The National Academy of Sciences, India

5, Lajpatrai Road, Prayagraj-211002, India

Summary of the Activities, held in the month of April 2023

1. **NASI- Prof. Prafulla Chandra Ray Memorial Award (2022) Lecture,** was delivered on **Global Optimization of Atomic Clusters: A Soft Computing Perspective,** by Prof. Pratim Kumar Chattaraj, Department of Chemistry, Indian Institute of Technology Kharagpur, on 6th April at IIT Bombay, Mumbai. The lecture was well attended; Prof. Jayesh R. Bellare, General Secretary-OS, NASI and Prof. P A Hassan, Secretary, NASI-Mumbai Chapter organised the same (please see the brochure & a few photographs, attached herewith as Annex. 1 'a' & 'b').

2. NASI-Bhopal Chapters organised two extensive training workshops for the UG/PG students in April around the region, under the guidance of Prof. B N Jauhari (Chairperson, Chapter) and Prof. Shivesh Pratap Singh (Secretary, Chapter); the first one was focussed on Research Methodology (please see the report as Annex. 2), while the second was on Biotechnological Advancements, especially in the field of nutrition (Annex. 3). Similarly, the Lucknow Chapter also organised training workshops under the guidance of Prof. Pramod Tandon (Chairman, Chapter), in which several entrepreneurs participated (please see the comments of an entrepreneur, as Annex. 4).

3. Several Popular Science Lectures were also delivered on different topics as Environmental Conservation, Nutrition & Health and History of Mathematics, in different institution (a report on Mathematics Lecture is attached, as Annex. 5).

4. World Book Day was celebrated by some of the Fellows/Members & officials of the NASI by disseminating the information about their books and inspiring the budding scientists to inculcate the habit of reading/writing good original books/writings. It is worth mentioning that NASI has produced more than 100 books in last few decades; and the series on 'History of Science in India', is a treasure.

5. The Annual Meetings of the Editorial Boards and the Chapters of the NASI has been planned, and notices served. The second Meeting of the NASI-Council of the year 2023 is also to be held in May. Several Chapters of the Academy also organised Science-Society Programmes of the NASI; and the publication of the NASI-Journals also achieved their time-lines.

Annex. 1 'a'

The National Academy of Sciences, India
(Mumbai Chapter)

in association with

Indian Institute of Technology Bombay, Mumbai

organizes

NASI- Prof. Prafulla Chandra Ray Memorial Lecture Award 2022

TITLE: **Global Optimization of Atomic Clusters: A Soft Computing Perspective**

SPEAKER:
Prof. Pratim Kumar Chattaraj
Department of Chemistry,
Indian Institute of Technology Kharagpur

DATE & TIME: **6th April, 2023 (Thursday), 11:30 AM**

VENUE:
Room 350, 2nd floor, Chemistry annex
Department of Chemistry,
IIT Bombay, Powai, Mumbai

Lecture Abstract

Global Optimization of Atomic Clusters: A Soft Computing Perspective

Pratim Kumar Chattaraj

Department of Chemistry, Indian Institute of Technology Kharagpur-721302

Chemical systems such as atomic clusters are having large size of search space and hence their structural optimization becomes a difficult task since there exists a possibility of being stuck in any local minima on the potential energy surface. For determining global minimum energy structure, one needs to calculate the gradient and Hessian matrices at each stage; however, no assurance of locating the global minimum can be made. Soft computing techniques, on the other hand may be used, which ignores this problem. We present various methods like particle swarm optimization in combination with density functional theory, convolutional neural network and atom centered density matrix propagation, also including a firefly algorithm for global optimization of the atomic clusters. Here the accuracy and efficiency of these systems are highlighted by considering some prototype examples of metallic and non-metallic clusters. In addition, a comparison is also made about the efficacy of these algorithms versus other standard methods of machine learning like basin hopping, simulated annealing, Bonobo algorithms and artificial bee colony.

