



ASSOCIATION OF CHEMISTRY TEACHERS

NEWS LETTER

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Promoting Excellence in Chemistry Education

Association of Chemistry Teachers

News Letter, September - December 2022

Contents of the News Letter : Issue - 24

1.	From Editorial Desk and Editorial Board Members	02
2.	Honorary Members of ACT	03
3.	Spectrum of Activities of ACT	04
4.	Reports of Activities of ACT	05
5.	Reports of NCCT 2022	09
6.	Awards of ACTs 2022	11
7.	CONTECH 2022-23 (Phase-1): A Report	15
8.	ACT Executive Council and Annual General Body Meeting	17
9.	Edible Oils in Cosmetics	19
10.	Views, News and more	23
	Climate Change is Raising the Top of the Troposphere	
	Dynamic bonds' reshape the rules of aromaticity and chirality	
11.	List of ACT Life memberships	26
12.	Life Membership Form of ACT	27



from Editorial Desk

Prof. Wasudeo Gurnule

Editor

Kamla Nehru Mahavidyalaya,
Nagpur, Maharashtra.



I welcome the Newsletter as an effort undertaken by editor and all editorial board members. Wishing you in advance the entire fraternity of ACT, a Merry Christmas, a very happy, healthy and prosperous New Year 2023. The present Editorial Board has put in its bit of efforts, to make the newsletter as attractive and informative as possible. We tried to direct the attention of our readers towards research trends taking place across the globe so as to motivate them to take up initiative in re-orienting themselves towards sustainability. We are bringing the issue of the newsletter with the activities of ACT, articles of current topic, scientific news and reports of International and National activities. We have also included the report of NCCT-2022 and brief profiles of ACT -2022 award winners.

I take this opportunity to say many, many thanks to all my Editorial Board Members for their whole hearted co-operation extended to me.

With warm regards to one and all.

Members of Editorial Board

- ▶ **Prof. Dr. Brijesh Pare**, Govt. Madhav Science College, Ujjain
- ▶ **Prof. Dr. Damodar V. Prabhu**, Wilson College, Mumbai
- ▶ **Dr. Hemant Khanolkar**, Fr. Conceicao Rodrigues College of Engg., Mumbai
- ▶ **Prof. Dr. M. Swaminathan**, KARE, Krishnankoil
- ▶ **Dr. Subhash P. Singh**, A.N. College, Patna
- ▶ **Dr. Hemant Pande**, Formerly Hislop College, Nagpur
- ▶ **Dr. Rakhi Gupta**, IIS (deemed to be University) Jaipur
- ▶ **Dr. Umesh C. Jain**, Academic Heights Public School, Morena
- ▶ **Dr. Gitimoni Deka**, Rangia College, Rangia
- ▶ **Dr. Helen Kavitha**, SRM Institute of Science and Technology, Chennai
- ▶ **Dr. Vijay P. Singh**, N.C.E.R.T. New Delhi
- ▶ **Dr. Mannam Krishnamurthy**, Varsity Education Management Limited, Hyderabad
- ▶ **Prof. Dr. Sudesh Ghoderao**, RNC Arts, JDB Commerce and NSC Science College, Nashik Road, Nashik

Honorary Members of ACT

We have great pleasure in bringing the updated list of honorary members of Association of Chemistry Teachers, who are sources of inspiration, guidance and support in activities of ACT.

The editorial board of ACT News Letter is proud of the academic achievements of these legendary honorary members.

Bharat Ratna Prof. C.N.R. Rao, FRS

National Research Professor : Linus Pauling Research Professor,
Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur, Bengaluru - 560 064
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Padma Vibhushan Prof. M.M. Sharma, FRS

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Padma Vibhushan Dr. R.A. Mashelkar, FRS

CSIR Bhatnagar Fellow; Former Director General, CSIR, New Delhi.
President, Global Research Alliance, National Chemical Laboratory, Pune - 411 008.



Dr. Nitya Anand

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Prof. R.S. Mali

Former Vice-Chancellor, North Maharashtra University, Jalgaon.
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Prof. S. Jayarama Reddy

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Padma Shri Prof. Jai P. Mittal

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Prof. Mihir K. Chaudhuri

Former Vice-Chancellor, Tezpur University, Tezpur.
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Spectrum of Activities of ACT

1. National Conference on "New Avenues and Advancement in Material Science "(NAAMS) organized by Prof Helen Kavitha, at SRM Institute of Science and Technology, Ramapuram Campus, Chennai. on September 26, 2022.
2. NCCT 2022 on Oct 13-15, 2022 at SVVV University, Indore with Prof Ashutosh Shukla and Prof. Navneeta Upadhyay as Convenors. The ACT Awards were also presented in the convention. The International Conference on Chemistry and Chemistry Education and Experimental Workshop for teachers were a part of the Convention.
3. Teacher Training Programme in Conceptual Chemistry and Physics was organized in collaboration with IAPT by Prof Mannam Krishnamurthy at St. Vincent Pallotti E M School, Pedana, AP on October 16-17, 2022.
4. International Conference on Green Initiatives in Chemical Sciences for Sustainable Development at Sikkim Manipal Institute of Technology SMIT(Sikkim Manipal University), Rangpo, Sikkim on Nov 18-19, 2022. Dr Amy Cannon, Co-Founder and Executive Director of Beyond Benign, USA gave a talk on "Green Chemistry for Sustainable Development"
5. **Prof. Wasudeo Gurnule**, Secretary ACT west Zone Chaired one academic session, at the National Conference on 'New advancements in Material Science', organised by SRM Institute of Science and Technology, Ramapuram Chennai. Also acted as Judge to decide best poster presentation, on Sept 26, 2022.

