models in the field of chemistry.

The workshop was inaugurated by lighting kuthu vilakku by the Chief guests. During the Inaugural function **Prof. Helen P. Kavitha**, welcomed the gathering. **Ms. Bhakti Dhamdhare**, RSC, Bangalore gave a detailed explanation about the workshop. **Dr. V. Subbiah Bharathi**, Dean, SRMIST, gave presidential address in which he has explained about the modern scientific developments in chemistry. The key note address was given by **Dr. S. Balasubramanian**, Secretary, RSC, Chennai.



On first day, Mrs. Badmavathy, Trainer from RSC has delivered a lecture on "Moving towards active learning" using various educational models such as DART, Concept map, Tarsia, Bingo etc. Teachers from various schools actively participated in the workshop. The interactive sessions made the workshop lively and enjoyable. The interesting part is the practical activity demonstrated by Mrs. Padmavathy in the second day of workshop.

During the valedictory function, the certificates were distributed by Dr. S. Balasubramanian. All the teacher participants gave a very good feedback about the quality of the two days workshop. They expressed that the inputs they gained through this workshop will definitely going to have a great impact on their teaching process.

A workshop under the Yusuf Hamied inspirational Chemistry programme of RSC was held at **Nehru Science Centre, Worli, Mumbai** on August 10-11, 2018. The workshop was organised under the aegis of Bombay Association for Science Education (BASE) and ACT.



There were 35 high school teachers from Mumbai region actively participated in the workshop which was conducted by **Dr. Vimala Oak**, RSC resource person.



**Dr. Paresh K. Joshi**, Coordinator, Junior Science Olympiad Programme, Homi Bhabha Centre for Science Education (TIFR), Mumbai and President, International Junior Science Olympiad served as the Coordinator of the workshop. Dr. Chitra Joshi, Mrs. Sangeeta Sohni, Mr. Zohar Attari, Mr. Deepak Bhatia, Prof. Sujata Haralkar and **Dr. D.V. Prabhu** of BASE organised the workshop. Mr. Umesh Kumar, Curator, Nehru Science Centre, Mumbai deserves special thanks for the organization of the two day workshop.

A Two day 'RSC Workshop on Chemistry' was organised jointly by RT Education Improvement Society and Association of Chemistry Teachers on 27-28, August 2018 at **S.V.R.M. College, Nagaram**, A.P. State. **Dr. Mannam Krishnamurthy**, EC Member ACT acted as convener of this 'Yusuf Hamied Inspirational Chemistry Workshop'.

The inaugural session was chaired by **Mr. G. Srinivasa Rao**, ACT Life member and Principal, S.V.R.M. College. **Mr. Peershavali S.Md.** was the resource person of the workshop from Royal Society of Chemistry. Adopting active learning strategies, chemical reactions and equations was performed on the first day. Workshop on the particle nature of matter was performed on the second day.

**Mr. R. Chinna Dorai**, Academic Executive, Agastya Foundation Kuppam, A.P., extended his co-operation in performing practicals. Dr. M. Krishna Murthy, Chief Executive Dean, Varsity Education Management Ltd., Hyderabad gave inspirational presentation on the use of animations in understanding chemistry and also gave valedictory address.



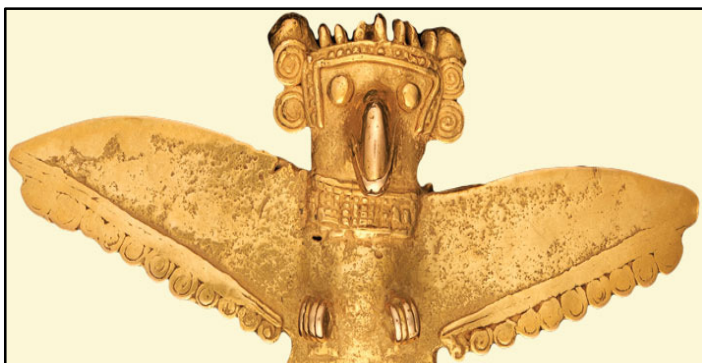
There was plenary of groups working on lesson plans. Each participant was presented, with three books and participation certificate by RSC. RTEI Society also presented a regional language version to **Prof. CNR Rao's 'Nanoworld' book** to all participants and guests.