Speaker profile

Dr. Pratim Kumar Chattaraj is a Professor at Indian Institute of Technology (IIT) Kharagpur. He received his PhD from IIT Bombay. He was a research associate in the University of North Carolina, Chapel Hill, USA, and FAU, Erlangen-Nürnberg, Germany. He has been actively engaged in research in the areas of density functional theory, ab-initio calculations, nonlinear dynamics, aromaticity in metal clusters, hydrogen storage, noble gas compounds, machine learning, confinement, fluxionality, chemical reactivity and quantum trajectories. He was honored with: INSA (Young Scientist) medal; CRSI Bronze and Silver medals; Acharya P.C.Ray Memorial Medal (Indian Chemical Society); Associate, Indian Academy of Sciences; BM Birla Science Prize; BC Deb Memorial award; Professor Sadhan Basu Memorial Lecture Award of INSA;Professor R.P.Mitra Memorial Lecture, Delhi Univ.; Professor S.K.Siddhanta Memorial Lecture, Burdwan Univ.. He is a Fellow of The World Academy of Sciences (TWAS), Italy; Royal Society of Chemistry, UK; Indian Natl. Science Academy; Indian Academy of Sciences; National Academy of Sciences, India; West Bengal Academy of Science and Technology; and FWO, Belgium. He is a Sir J.C. Bose National Fellow. He was a Distinguished Visiting Professor of IIT Bombay. He has published over 480 research papers / book chapters, edited seven books and special issues of three journals He is in the Editorial Board of a number of journals published by the American Chemical Society, Elsevier, Frontiers Group, etc. Several of his papers have become hot/most accessed/most cited/cover/Editors' choice articles.

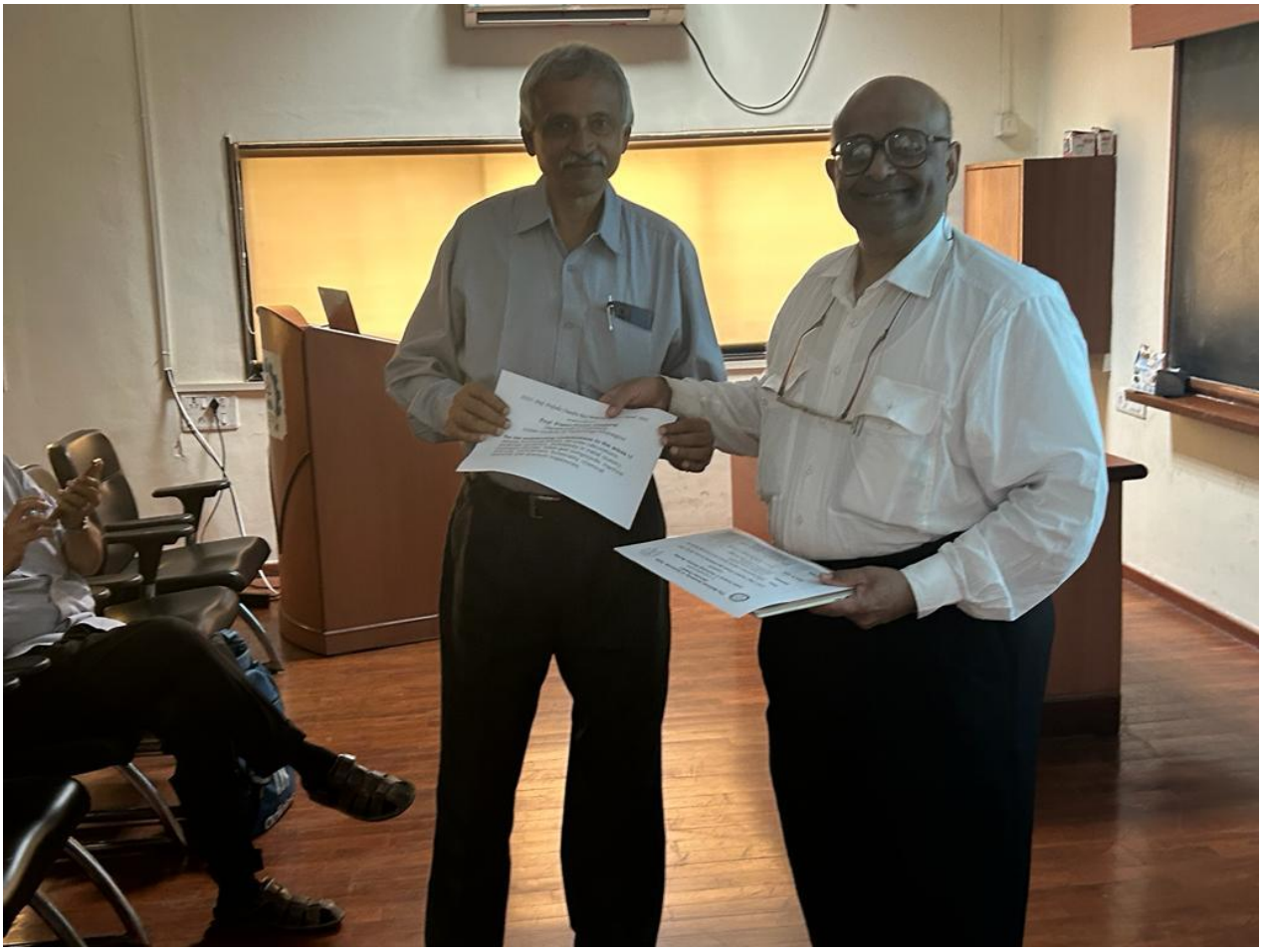
About The National Academy of Sciences, India (Mumbai Chapter)