Reports of Activities of ACT

International Conference on “Green Initiatives in Chemical Sciences for Sustainable Development (ICGICSSD – 2022)” held at SMIT, Sikkim

A two-day-long **International Conference on “Green Initiatives in Chemical Sciences for Sustainable Development (ICGICSSD – 2022)”** was organized by the **Department of Chemistry in joint collaboration with** Association of Chemistry Teachers (ACT) and Indian National Science Academy (INSA), New Delhi **on the occasion of International Year of Basic Sciences for Sustainable Development - 2022 (IYBSSD-2022) on 18–19 November 2022 at Sikkim Manipal Institute of Technology, Sikkim.**

The conference was inaugurated by Prof. (Dr.) Sangeeta Jha, Director in-charge, SMIT in presence of Prof. (Dr.) D.V. Prabhu, General Secretary, Association of Chemistry Teachers (ACT), Prof. (Dr.) Brijesh Pare, President, Association of Chemistry Teachers (ACT), Prof. (Dr.) Kalpana Sharma, Associate Director (R&D), SMIT, Prof. (Dr.) A.P. Tiwari, Associate Director (SA), SMIT, Prof. (Dr.) Pankaj Das, Dibrugarh University, Assam, Dr. Anindita Bhadra, IISER, Kolkata, Prof. (Dr.) Soma Mukherjee, Kalyani University, WB, other invited speakers, HODs and faculty members of SMIT.

Hon'ble Vice-Chancellor, Sikkim Manipal University, Dr. (Lt. General) Rajan S Grewal addressed the gathering in virtual mode. He also expressed that the collaboration of Department of Chemistry with Association of Chemistry Teachers and Indian National Science Academy should continue for research and various activities of the department.

Joint Convener Dr. Santanu Gupta welcome all the guests, delegates and participants and Convener Prof. (Dr.) Nayan Kamal Bhattacharyya highlighted the theme of the conference and the **proclamation of the United Nations (UN) General Assembly regarding International Year of Basic Sciences for Sustainable Development (IYBSSD 2022).** Prof. Bhattacharyya also highlighted that the primary objective of the conference is to link basic science with the goals of Sustainable Development.



The e-copy of the Proceedings was released by Prof. D. V. Prabhu, General Secretary, ACT and Prof. N. K. Bhattacharyya, Convener, ICGICSSD – 2022 highlighted the details about the Proceedings and read out

the message sent by Bharat Ratna Prof. C.N.R. Rao. He also mentioned about the message sent by Prof. John Warner who is considered to be the pioneer of Green Chemistry and also the message from Prof. Javier García Martínez, the President of IUPAC. Nine eminent invited speakers out of which 2 from foreign Country covered a wide range of current research on green initiatives in Chemical Sciences for sustainable Development.

In addition to this, as a part of international year of Basic Sciences for Sustainable Development, a unique program was organized for School children on Sustainable Development. 250 students from various schools of Sikkim participated in this program. Prof. Brijesh Pare, President ACT conducted the program.

All total thirty Researchers and faculty members from various organizations of the country presented their original research work and shared their ideas on green initiatives in Chemical Sciences.

The conference was instrumental in raising the awareness of the need for urgency in implementing Green initiatives for Sustainable Development among the academicians and student community.



List of Invited Speakers:

1. **Dr. Anindita Bhadra**, IISER, Kolkata
2. **Prof. D.V. Prabhu**, General Secretary, ACT, Wilson College, Mumbai
3. **Dr. SubarnaSivapalan**, Head, School of Education, University of Nottingham, Malaysia
4. **Prof. Pankaj Das**, Professor, Dibrugarh University, Assam
5. **Prof. Soma Mukherjee**, Professor & Head, Dept. of Environmental Science, University of Kalyani, WB.
6. **Dr. Amy Cannon**, Co-Founder and Executive Director of Beyond Benign, Wilmington, Massachusetts, United States.
7. **Dr. Biswajit Dey**, Visva-Bharati University
8. **Prof. Brijesh Pare**, President, ACT, Professor & Head, Dept. of Chemistry, Madhav Science Post Graduate College, Ujjain
9. **Prof. Ajeya Jha**, Professor, Dept. of Mgt. Studies, SMIT, Sikkim

Report of Teacher training in Conceptual Chemistry and Physics

A two day 'Teacher training in Conceptual Chemistry and Physics' was organized jointly by Association of Chemistry Teachers (ACT, Mumbai) and Indian Association of Physics Teachers (IAPT), at St. Vincent Pallotti E.M. School, Pedana, Krishna Dist., A.P. on 16 & 17 Oct 2022. First day academics on Chemistry concepts and teaching were coordinated by Dr. Mannam Krishna Murthy, Secretary, ACT South zone.

The inaugural session was chaired by **Mr. BaluJogi Reddy Thirumala**, *Correspondent*, VincetPallotti Group, AP. **Mrs. B. Matilda Rani**, *Mandal Education Officer*, Pedana was the Chief Guest, who emphasized on the importance of training to Science Teachers. **Dr. S.J. Ernest**, *Principal*, Noble College, Machilipatnam was the additional guest, who advised teacher participants not to neglect in learning concepts.

There were three academic sessions on conceptual chemistry. **Mr. U. LakshmanaSuri**, *Lecturer*, Sri Chaitanya Junior College, Gosala; **Mr. K. Ravindra Kumar**, *Executive Dean*, Sri KalyanaChakravarthi Memorial Educational Trust, Vijayawada and **Dr. Mannam Krishna Murthy**, *Chief Executive Dean*, Varsity Education Management Ltd., Hyderabad gave their demo experimentations and power point presentations on teacher training.

