

[www.ucost.in](http://www.ucost.in)



THE NATIONAL  
ACADEMY  
OF SCIENCES,  
INDIA



UTTARAKHAND  
STATE COUNCIL  
FOR SCIENCE &  
TECHNOLOGY

UTTARAKHAND  
CHAPTER OF

**NASI**

**For Further Information :**

The National Academy of Sciences, India  
Uttarakhand Chapter (NASI, UK Chapter)  
Vigyan Dham, Jhajra, Dehradun, Uttarakhand  
E-mail: [nasiuk@gmail.com](mailto:nasiuk@gmail.com)  
Phone No. : 0135-2102769, 2102770

**2014-15**

## UTTARAKHAND CHAPTER

### CHAIRMAN

#### Prof. A.N. Purohit

Former Vice-Chancellor, H.N.B. Garhwal University; Res. Almi Anchal,  
181/1 Dobhalwala, Dehra Dun – 248001

### SECRETARY

#### Dr. Rajendra Dobhal

Director General, Uttarakhand State Council for Science & Technology,  
Department of Science and Technology (Govt. of Uttarakhand), Vigyan  
Dham, Jhajra, Dehradun - 248 007 (Uttarakhand)

### ADVISORS

#### Prof. Y.P.S. Pangtey

Department of Botany, DSB Campus, Kumaun University, Nainital – 263002

#### Prof. R.D. Gaur

Professor Emeritus, H.No. 653, Hanumantpuram, Lane 6, Ganga Nagar,  
Rishikesh, Uttarakhand-249201

#### Prof. Surendra Pratap Singh

Chair of Excellence, Forest Research Institute, Deemed University, New  
Forest Post Office, FRI Campus, Dehradun-248006

#### Dr. Anil Kumar Gupta

JC Bose National Fellow & Director, Wadia Institute of Himalayan Geology,  
33, General Mahadev Singh Road, Dehradun-248001

### COORDINATOR & CO-OPTED MEMBER

#### Dr. D.P. Uniyal

Senior Scientific Officer, Uttarakhand State Council for Science &  
Technology, Department of Science and Technology (Govt. of Uttarakhand),  
Vigyan Dham, Jhajra, Dehradun - 248 007 (Uttarakhand)

### EDITED BY:

#### Dr. Rajendra Dobhal

Secretary, NASI - UK Chapter

#### Dr. D. P. Uniyal

Coordinator & Co-opted Member  
NASI - UK Chapter

#### M. S. Rawat

Technical Assistant, UCOST

#### Dr. J. S. Aswal

Scientific Assistant, UCOST

#### Manoj Kumar Singh

Scientific Assistant, UCOST

"Science to be  
Science must afford  
the fullest scope for  
satisfying the hunger  
of body mind and  
soul"

Mahatma Gandhi





# CM for science centres in all districts



PNS ■ DEHRADUN

Top priority must be given to making science a tool for facilitating improvement in the life of the common masses and making it more comfortable, said Chief Minister Harish Rawat.

Inaugurating the ninth Uttarakhand State Science and Technology Congress being organised by Uttarakhand State Council for Science and Technology (UCOST) at its Vigyan Dham campus here on Thursday, Rawat said that the knowledge gained on the basis

of experiences attained over the last thousands of years by humanity must be linked with the latest technical knowledge to make it more relevant. He said that India's biodiversity is its natural heritage.

"The spiritual knowledge of our saints and sages must be channelised and linked with the latest science and technological developments. Scientific organisations must come forward to enhance the traditional agricultural produce of Uttarakhand. UCOST could coordinate with various scientific and educational institu-

tions of the State by working as a representative of the scientific agencies," he said.

Rawat added that the scientific analytical report on Nanda Raj Jat 2014 prepared by UCOST would be useful for organising religious Yatras and trade fairs in the future. Stating that the Government was working on making soil health cards in all districts within the next two years, Rawat also stressed on the need for developing simple techniques to improve the quality of water. Appreciating works undertaken by the council, the CM

declared enhancement of its allotted budget from ₹3.3 cr to ₹10 cr.