There were 60 Government Science teachers participated in the workshop. The feed back was good and participant teacher felt happy with the methods, experiments, group working and interaction in the inspirational workshop.

## Views, News and more ....

### How Gold is made and how it got to our planet

Revered for its aesthetic and metallurgical properties for thousands of years, gold is still one of the most sought after precious metals. There's no question gold has played a unique role for humanity, for better or for worse. Today, we'll explore the fascinating science behind the origin of gold atoms and some theories that seek to explain how the prized element got to where it is today, here on Earth.



Gold is very memorable, so it shouldn't come as a surprise that its main use is in jewelry. Since time immemorial the noble metal's resplendent luster allows it to be designed into the world's most coveted and exquisite jewelry - fit for queens or kings. Today, most of the gold that is newly mined or recycled is used in the manufacture of jewelry. About 78% of the gold that's available, as opposed to stored, each year is used for this purpose.

Early transactions were done using pieces of gold or pieces of silver. The rarity, usefulness, and desirability of gold make it a substance of long-term value.

### Glyphosate

Glyphosate  $C_3H_8NO_5P$  is the real weed, herbicide and is world. The WHO says, glyphosate causes cancer and studies link it to many diseases. Countries across the globe have been struggling to ban its use due to pressure from industry and farmer groups. The Indian law says that the chemical can be used only in tea plantations and non-crop areas. But it is widespread. Recently two states (Maharashtra and Andhra Pradesh) have tried to enforce restrictions on the use of glyphosate as herbicide and tracks the toxic trail.

### How sticky tape trick led to Nobel Prize

**It sounds like an unusual way to win a Nobel Prize.** But ordinary sticky tape was crucial to the breakthrough that yielded graphene, a material with amazing properties and - potentially - numerous practical applications.

Graphene is a flat layer of carbon atoms tightly packed into a two-dimensional honey comb arrangement. It is both the thinnest and the strongest material known to science, and it conducts electricity better than copper.

The electrical properties of graphene mean that it is the prime candidate to replace silicon in transistors - the switches that change the flow of current and form the heart of computers and other electronics.

There are now more sophisticated ways to produce graphene and the list of potential applications is endless. Scientists say it could find uses in transparent touch screens and solar cells. A tiny amount mixed into plastics could also turn them into electrical conductors.