In the closing session, science teachers interacted with the resource persons, conclusions were drawn on the method of introducing concepts during teaching.

There were 102 science teachers registered for training, representing 21 government and private schools. A hard copy of the book, 'Experimentation in Physical Science' was given free to each teacher participant, along with a participation certificate.

Second day academics were mainly on Physics teaching. An academic competition was held to 60 class IX and 60 class X students, coordinated by Mr. Dileep and Mr. Rajeev, separately as a part of talent search on 'Chemistry in everyday Life'. Prizes were distributed to best performers.



Report of NCCT-2022

To create an educational environment that engages deep intellectual and to encourage innovative thinking with self discipline and social responsibility, an **International Conference of Chemistry and Chemistry Education** coinciding with the 22nd annual convention of Association of Chemistry Teachers, India was held at Shri Vaishnav Vidyapeeth Vishwavidhyalaya, Indore, during 13-15th October 2022.

The theme of the conference was **"Innovations for Sustainable Chemistry: Challenges and Opportunities"** and the sub themes were, Synthetic and Natural Product Chemistry, Medicinal Chemistry, Applied and Physical Chemistry, Green Chemistry, Biochemistry, Biomaterials, Supramolecular Chemistry, Nanotechnology and Nanoscience, Material Science, Engineering Materials, Synthetic Catalyst, Polymer Chemistry, Environmental Science, Organometallics, Coordination Chemistry, Drug and Gene Delivery, Computational Chemistry.

There were about 200 delegates from within and outside the India participated in the conference. Padma Vibhushan Prof Man Mohan Sharma, inaugurated the Conference, with Hon'ble Chancellor SVVV Shri Purshottam Dasji Pasari. Vice Chancellor, SVVV, Dr. Upinder Dhar in his welcome address gave emphasis on the need of research and innovations for sustainable development. President of ACT Prof Brijesh Pare gave Inaugural address followed by the address of Prof. D.V. Prabhu, General Secretary of ACT. Chair of the conference Dr. K. N. Guruprasad presented the theme of the conference in a lucid manner for the understanding of the audience. Secretary, Vaishnav Parmarthik Trust Shri Kamal Narayanji Boradia proposed the vote of thanks,



Dignitaries on the dias in Inauguration Ceremony



Dr. Brijesh Pare delivering a speech

Plenary Sessions

The conference comprised of Three Plenary Sessions, where expert lectures delivered by eminent speakers.

Dr. Liza Abraham from Ambrose University Canada, She shared how the Green Chemistry Education provides tremendous opportunities to academic institutions to develop skills among the present and

future generation to address sustainability through Chemistry.

Senior Professor Sreekantha BJonngaladda from Durban South Africa nicely explained the use of catalysts to synthesized novel heterocyclic molecules and value added conversions comprising one pot synthesis.

Prof V. P. Singh, Professor of Science Education and Head, NCERT New Delhi discussed the concept of green chemistry to solve the environmental issues posed in the Laboratory.

Prof. Roshan Kumar Yadav (Member, Nepal National Commission for UNESCO, Ministry of Education, Science and Technology, Govt. of Nepal) throw some light on various species of medicinal plants mainly available in Nepal and their therapeutic applications.

Dr. Piyali Das, Adjunct Professor, TERI (The Energy and Resources Institute) presented the Topic "Role of Green Chemistry in achieving SDG Goals and Opportunities for India"

Prof. Rajesh Kumar from IIT, Indore spoke about an interesting topic "Teaching and Mentoring Methods: Dos and Don'ts."

Prof. D.C. Deka (Vice Chancellor, Madhab Deb University, Narayanpur, Assam), discussed that sustainability can be achieved through Nature and role of eco friendly catalysts in sustainable chemistry.



Audience during Inauguration Ceremony

Professor Krishna Kumar Sharma, Former VC, Maharshi Dayanand Saraswati University, Ajmer, delivered a very interesting topic “Medicinal, Commercial and Forensic Importance of Venom of Four Major Snakes of India”

Dr. Nishith Dubey Professor and Head, DTVE&R NITTTR, Bhopal, spoke about “Guided Discovery a Tool for Creative Learning”

Dr. Namit Gupta, Director SVITS, Dr. V. R. Sampath, Director, SVITT, and Dr. M. P. Goutam, Professor, SVIFS, were the chair person for Plenary Session I, II and III respectively.

Scientific Sessions

More than 60 scientific papers were presented by the authors from various regions in 7 technical sessions. Six parallel technical sessions were conducted for oral presentation on day one and day two. Also one poster session on day 2 was conducted.

Each session had a Chair and Co-chair, who were experts in the domain. Each author was given 7 minutes for the paper presentation, which was followed by question and answer session for 3 minutes. The conference was structured to foster discussion between participants.

Along with plenary and technical session, a one day hand on workshop was also organized during the conference. Which was conducted by a team of Four experts led by **Dr. Savita Ldage, from Homi Bhabha Center for Science Education.**

The Conference owes its success to the able guidance of Vice Chancellor SVVV, Dr. Upinder Dhar, Director SVIS, Dr. K.N. Guruprasad, President ACT, Dr. Brijesh Pare, Secretary ACT, Dr. D. V. Prabhu, Convenor of the conference Dr. Ashutosh Shukla, Organizing secretary, NCCT-2022, Dr. Navneeta Upadhyay, and the hard work put in by the entire team of NCCT 2022 and student volunteers.