He said that one science centre in each district on the lines of UCOST should be opened so that the young scientists of the State working in the remote and far-flung areas could enhance their knowledge and satisfy their curiosities.

Speaking on the occasion, the State Science and Technology Minister, Surendra Singh Negi, pointed out that hundreds of scientists and researchers are participating in the three-day congress which

shows the new scientific wave flowing in the researchers of the State which must be enhanced in future.

Sahaspur MLA Sahadev Singh Pundir expressed the hope that Vigyan Dham would play a major role in giving science a new direction and accelerating scientific activities in the State. State Science and Technology Secretary Deepak Gairola said that UCOST has taken initiatives for popularising agricultural activities through new techniques among the farmers. Similarly, UCOST has also taken initiatives to improve the quality of water in the State.

Science and Technology Excellence Awards 2014-15 were presented to noted scientist Dr SS Negi for engineering science, Dr LMS Palni for biodiversity and biotechnology and Deeksha Bisht for science communication. National Academy of Sciences, India (NASI) Uttarakhand chapter chairman Prof AN Purohit received the Prof RN Tandon NASI Memorial Lecture Award 2014 and Neeraj Kumar Joshi, GIC Munswari, Pithoragarh was awarded NASI Best Science Teacher Award 2014-15. UCOST director-general Dr Rajendra Dobhal, former State Chief Secretary Dr RS Tolia and former Secretary, Government of India, Vibha Puri Das were also among those present on the occasion.

## राष्ट्रीय सहायक

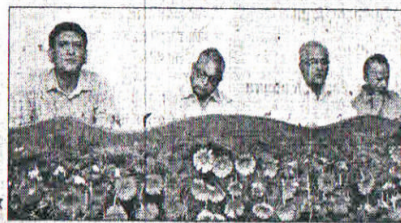
वारणसी से प्रकाशित

देहरादून, हरपतिवार • 19 जून • 2014

## शोध व विकास में महिलाओं की सक्रिय भागीदारी जरूरी

देहरादून (एसएनडी)। उत्तराखंड राज्य विज्ञान एवं प्रौद्योगिकी परिषद (यूकोस्ट) व राष्ट्रीय विज्ञान अकादमी (नासी) के संयुक्त तत्वावधान में आयोजित दो दिवसीय कार्यशाला का समापन बुधवार को हुआ। विज्ञान शोध लेखन विषय पर श्रमिक परा विवि में आयोजित कार्यशाला के समापन अवसर पर मुख्य

■ यूकोस्ट व नासी द्वारा आयोजित दो दिवसीय कार्यशाला का समापन



यूकोस्ट व नासी द्वारा आयोजित कार्यशाला के समापन अवसर पर पंचायतीव अतिथि की शिरकात

विश्वविद्यालय के पूर्व कुलपति प्रोफेसर एसपी सिंह ने बतौर मुख्य अतिथि शिरकात की। उन्होंने देश व प्रदेश की प्रगति में महिलाओं की शोध एवं विकास में सक्रिय भागीदारी को आवश्यक बताया। इस प्रसंग पर वे बहतर वातावरण तैयार करने की जरूरत पर भी उन्होंने बल दिया।

वाडिया भूविज्ञान संस्थान के पूर्व निदेशक डा. बीआर अरोड़ा ने कहा कि समाज को महिलाओं के लिए विज्ञान एवं तकनीकी में अधिक निर्धारण हेतु उपयुक्त वातावरण तैयार करना चाहिए। श्रमिक परा विवि के कुलपति प्रोफेसर संजय जसोलां विज्ञान के क्षेत्र में यूकोस्ट व नासी