The National Academy of Sciences, India (NASI), one of the oldest Science Academies in India, was established in 1930 by ***Prof. Meghnad Saha***. It is located in Prayagraj, Uttar Pradesh. Currently the Academy has more than 1900 Fellows, honorary Fellows and foreign Fellows from various disciplines of Science and Technology. The Academy has been effectively pursuing its mandate '***Science & Society***' since its inception through its various scientific programmes/ activities by involving a large number of scientists, academicians, educationists and industrialists from all across the country with the support of its 22 Local Chapters spread all across the country to disseminate and communicate the scientific knowledge in different regions/parts of the nation.

NASI - envisions the cultivation and promotion of Science & Technology in all its branches through – (a) promoting scientific and technological research related to the problems of societal welfare; (b) publication of proceedings, journals, memoirs, transactions and other works as may be considered desirable; (c) organizing meetings and hold discussions on scientific and technological problems; (d) undertaking, through properly constituted committees and bodies, the scientific work(s) of technological or public importance; (e) cooperating with other organizations in India and abroad, having similar objects, and to appoint representatives of the Academy to act on national and international bodies; (f) securing and managing funds and endowments for the promotion of science and technology; (g) organizing a Science Library; (h) performing all other acts, matters and things that may assist in, conduce to, or be necessary for the fulfillment of the above mentioned aims and objects of the Academy; (i) creating an adequate impact of the Academy all over the country.

Mumbai Chapter (NASI-MC) is one such chapter of the NASI. In sync with the vision and mission of the Academy, the NASI-MC organizes a number of activities throughout the year in different institutions in Mumbai and adjoining areas. (For further details of the Academy, please browse through the official website of the Academy: http://www.nasi.org.in)

Annex. 1 'b'



Annex. 2

हरिभूमि

जबलपुर - विंध्य भूमि

1 Apr 2023

नेशनल वर्कशॉप रिसर्च मेथोडोलॉजी एंड करेंट रिसर्च ट्रेंड्स का समापन समारोह

राष्ट्रीय कार्यशाला रिसर्च मेथोडोलॉजी एंड करंट रिसर्च ट्रेंड्स में विशेषज्ञों द्वारा उद्बोधन दिया एडवांसेज इन बेस्ट वॉटर ट्रीटमेंट एंड सॉलिड वेस्ट मॅनेजमेंट पर डॉ. विशाल मिश्रा प्रोफेसर आईआईटी बीएचयू वाराणसी द्वारा प्रोफेसर ओ एन तिवारी सायंटिस्ट सीयूबीजीए आइएआरआई ने माइक्रो एलगई के एडवांस रिसर्च पर प्रकाश डाला। तकनीकी सत्र के अंतिम भाग में एडवाइजर टू चांसलर एकेएस यूनिवर्सिटी बी ए चोपड़े ने अपना कीनोट लेक्चर देते हुए स्टूडेंट्स को रिसर्च की बारीकियों से अवगत कराया एवं रिसर्च पेपर लिखने और उसके अध्ययन के बारे में बताया। प्रोफ़ेसर बीए चोपड़े एडवाइजर टू चांसलर एकेएस यूनिवर्सिटी ने अपने वक्तव्य में क्रिटिकल थिंकिंग द्वारा रिसर्च प्रक्रिया को बताया एवं रिसर्च स्कोर बुक लिखने के लिए प्रेरित किया। वैलिडेटरी फंक्शन में मुख्य अतिथि प्रोफेसर ओएन तिवारी साइंटिस्ट आईएआरआई न्यू दिल्ली एवं डॉ विशाल मिश्रा आईआईटीबीएच रहे। एकेएस के वाइस चांसलर डॉ आरएस त्रिपाठी ने रिसर्च के स्तर को ऊंचा उठाने के प्रयासों के बारे में बताया। प्रोफेसर शिवेश प्रताप सिंह सेक्रेटरी नासी भोपाल चैप्टर ने अपने वक्तव्य में वर्कशॉप के सफलतम आयोजन के लिए एकेएस यूनिवर्सिटी बधाई दी एवम ऑनलाइन से ज्यादा फिजिकल वर्कशॉप के महत्त्व के बारे में बताया। यूनिवर्सिटी के प्रो वीसी डॉक्टर हर्षवर्धन ने अपने वक्तव्य में बायो टेक्नोलॉजी विभाग को इस प्रकार के आयोजन के लिए बधाई दी और प्रतिभागियों के मूल्यांकन के लिए प्रेरित किया। प्रोफेसर नीरज वर्मा कन्वीनर ने विभिन्न विभागों से आए हुए प्रतिभागियों की संख्या से अवगत कराया। प्रोफेसर कमलेश चौरे कोकन्वीनर ने स्टूडेंट्स को रिसर्च के अनुवाद प्रक्रिया के बारे में बताया कि वह अपनी रिसर्च से प्रोडक्ट बनाकर उसे मार्केट तक लेकर आए। प्रोफेसर ओ एन तिवारी ने अपने वक्तव्य में लोकल रिसर्च गाइडेंस टीम बनाकर यहां के स्टूडेंट्स को लगातार रिसर्च के बारे में प्रशिक्षित करने के लिए कहा। विशाल मिश्रा ने आयोजन की सराहना की एवं सभी को करंट रिसर्च के लिए अवगत किया।