We would like to thank all of our magnificent delegate speakers, National Advisory committee members, ACT executive council members, ACT life members, organizing committee members, conference attendees, students, media partners and guests for making NCCT 2022 a successful and splendid event.



Prof. D.V. Prabhu announcing names of best paper winner

ACT AWARDS -2022

ACT AWARDS for 2022 were presented to the outstanding Chemistry teachers of the country in recognition of their dedicated services to Chemistry Education and Research. **Padma Vibhushan Prof. M. M. Sharma, FRS, Chief Guest will do the honours and present awards.** Association of Chemistry Teachers is proud to honour.

1. ACT Life Time Achievement Award –

Awarded to Prof.Dr. Rajeev Jain, Director, Directorate of Culture and Cultural Relations, Pondicherry University, Puducherry.

Prof Rajeev Jain was connected with Jiwaji University for over 36 years in several capacities as Professor of Chemistry, Dean of Science Faculty and Director of Institute of Engineering, Jiwaji University awarded him the DSc degree in 1990. During his illustrious career, he has completed 16 research projects from CSIR, New Delhi, ICMR, New Delhi, UGC, DRDO, MPCST, Bhopal and Ministry of Forests and Environment, New Delhi.

His research interests are Electrochemistry and Environmental Science. He has guided 39 students for PhD and has published 359 papers in reputed journals. His research group has won best paper presentation awards in conferences and he is a much sought after speaker at conferences. Prof Jain served as the President of the 103rd session of the Chemical Science Session of ISCA.

ACT is proud to present the Life Time Achievement Award of 2022 to Prof Rajeev Jain in recognition of his outstanding contribution to Chemistry Education and Research.



Group Photo of Award Winners with dignitaries on the dais

2. ACT ShriAnupamSinha Best Chemistry Teacher Award-

Awarded to Prof Dr Seema Joshi of Isabella Thoburn College, Lucknow.

Dr Seema Joshi is the Head of the Chemistry Department and has 33 years experience of teaching. Her research interest is Toxicology and has published 15 papers and 2 book chapters. She has also completed a UGC research project on Arsenic in drinking water-treatment technology development.

Dr Seema Joshi has done a lot of Science popularisation through Science Fest-Nirantar. She has delivered invited lectures and Science popularization talks. In recognition of her contributions to Chemistry Education she has been honoured with 6 awards.

ACT is proud to present Shri Anupam Sinha Best Chemistry Teacher Award of 2022 to Prof Dr Seema Joshi.

3. ACT Best Woman Chemistry Teacher Award

Awarded to Prof Dr Alka Sharma, of Department of Chemistry, University of Rajasthan, Jaipur

Prof Alka Sharma has contributed richly to Chemistry Education and Chemistry Popularisation through 40 invited talks at various fora. Her research interests are 1) Electrochemistry 2) Corrosion Science 3) Nanocomposites and 4) Material Science with main focus on ecosustainability. She has guided 7 PhDs and has published 48 research papers and 4 book chapters and has to her credit 2 INSPIRE projects, one UGC Major project and one UGC Minor project.

ACT is proud to present Best Woman Chemistry Teacher Award of 2022 to Prof Dr Alka Sharma.

4. ACT Prof Lallan Singh Award for Best PG Chemistry Teacher (Stat Universities)

Awarded to Prof Dr Nikhil Guchhait of Department of Chemistry, University of Calcutta, Kolkata

He did Post Doctoral Projects in USA and Japan and was a Visiting Scientist at CNRS, France and Visiting Faculty in Taiwan.

His research interests are Laser Spectroscopy, Photochemistry and Functional Materials. His research output is phenomenal-13 PhDs, 7 Research projects, 250 papers in high impact journals, 40 Invited talks.

Dr Guchhait has been awarded the B C Deb Memorial Award for 2006-7

And the Fellowship of Science Congress of West Bengal Academy of Science and Technology in 2017.

ACT is proud to present the Prof Lallan Singh Award for Best PG Chemistry Teacher Award (State Universities) of 2022 to Prof Dr Nikhil Guchhait

5. ACT Prof Dr Bhupendra Sahai Saxena Award for Best PG Chemistry Teacher

Award to Prof Dr A Jafar Ahamed of Jamal Mohamed College (Autonomous), Tiruchirappalli, Tamil Nadu.

Prof Jafar Ahamed has more than 24 years PG teaching experience. He has guided 19 PhDs, 47 MPhil students and has successfully completed 2 research projects as the Principal Investigator. He has one patent in his name.

He has organized 15 conferences and has to his credit 113 research papers, 2 book chapters and is on the editorial board and reviewer board of 5 journals. Prof Jafar Ahamed is involved in Chemistry popularization through invited talks and is a member of several administrative and academic committees and is a member of 6 learned societies.

ACT is proud to present Best PG Chemistry Teacher Award of 2022 to Prof Jafar Ahamed.

6. ACT Prof Pinki B Punjabi Award for Outstanding Contribution to Research in Chemical Sciences

Awarded to Prof Dr Subramania Angaiah of Pondich University, Puducherry

Prof Subramania Angaiah has 22 years experience and has a rich research record-23 PhDs, 26 M Phils, 8 books, 2 Course Material books for MSc Course by Distance Education.

His research areas are 1) Electrochemical Science and Technology, 2) Polymer Science and Technology and 3) Nano Science and Technology.

He has published 156 papers. His H Index is 47, 10 Index is 123 and he has 7006 citations.