## The Tribune

Young scientists must learn from experience of seniors: expert

## Garhwal Post



Workshop organised by UCOST, NASI

## UTTARAKHAND CHAPTER OF

# NASI



# Contents

1.	The National Academy of Sciences, India	1-3
	<ul style="list-style-type: none"> <li>NASI - Envisions</li> <li>State Chapters:</li> <li>Uttarakhand Chapter of NASI</li> <li>UCOST Affiliation:</li> </ul>	
2.	NASI PLENARY LECTURES :	4-5
	<ul style="list-style-type: none"> <li>Previous Years NASI Plenary Lectures</li> </ul>	
3.	POPULAR LECTURES (2014-15):	6-9
	<ul style="list-style-type: none"> <li>Biodiversity is life : Biodiversity is our life</li> <li>Intellectual Property Right (IPR)</li> <li>Participatory Learning by Community Involvement</li> <li>Nano Medicine : Cancer and beyond existing strategy for drug delivery platform</li> <li>Previous Year's Popular Lectures</li> </ul>	
4.	BRAIN STORMING SESSIONS	10-14
	<ul style="list-style-type: none"> <li>Science Communication</li> <li>Employing S&amp;T Resources for Creating Skill Revolution in Uttarakhand</li> <li>Blending Ayurveda with Modern Science and Reverse Pharmacology</li> <li>Orientation of Science Teacher in Science and Technology</li> </ul>	
5.	SCIENCE DAYS AND S&T EXHIBITION	15-19
	<ul style="list-style-type: none"> <li>National Science Day:</li> <li>State Science and Technology Exhibition:</li> <li>National Technology Day</li> </ul>	
6.	NASI BEST SCIENCE TEACHER AWARD:	20
	<ul style="list-style-type: none"> <li>Previous year NASI best teacher awards</li> </ul>	
7.	WORKSHOPS/SEMINARS IN S&T ISSUES:	21-28
	<ul style="list-style-type: none"> <li>Workshop on "Scientific Paper and Project Writing"</li> <li>Workshop on "Technological Empowerment of Women"</li> <li>International conference on "Our Genes &amp; Genomes-Past, Present &amp; Future".</li> </ul>	
8.	PUBLICATION & REPORTS	29-30
9.	FORTHCOMING EVENTS	31-36
	<ul style="list-style-type: none"> <li>NASI-Uttarakhand Chapter Fellows</li> <li>NASI-Uttarakhand Chapter Life Members</li> </ul>	
10.	MEDIA COVERAGE	37-38

## MEDIA COVERAGE

## विज्ञान को बनाया जाए विकास का माध्यम : सीएम

- सीएम ने कहा, आगामी दो वर्षों में सभी अनार्यवर्गों में उपलब्ध कराए जाएंगे सांख्यिक हेल्थ कार्ड
- यूकरोस्ट के बजट को बढ़ाकर सालाना 10 करोड़ रुपये करने की घोषणा
- जल्द बनेगा भव्य विज्ञान केंद्र, विज्ञान प्रयोगशालाओं का आधुनिकीकरण
- नया राजजात रिपोर्ट का किया विमोचन, वैज्ञानिकों को प्रबलन किंग अर्वाइ
- तीन दिनी विज्ञान एव प्रौद्योगिकी कांग्रेस में भाग ले रहे हैं 500 युवा वैज्ञानिक व शोधार्थी

जन्मदौ में संसल लेल काई उपग्रहक काले के लिए सरकार प्रतियबद्ध है। संसल से टेस्टिंग लेब स्थापित करके को दिहल जा सके से कायदे किचा जा रहल है। पेजल को जगुनासा सुधारन के लिए भी सरल विधियाँ विकसित करे को जखेनी।

उठेनी लेल राष्ट्रीय संग्रहालयक पीछे कोलकाता द्वारा भवन बिनात के करीब हो प्रेश को मिल जायेगा। जनक रत्न पर स्थापित उपरन क्षेत्रीय बिनात केर अयोग्य को संभालन इसी साल से किचा जायेगा। मुख्यमंत्री ने यह बात धुमकेतिबहार को नीती नयन केर अंग केर कोसले को केर उपाधन अमरर पर करे को। इबहार विस्द बिगत बिनात काय परिसर में नीती दिवसीय बिनात कायरेस का आयोजन उतराखंड राज्य बिनात पर प्रौद्योगिकी परिसर