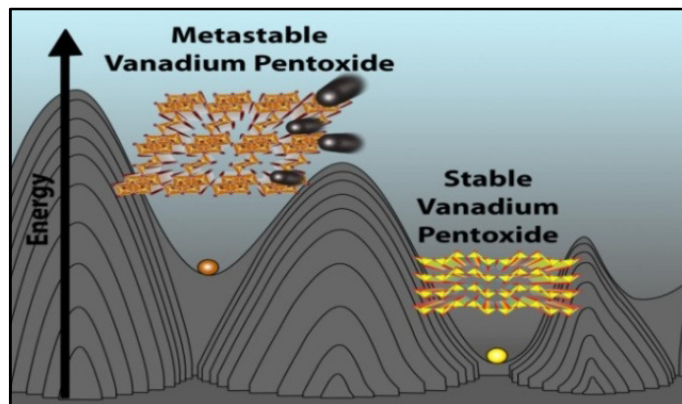




## A new type of powerful battery

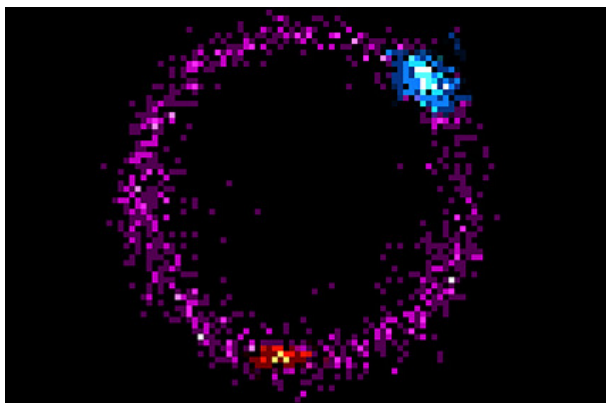
A multi-institution team of scientists led by Texas A&M University chemist Sarbajit Banerjee has discovered an exceptional metal-oxide magnesium battery cathode material, moving researchers one step closer to delivering batteries that promise higher density of energy storage on top of transformative advances in safety, cost and performance in comparison to their ubiquitous lithium-ion (Li-ion) counterparts.

"Currently, lithium-ion technology dominates; however, the safety and long-term supply of lithium remain serious concerns. By contrast, magnesium is much more abundant than lithium, has a higher melting point, forms smooth surfaces when recharging, and has the potential to deliver more than a five-fold increase in energy density if an appropriate cathode can be identified."



## Piecework at the Nano assembly line

Scientists at the Technical University of Munich (TUM) have developed a novel electric propulsion technology for nanorobots. It allows molecular machines to move a hundred thousand times faster than with the biochemical processes used to date. This makes nanobots fast enough to do assembly line work in molecular factories.



(Source : Enzo Kopperger)

"By applying electric fields, we can arbitrarily rotate the arms in a plane," explains the head of the Chair of Physics of Synthetic Biological Systems at TU Munich. His team has, for the first time, managed to control nanobots electrically and at the same time, set a record: The new technique is 100,000 times faster than all previous methods.

## International Chemistry Conference MTCSGC 2018 at SRM Chennai

Association of Chemistry Teachers, SRM Institute of Science and Technology and Rasayan Journal of Chemistry (SCOPUS indexed Chemistry journal since 2008) have jointly organised an International Conference on "**Modern Trends in Chemical Sciences including Green Chemistry**" MTCSGC 2018 on **December 27-29, 2018** at SRM IST, Ramapuram Chennai.

**Prof. K.N. Ganesh**, Director IISER-Tirupati had kindly consented to be the Chief Guest and to deliver the Keynote Address. **Prof. N. Sathyamurthy**, President, Chemical Research Society of India, Former Director, IISER-Mohali, Honorary Professor, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore and Founder President, ACT will be the Guest of Honour and will deliver the Keynote Lecture.

**Prof. D.V. Prabhu**, Wilson College, Mumbai and **Prof. Helen Kavitha**, SRM, Ramapuram are the convenors of the conference.

## ACT Memberships (Sept 2017 to Aug 2018)

LM No.	Name	Address/Particulars
2034	Dr. Anil Kumar Singh	1 Raghunath Sadan, Venu Vihar Colony, North Patel Nagar, Patna.
2035	Dr. Gayatri Natu	B 208, Madhukosh Society, Ghayatri Phata, Pune.
2036	Prof. K.M. Poopathi Raja	F 192, Shanthi Sadan Residency, Kochadai, Madurai.
2037	M. Satish Dheerendra	Ganesh Society, Jule, Solapur.
2038	Dr. Kasula Mamatha	Ramnagar, Hanamkonda, Warangal.
2039	Dr. Bikal Kumar Gupta	R.K. Tower, Bhikhanpur, Guntur N3, Bhagalpur.
2040	Dr. Dwipen Kakati	Rajiv Gandhi University, Doimukh, Arunachal Pradesh.
2041	Rajesh Chakrabarty	102 K, Nilgiri Apt., Adadari Twiali, Guwahati.
2042	Dr. Anand Kumar Arya	6, Shiva colony, HBU Ext, Ajmer, Rajasthan.
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2046	Prof. V. Rajeswar	2-8-445/2, Srinagar Colony, Hanamkonda, Warangal, Telangana.
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2054	Namrata Doodani	803, Tower 22, CWG V, Near Akshardham, New Delhi.
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2068	Dr. G. Venkata Reddy	Near Saibaba Temple, Kuppam, Chittoor Dt., Andhra Pradesh.
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2077	Dr. Snehal Ashok Chavan	N40, New Snehanagar, Wardha Road, Nagpur.
2078	Dr. Vishwa Deepak Tripathi	A28, Ram Vihar, Shivajipuram, Indira Nagar, Lucknow.