He has participated and organized several conferences, symposia, workshops and refresher courses. He has delivered many invited lectures and keynote addresses in national and international conferences. Prof Angaiah has developed a simple electrochemical process for the preparation of grapheme nanosheets which have superior electrochemical properties as compared to those prepared by the existing electrochemical properties.

ACT is proud to honor Prof Subramania Angaiah with Prof Pinki B Punjabi Award for Outstanding Contribution to Research in Chemical Sciences.

CONTECH 2022-23 (Phase-1): A Report

CONTECH, a national level Concept Test in Chemistry organized by Association of Chemistry Teachers (ACT), finds it useful in knowing the pulse of Chemistry teaching and learning at UG level and thus helps the teachers to take appropriate action. This test is a great incentive for the students to improve the subject and assess their conceptual understanding in Chemistry. With this in mind, it has been held regularly annually in two phases. CONTECH is one of the flagship programs of ACT which is widely publicized through ACT officials and chemistry teachers. **The 1st phase of CONTECH was conducted in the last quarter of 2022 i.e. 5th November 2022. Dr S P Singh, Secretary, ACT-Eastern Zone was National Coordinator of the event.**

The 80 scientifically designed Multiple Choice Questions (MCQs) with four options with one correct answer carrying one mark each have been set as per the criteria given below;

- (i) 75% questions to test knowledge, understanding and application of knowledge.
- (ii) 25% questions were process based, problem solving and practical skills based, structured questions asking some practical situations, observation and drawing conclusions or answering questions related to observation of experimental situation.

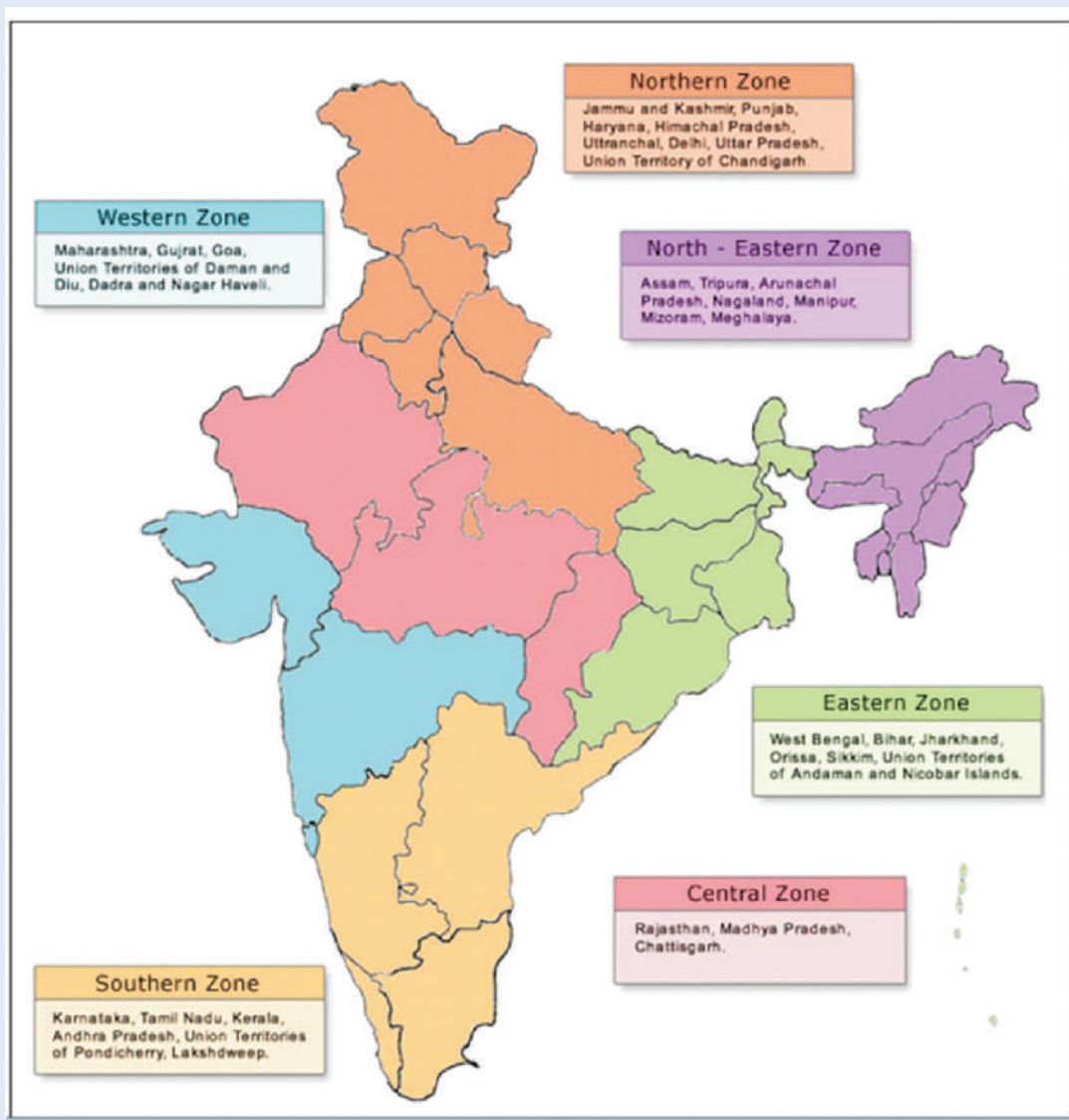
Coordinator Dr. S.P. Singh led a national campaign of Designing Quality Questions (MCQs) followed by progressive moderation at the local level before finalizing the question paper. The objective of this activity was not only to **create a question pool at the national level covering all the states but also to identify potential teachers in question preparation across the country.** Encouraging response was received from all the regions of the country. Question contributors are issued a **Certificate of Recognition** by ACT.