नीरज कुमार जोशी को उत्कृष्ट शिक्षक पुरस्कार से सम्मानित करते मुख्यमंत्री

राज्य के परिप्रेक्ष्य में मानव संसाधन विकास पर जोर देने की बात भी उन्होंने कही।

सीएम ने कहा कि प्रदेश में आईआईटी व इलेक्ट्रिक इंजीनियरिंग कालेजों की बढ़ी संख्या है। इन कालेजों को सेंटर ऑफ एक्सीलेंस के रूप में विकसित करने की जरूरत भी है। राज्य के विकास में अनुभवंत विशेषज्ञों का सहयोग सुनिश्चित करने के लिए पारिस्थिी प्लानिंग ग्रुप का गठन करने की बात भी उन्होंने कही। विज्ञान एवं प्रौद्योगिकी मंत्र

[illegible]

सुरेन्द्र सिंह नेमो ने ब्लाक स्तर पर दो विश्वशालाओं में विज्ञान क्लब गठित करने और विज्ञान प्रयोगशालाओं के आधुनिकीकरण करने की बात कही।

युष्मद्वा इदं वाक्ये ज्ञेयं त्रयं वाक्यं कथं  
समाहतं तु उच्यते को। इसमें प्रत्येक वाक्योत्तर  
के मान्यनिष्ठता का उल्लेख उद्घोषण के निम्नान्त  
एवं प्रतीयोगिक कोष में मिलित करके त्रय  
के अर्थान्वयों व प्रतिनिधियों का स्वयम्भूत निष्कर्ष।  
उच्यते का कि प्रमाण का कोष में मिलित करके  
त्रयें 500 वर्ष वैदिकनिष्ठ तन्त्र दिक् विज्ञान व  
प्रतीयोगिक के विनिर्माण पहलुओं को प्रस्तुत करते  
हुए अपने कोष प्रस्तुत करते। मध्यस्थानों के

# कौशल विकास के लिए बनेगा विज्ञान एवं प्रौद्योगिकी ग्रिड

असयाल आदि ने अपने विचार रखे। यक्ताओं ने कहा कि विज्ञान शिक्षण को नवीनमनसुषैक्षणिक विधि से जोड़ा जाना चाहिए। विज्ञान संसार सत्र में सीएसआईआर और प्रभारी निदेशक दीक्षा बिष्ट, प्रोफेसर एल्लाम फलनी, डा. जेपी कोटियाल, डा. डीपी उमियाल ने विज्ञान शिक्षा को बढ़ाने व जागरूकता कार्यक्रम संचालित करने पर जोर दिया।

[illegible]

आयोजित ब्रेन स्टार्मिंग सेशन में आयुर्वेद को विज्ञान की कसौटी पर परखने से संबंधित विषय पर विद्वत् चर्चा की गई। कहा गया कि आयुर्वेद में भविष्य की प्रबल वैज्ञानिक एवं व्यावसायिक संभावनाएँ हैं।

[illegible]

भी अपने विचार रखे।



विज्ञान एवं प्रौद्योगिकी काग्रेस के दौरान आयोजित ब्रेन स्ट्रामिंग सत्र में चर्चा करते  
विषय विशेषज्ञ।

[illegible]

DEHRADUN, WEDNESDAY, JUNE 18, 2014, PRICES IN ₹

# the pioneer

## Science policy to focus on research, scientific writing

**Dehradun:** The State's science policy will lay special focus on encouraging research and scientific writing by the youth, said the Uttarakhand State Council of Science and Technology (UCOST) director-general Vijay Kumar Dhaundiyal. He was addressing young scientists at the start of a two-day workshop organised jointly by UCOST and the National Academy of Sciences, India (NASI) in Dehradun on Tuesday. Addressing the gathering Dhaundiyal stressed on the need for preparing a scientific paper as a roadmap for the young scientists for facilitating their development in Uttarakhand. The National Research Development Corporation (NRDC) chairman cum managing director Dr Rajendra Dobhal exhorted the youth to benefit from the experiences of senior scientists. Appealing them to work to get their research papers published in national science journals, he elicited focus on the need for improving the quality of research writing. The delivery was made by Dr Pooja Bhushan recipient and former additional director general of the Indian Council of Medical Research, Prof PV Sharma informed the participants in detail about various aspects of scientific paper writing. He also answered the queries raised by the participants on the subject. Various other scientists and academicians also addressed the gathering on the occasion. Two technical sessions were held later on the inaugural day of the workshop.