Annex. 3

पश्चिमी खानपान से परहेज करे युवा: दिव्या

भोपाल, देशबन्धु। रामकृष्ण धर्मार्थ फाउंडेशन आरकेडीएफ विश्वविद्यालय के बायो टेक्नोलॉजी विभाग द्वारा नेशनल अकेडमी आफ साइंसेज इंडिया के भोपाल चैप्टर के सहयोग से बायोटेक्नोलॉजी में नवीनतम प्रगति से संबंधित सेमिनार में बोलते हुए वरिष्ठ पोषण आहार विशेषज्ञ श्रीमती दिव्या महाजन ने युवाओं का आवाह्न किया कि वे पश्चिमी खानपान से परहेज करते हुए बेहतर पौष्टिक आहार का सेवन करें, जिससे अपने शरीर के साथ-साथ मानसिक स्वास्थ्य को भी बेहतर कर सकें।

श्रीमती महाजन ने कहा कि आज का विद्यार्थी खानपान में गड़बड़ी के कारण अवसाद का शिकार हो रहा है और इससे जब तक उबरेगा नहीं तब तक उसके स्वास्थ्य में वांछित सुधार होना संभव नहीं। इस अवसर पर अतिरिक्त निदेशक, आयकर विभाग भोपाल तरुण कनौजिया, द्वारा छात्रों के सॉफ्ट स्किल पर प्रकाश डाला गया। उन्होंने कहा कि जैसी हमारी सोच होती है वैसे ही हमारा कार्य भी होता है और उसी से हमारे भविष्य का निर्माण भी होता है। इसलिए छात्रों को जिज्ञासु होना जरूरी है ताकि वह एक बेहतर चिंतनशील मस्तिष्क का विकास कर सकें।

वहीं रामप्रकाश मौर्य ने तनाव प्रबंधन पर चर्चा की और कहा कि यदि हमारे निर्णय पक्षपातपूर्ण होंगे तो हम तनावग्रस्त रहते हैं। इसलिए निर्णय लेते समय हमें निष्पक्ष होना चाहिए । उन्होंने कहा कि छात्रों को पाठ्यक्रमों की पुस्तकों के साथ-साथ साहित्य की पत्र-पत्रिकाओं का भी सम्यक अध्ययन करना चाहिए। इससे व्यक्तित्व के विकास में मदद मिलती है। इसी तरह शिवांशु शुक्ला ने छात्रों को पीसीआर एवं मॉलिक्यूलर बायो टेक्नोलॉजी के बारे में महत्वपूर्ण प्रायोगिक जानकारी उपलब्ध कराई। इस अवसर पर डीन और विभागाध्यक्ष प्रोफेसर सी बी एस डांगी ने अतिथियों का परिचय प्रस्तुत किया तथा प्रोफेसर साधना सिद्दीकी ने वर्तमान समय में बायोटेक्नोलॉजी के फॉरेंसिक प्रयोग पर अपना व्याख्यान प्रस्तुत किया।