ACT approved **Certificate of Participation** duly signed by the President, General Secretary, National Coordinator, and College Coordinator are issued to students securing 30% or more whereas **Certificate of Excellence** are awarded to meritorious students scoring **60% or more.**

In addition, at local level, Centre Heads (Principals / College Coordinators) had freedom to give away the awards to the meritorious students. In general no certificate / award is given to candidate getting less than 30% marks (even if he / She is the topper at the Centre), in order to maintain the standards. **Letter of appreciation** is mailed to all the Principals of the Colleges involved in CONTECH. **Certificate of Appreciation** is issued to **all College Coordinators** after successful conduct of the Test. These certificates are also issued to all the **Local**

Coordinators who appoints at least 10 active College Coordinators. **College Coordinators / Local Coordinators** who register **100 or more than 100 participating students** shall receive **Annual Subscription Fee of Journal 'Resonance'**. The **Special Award** is given to the **College Coordinator** for having **maximum participation** of students **in the country**. The exam was a success because of the collective efforts of the teachers who encouraged and motivated the students across the country to participate in this Test at the National level. The National Coordinator is thankful to the team ACT. Special thanks go to the ACT President, ACT-General Secretary and the ACT officials who acted as a catalyst for the successful event.

Dr. S. P. Singh
National Coordinator, ACT-CONTECH



ACT Executive Council and Annual General Body Meeting

A Meeting of the Executive Council of ACT was held in the offline mode on October 13, 2022 in the evening at S. V. V. V. University, Indore-Ujjain Road, Indore 453111 under the Chairmanship of Prof Brijesh Pare, President, ACT. The following members were present: Professors Brijesh Pare, D. V. Prabhu, Hemant Khanolkar, P. V. S. Machiraju, Prof. Wasudeo Gurnule, Dr. Hemant Pande, S. D. Samant, V. P. Singh, Principal Dr. Umesh Chandra Jain, Dr. Amrit Krishna Mitra, Prof. M. Swaminathan, Dr. Savita Ladage, Dr. Gitimoni Deka, Dr. Shraddha Sinha, Dr. S. P. Singh, Prof. Sudesh Ghoderao and Prof. Sanchay J. Bora.

Dr. D. V. Prabhu informed that the online acceptance of ACT Membership applications and fees has started from October 2022 and certificates are sent expeditiously by online mode. Hard copies of fee receipt and certificate are sent by post in due course of time. Members have appreciated this improvisation of online payment of fees and quick delivery of certificates.

Members expressed their appreciation of the strenuous efforts of the Faculty of the Department of Chemistry, SVVV University to organize NCCT 2022 on a grand scale especially Prof Upinder Dhar, Hon'ble Vice Chancellor, SVVV University, Prof Ashutosh Shukla and Prof Navneeta Upadhyay, Convenors of NCCT 2022. Towards the end of the meeting Prof Sudesh Ghoderao suggested that in view of the Covid pandemic, the term of the EC may be extended by 2 years. The suggestion was accepted for recommendation to the General Body for ratification. The meeting ended with a vote of thanks to the Chair.



AGM-22 of ACT was held on October 14, 2022 at SVVV University, Indore under the Chairmanship of Prof Brijesh Pare, President of ACT. In this AGM, 20 members attended and actively participated in the deliberations.

The decision taken in the ECM held on October 13, 2022 at SVVV University, Indore to extend the term of the EC by 2 more years was ratified. This decision was taken in the light of the COVID 19 pandemic which prevailed for about 2 years (2020-2022). The meeting ended with a vote of thanks to the Chair.



“Edible Oils in Cosmetics”



Dr. Ketki S. Misar

Head, Department of Cosmetic Technology,
Kamla Nehru Mahavidyalaya,
Sakkardara, Nagpur

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Oils and fats are among the most important cosmetic ingredients and are frequently used for formulating variety of external applications. They can be used directly as skin and hair care products and also as the basic substances for the manufacture of cosmetic products. Edible oils are generally derived from plant and animal sources, some examples of edible oils are Almond oil, Arachis oil, Castor oil, Olive oil, Coconut oil, Mustard oil, Sesame oil, Safflower oil, Linseed oil, Rice-bran oil, Corn oil, etc. Edible oils are obtained by expression or extraction methods. Several tests and standards such as acid value, saponification value, iodine value, solubility in various solvents, and specific gravity are considered for determining their purity and identity. The oils which are liquid at 15.5°C to 16.5°C are called as fixed oils; while those



which are solid or semi-solid at above temperatures are termed as fats. Fixed oils are thick, viscous, slightly yellow coloured liquids with characteristic odour. They are non-volatile, have food value and can be saponified. They turn rancid on storage due to free acidity. Vegetable oils primarily consist of triglycerides of fatty acids. The addition of hydrogen atoms to vegetable oil results in hydrogenated vegetable oil. Application of oils on skin retards the loss of water from the skin by forming a barrier on the skin's surface. Vegetable oil may also be used as a hair conditioning agent, and hydrogenated vegetable oil may also be used to increase the thickness of the lipid (oil) portion of cosmetics and personal care products. Edible oils are excellent

emollients leaving the skin soft and smooth. While penetrating the skin many oils have also effective nourishing and revitalizing effects. Many edible oils are used in a wide variety of cosmetic products including personal care and makeup products such as in the formulation of bath products, cleansing products, eye makeup, fragrances, foot preparations, facial makeup, personal cleanliness products, suntan products, and other skin products. Vegetable oils, also known as carrier oils, are often used as a vessel for essential oils that shouldn't be applied directly to the skin.