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2086	A. Kistan	46, Krishna Colony, Kovanapolayam, Thiruninravur, Chennai.
2087	A. Prem Kumar	166/5, Gandhiji Street, Kollapalayam, Erode, Tamilnad.
2088	A. Salem	4/7, Neithal Street, Ponni Nagar, Porur, Chennai.
2089	J. Sumathi	96, Abdulkalam 1st street, Srineevasapuram, Paranipuddur, Chennai.
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2091	Pandurang T Mohite	A/P Tondoli, Kadegaon, Sangli Dt., Maharashtra.
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2093	Dr. Partha Pratim Das	Dinggal, Debra, West Midnapore, West Bengal.
2094	Dr. P.S. Kandagal	Ashiyana, Basava Nagar, Ilkal, Karnataka.
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2096	P. Bashpa	Laxmi Sadanam, V Paramra, Feroke, Calicut, Kerala.
2097	Dr. Suman Maji	Lovely Professional University, Phagwara, Punjab.
2098	Dr. T.V. Rajendran	22. Mosque st. Nerkundram, Chennai.
2099	Dr. S.S. Kalaivani	129, Sambandhar street, Semmedu, Coimbatore.
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2101	Jyotirekha G. Handique	TW-1, University Campus, Dibrugarh, Assam.
2102	Dr. Sumit Kumar	Anugrah Memorial College, Katari Hill Road, Gaya.
2103	Dr. Saneel K Jhakur	53, Cinema Colony, Bilaspur, Himachal Pradesh.
2104	Dr. Nisha Kumarti	Station Road, Dumraon Buxar, Bihar.
2105	Dr. Sheerin Masroor	AN College, Pataliputra University, Patna.
2106	Dr. Amrita Chakraborty	Nutan Chati (Dasbagan), Banhura, West Bengal.
2107	Jain Prakash Patel	5, Durga Mandir Road, Hargnkhat, Anisabad, Patna.
2108	Mira Kumari	Saristabad, Gardanibag, Patna, Bihar.
2109	Sri Shaileswar Jha	402, N K Enclave, Monokamna Mandir, Ambedkar Path, Patna.
2110	Kumar Gyanendra Kishore	Chhoti Tengraila, Amarpura, Naubalpur, Patna.
2111	Viswanath	North Jai Prakash Nagar, Ashiyana, Patna
2112	Jaya P. Swaminathan	C 205, Hinduja Lake Estate, Hulimavu, Bangalore
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2114	Dr Aparna S. Bhardwaj	Kidangan House, Mele Pattambi, Palakkad Dt., Kerala
2115	Dr Mery George	2 Sherfudeen Street, Choolaimedu, Chennai
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2117	Dr. Annu Thomas	Kalleimannil, Baker-Hill, Kottayam, Kerala
2118	Jaisy Joy	Chackalayil, Kaipattor, Arakkunnam, Via Ernakulam, Kerala

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

# **ASSOCIATION OF CHEMISTRY TEACHERS**

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Indian Chemistry Olympiad team, which won 2 gold and 2 silver medals at 50th International Chemistry Olympiad organised in Czech Republic, during July 2018. ACT congratulates the medal winners and appreciates the team efforts in winning four medals.

**ACT NEWS LETTER**  
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