कार्यक्रम में रविंद्र नाथ सिंह, एडिशनल असिस्टेंट डायरेक्टर ने अपने व्याख्यान में छात्रों के सर्वांगीण विकास पर प्रकाश डाला। प्रारंभ में डायरेक्टर जनरल रिसर्च प्रोफेसर वीके सेठी ने विश्वविद्यालय के विकास के संबंध में जानकारी प्रस्तुत की। वहीं महाप्रबंधक डॉ बीएन सिंह ने सभी अतिथियों को शॉल श्रीफल और स्मृति चिन्ह देकर सम्मानित किया। अंत में कुलसचिव डॉ नरेंद्र कुमार लहरिया ने धन्यवाद प्रस्ताव प्रस्तुत किया।

Annex. 4

KSHITIJ KUMAR'S Post

KSHITIJ KUMAR

Mahatma Gandhi national fellow, MSDE, SSGK

Edited

From the training of SHG's to designing of the product packaging, crafting cold emails to hotels for marketing, I spent days working closely with Self Help Groups (SHGs). Looking back, I can confidently say that all the effort was worth it. The project was thrilling, especially because we weren't able to fully utilize the skills of our SHGs the previous year. However, with the inspiration from our former CDO Ishan Pratap Singh we pledged to make it a success the following year. And today, we have achieved astounding sales of 750 kg of organic gulaal during Holi, resulting in a remarkable profits of 300%. The success of these SHGs can be attributed to the innovative marketing approach, which involved reaching out to hotels in Lucknow, institutions such as IIM, cantonment areas like SSB, government offices, and the SHG's also tapped the international markets. By expanding their customer base, these SHGs have been able to generate significant profits while also establishing their brand in new markets. Despite facing time and professionalism constraints, I would like to express my gratitude towards the marketing managers of **Lucknow Metro Rail Corporation Ltd. (LMRC)** and LuLu Mall for agreeing to market our products in their premises. Although we could not succeed, we greatly appreciate their support and willingness to help promote our cause. Thanks to the training provided by Professor **Pramod Tandon** from the **National Academy of Sciences** these SHGs were able to develop high-quality products that were well-received in the market. With continued support, we are confident that these SHGs in Shravasti will continue to thrive and contribute to the local Economy. This success story is just the beginning for the SHGs in Shravasti. There are many more ventures in process that are working hard to make grand success. With the right guidance and support, these ventures have the potential to create more job opportunities and generate greater economic growth in the region. In conclusion, would like to thank DM **Neha Prakash** Mam for the guidance and CDO **Anubhav Singh** sir for their constant support to us in this venture. Through effective marketing strategies and support from officials, these SHGs have been able to achieve significant success, and there is much more potential for growth and development in the future. एक कदम संपन्नता की ओर **Ajay K Garg** **Kshitij Awasthi** **Deepali Raina** **Sidrah Naiyer** **Ministry of Skill Development and Entrepreneurship, India** **Uttar Pradesh State Rural Livelihood Mission (UPSRLM)** **National Skill Development Corporation** **#Mgnf** **#SHG**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Vivo AI camera
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Customer Care No.: +91 9311520160
Email Id:- amgmasala@gmail.com

Annex. 5

The National Academy of Sciences, India (NASI)

5,Lajpatrai Road, Prayagraj -211002

Popular Science Lecture on Mathematics

Report:

A popular science lecture on April 21,2023 at Maharshi Patanjali Vidya Mandir, Prayagraj was organized under the science communication programme of NASI. The illustrative lecture was delivered by Mrs P Sarada Devi, Science Communicator; Researcher in History of Indian Mathematics and Former Mathematics teacher St. Xavier's College, Mumbai. The topic of the lecture was "Overview of our Mathematical Treasure - Our Heritage". Mrs Sarada spoke about the Golden era of Indian mathematics and its treasure eg. works from 14th to 19th century by Kerala School, Mathematics from Malabar region, Guru Parampara at the banks of River 'Nila'. She explained about 'Kerala School of astronomy and mathematics' where scholars were able to know about **'Infinite series and calculus';** even some of the basic ideas of calculus were known in India many centuries before Newton. Many of the formula, equations and interesting facts like **'Garland Product' Brahmagupta's Spectacular piece of work** (Area of cyclic quadrilateral), **Bhavana** (method to solve indeterminate equation), **Pingala-sutras** etc. were discussed and explained to the students. The students were also given a questionnaire to answer on the topic discussed, and they responded enthusiastically. Prof. Punita Batra, Professor and Scientist H from Harishchandra Research Institute (HRI), Prayagraj presided over the function. Prof. Batra told about the career opportunities in theoretical physics and mathematics. Dr Santosh Kr Shukla, AES, NASI coordinated the programme. The Principal of the College, Mrs. Alpona Dey, expressed her gratitude to NASI for developing a scientific temperament among her students and teachers.