Following edible oils are commonly used in various cosmetic preparations –

Coconut oil –It gives skin moisturizing effect. It is extensively used in hair care products to prevent hair damage.



Arachis oil - Also called as Groundnut oil and Peanut oil. It can be used in liniments and soaps. Being non-drying oil it is a valuable lubricant. It produces firm and excellent white soap.

Castor oil – It is commercially used lubricant. It is employed as an emollient in preparation of lipsticks and as sulphorecinolate in tooth formulation being strong bactericide. Other cosmetic purposes for which the oil is used include perfumed hair oil and hair fixers. It imparts transparency to soaps. It is a mild moisturiser, with excellent film forming and pigment-wetting properties. It is used in lip balms, massage oils, creams and a wide range of stick products. The high solubilisation power of Castor oil gives it a unique position among the vegetable oils.



Almond oil - Almond oil is widely used as an emollient and carrier in the cosmetic and pharmaceutical industry. It can be used in a wide range of products, such as massage oils and bath oils. It has good occlusive properties, enabling it to act as a moisturising agent by preventing excessive loss of moisture through the epidermis. Vitamin E in almond oil offers antioxidant benefits.



Safflower oil – Safflower oil gives soothing to inflamed skin. It is a common ingredient of skin care cosmetics.

Sesame oil – It has strong healing properties. Oil is nutritive, laxative and demulcent, also has got very good emollient properties. It is used in preparations of liniments, ointments and soaps.



Olive oil – It is an emollient and soothing agent for inflamed skin surfaces. It is used to soften the skin and crusts in eczema and psoriasis. It can be used as massage oil on sensitive skin, gives excellent moisturization and rejuvenation property.



Black Mustard Oil – It is used for massage of skin, it promote strength, maintain health and provide warmth to the body. Mustard oil is known as rubefacient, also used in manufacture of soaps.

Linseed oil – Linseed oil functions as a skin conditioning agent. It is nutritive and emollient. It is mainly recommended for external applications like lotions and liniments. The oil is used in cleansing products and skin care products.

Avacado oil - Avocado oil is more easily absorbed by the skin than many other cosmetic oils, assumed to be partly due to its content of palmitoleic acid, a fatty acid which is relatively rare in vegetable oils. Avocado oil is regarded as one of the most suitable and effective moisturizing oils.

Apricot kernel oil - Apricot kernel oil is a useful emollient as it has a good “slip” and good occlusive properties. These properties enable the oil to act as a moisturising agent by preventing excessive loss of moisture through the epidermis. The oil is characterized by a somewhat dry feel.

Evening Prime Rose oil - Evening Primrose oil is rich in two very important polyunsaturated fatty acids, as it contains over 70% linoleic acid and over 9% of the rare gamma-linolenic acid. Omega-6 fatty acids like linoleic and gamma-linolenic acid play an important role in the barrier function of the skin, and oils containing these fatty acids can work in more ways than occlusion alone. In this way, these fatty acids can be considered as actives, with the skin as one of the target organs.

Rice Bran oil – Since it contains antioxidants, its keeping quality is very good. It is used in the manufacture of cosmetics as it is very effective skin protecting moisturizer and as an emollient. This edible oil is preferably used in cosmetic baby formulations, hair and skin products.



Wheat Germ oil - The oil is rich in vitamin E and essential fatty acids, it is used in many cosmetic preparations. Oil is good moisturizer for skin, can give protection against sun damage, can increase skin elasticity and reduce inflammation.

Corn oil – It contains natural antioxidant in the form of vitamin E. It can be used in cosmetic formulations as a source of vitamin E particularly in anti-ageing preparations.



News, Views and More

Climate Change is Raising the Top of the Troposphere

The troposphere, the bottom layer of Earth's atmosphere, contains most of the atmosphere's mass and clouds and is where most weather occurs. It stretches between Earth's surface and roughly 4 to 12 miles above sea level, depending on the location. But a new paper shows that the top of the troposphere, called the tropopause, has risen about 50 to



60 meters per decade over the past 20 years, largely because of human emissions of greenhouse gases and ozone-depleting substances.

The troposphere is warmest near Earth's surface, and temperature decreases with height until the stratosphere. The stratosphere contains a layer of ozone, a gas that absorbs heat, so the air temperature starts to increase again. This turning point from decreasing to increasing temperatures is one measure of the height of the tropopause, said Pu Lin, an atmospheric scientist at Princeton University in New Jersey who did not contribute to the new paper. The tropopause's height can be influenced by things like volcanic eruptions and typhoons, said Jane Liu, one of the new paper's authors and an atmospheric scientist at the University of Toronto. "But in the long run, the two most important factors are tropospheric temperature and stratospheric temperature," she said.

Human activities can affect these two temperatures. By extracting and burning fossil fuels, we release greenhouse gases, like carbon dioxide and methane, into the troposphere, where they trap heat and warm the air. Until the late 1980s, humans were also releasing more and more ozone-depleting chemicals, which had been commonly used in refrigerators and air conditioners. These chemicals cool the stratosphere by destroying the stratospheric ozone layer. A warmer upper troposphere and cooler lower stratosphere cause their border, the tropopause, to rise. A new paper, published online Nov. 5 in the journal *Science Advances*, found that the tropopause rose about 50 meters per decade due to human activity between 1980 and 2000 and at a similar rate between 2000 and 2020. The authors estimated human activity accounted for roughly 80% of the total increase in tropopause height during that time.

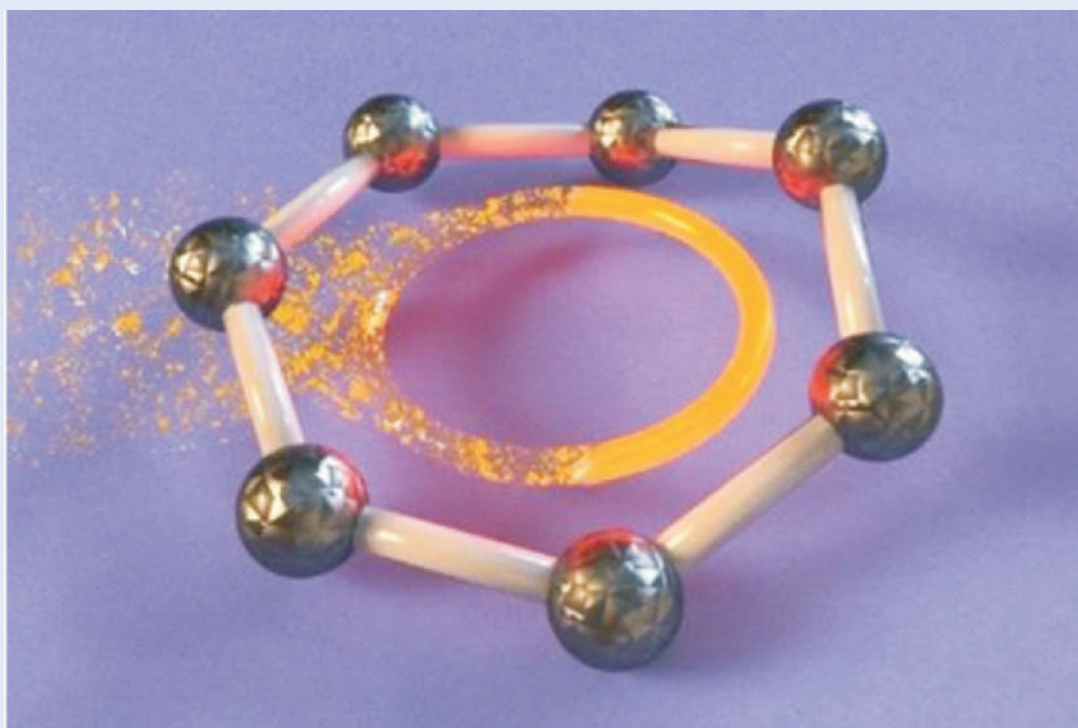
Ben Santer, an atmospheric scientist at the Joint Institute for Regional Earth System Science and Engineering at the University of California, Los Angeles, said the paper is "another piece of the puzzle, if you will, pointing towards the reality of human-caused warming of the troposphere and cooling of the stratosphere." Santer did not contribute to the research. The paper also used a GPS satellite dataset and other weather balloon datasets to measure the tropopause height increase. "All the observational data over this four-decade period of time tell us the same thing," said Liu. "This is a clear, robust and strong indication of the tropopause height increase."

Liu said climate change textbooks commonly include changes happening at Earth's surface, like sea level rise and glacial retreat, as indicators of human-caused global warming's effect. "The change in the tropopause height far away, at about a 10-kilometer distance, also can be included in those textbooks," she said.

Dynamic bonds' reshape the rules of aromaticity and chirality

New discoveries in 'dynamic bonds' could reshape our fundamental understanding of key chemical concepts, including aromaticity and chirality. A team at the University of York in the UK has synthesised a polycyclic molecule whose aromaticity can be switched on and off, as well as a carbon cage where chiral carbon atoms interconvert without breaking bonds at the stereocentre. This 'subverts our view of carbon-based molecules as fixed objects', according to lead author Paul McGonigal. In the future, these new concepts could one day underpin 'new applications for dynamic molecular materials'.

The researchers started by studying fluxional molecules.¹ In these species, different functional groups interchange positions but, depending on the velocity of the process and the timescales of the observations, they may appear identical. An example is the extremely fast interconversion between cyclohexane chair and boat conformations. In an attempt to control and condition the interconversion rates of a range of fluxional molecules, researchers at York started overcrowding the structures with bulky and highly crowded systems. 'We were lucky to observe both phenomena while exploring the effects of bond strain in fluxional molecules,' explains McGonigal. Previously, the team had used this strategy to create unusual luminescence in strained structures, such as molecular rotors. Now, the results demonstrate dynamism is more common in organic molecules than previously thought



The concept of aromaticity has mesmerised chemists for centuries. The new work shows aromaticity can be turned on and off, practically on demand, just by adding increasingly bulky groups around an aromatic ring – a tropyliumcation. Previously, these rearrangements required external energy inputs. The bulky groups around the tropylium twist the molecule beyond its limits – eventually the contorted conformation ruptures aromaticity and forces a rearrangement of the seven-membered ring into a fused cyclopentane–cyclobutene – a bicycloheptane – non-aromatic structure dubbed 'Dewar tropylium'. We actually predicted the structures that would work, using DFT computational calculations and simulating different groups and positions,' says McGonigal. The simulations suggested that steric bulk has a stronger influence than electronic effects, and phenanthrene rings surrounding the tropylium ring offered the perfect balance. Nevertheless, the rearrangement is still a speedy, dynamic process. 'We could follow it using low-temperature nuclear magnetic resonance, [and] separately synthesising the molecules to study their properties,' adds McGonigal.



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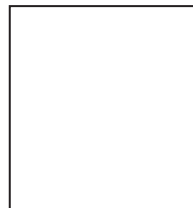


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