# The National Academy of Sciences, India

The National Academy of Sciences, India founded in the year 1930, is a society registered under the registration of society's act 1860. It is the oldest Science Academy of the country and is located at Allahabad. Over the years, this unique organization has served as a springboard for scientific and technological activities in a wide variety of S&T domains. It has helped India usher in a scientific milieu, in creating and nurturing talent in science and technology.

The Academy started with 57 ordinary Members and 19 Fellows but which has now grown many folds in strength and popularity. Today it has about 1571 Members and 1579 Fellows including 29 Honorary Fellows and 88 Foreign Fellows. All these, include scientists from various disciplines of Science and Technology from all over India and abroad.

The main objective of the Academy is to provide a national forum for the publication of research work carried out by Indian scientists and to provide opportunities for exchange of views among them. The Rules and Regulations of the Academy were based on those of the Royal Society of England and Asiatic Society of Bengal. These have since been revised and updated to meet the emerging challenges. Prof. Meghnad Saha was elected its first President.

## NASI - ENVISIONS

The cultivation and promotion of Science & Technology in all its branches, through –

- The cultivation and promotion of Science and Technology in all its branches;
- To publish such proceedings, journals, memoirs, transactions and other works as may be considered desirable;
- To organize a Science Library;
- To organize meetings and hold discussions on scientific and technological problems;
- To promote scientific and technological research

concerned with the problems of national welfare;

- To undertake, through properly constituted committees and bodies, such scientific work of technological or public importance as it may be called upon to perform;
- To co-operate with other organizations in India and abroad, having similar objects and to appoint representatives of the Academy to act on national and international bodies;
- To secure and manage funds and endowments for the promotion of science and technology;
- To do and perform 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;
- To create an adequate impact of the Academy all over the country, it may open Chapters of the Academy in other cities in the country, where reasonable number of scientists are interested.

## STATE CHAPTERS:

The Academy has 16 Chapters located at Allahabad, Bengaluru, Bundelkhand Extended Region, Chandigarh, Chennai, Delhi, Hyderabad, Jammu, Kharagpur, Kolkata, Lucknow, Mumbai, Patna, Shillong (N.E. Chapter), Uttarakhand and Varanasi.

## UTTARAKHAND CHAPTER OF NASI

Uttarakhand is the youngest member among the metro chapters. Uttarakhand Chapter came in to being in the last quarter of 2006 with an aim to co-ordinate the activities of NASI, Allahabad in the newly formed state of Uttarakhand. The Uttarakhand Chapter of NASI, with its founder Chairman, Prof. A.N. Purohit was formally

*"Science is the attempt to make the chaotic diversity of our sense-experience correspond to a logically uniform system of thought."*  
-Albert Einstein



inaugurated on October 12, 2006 at Uttarakhand Institute of Technology, Premnagar, Dehradun by Prof M.G.K. Menon, India's most renowned scientist. Other dignitaries who graced the occasion were Prof. P.N. Tandon, Former Director, AIIMS, Dr. V.P. Sharma, Former Addition Director ICMR, New Delhi, Dr. (Mrs.) Manju Sharma, Former Secretary (DBT) GoI, New Delhi and large number of scientists academicians in the state. In recent years the chapter has observed change in office bearers with Prof. A.N. Purohit, Former Vice Chancellor,

HNB Garhwal University is currently Chairman of the chapter and Dr. Rajendra Dobhal, Director General Uttarakhand State Council for Science & Technology, Dehradun is the Secretary, NASI-UK Chapter. Dr. D. P. Uniyal is Coordinator & Co-opted member to coordinate the Chapter routine work under the guidance of office bearer. Since then the chapter has organized many Science popularization activities.



Fig. 1 Inauguration of NASI UK Chapter (Date : 12/10/2006)

## UCOST AFFILIATION:

The Uttarakhand Chapter of the Academy is affiliated to the Uttarakhand State Council for Science & Technology (UCOST). UCOST has not only provided space for housing the working office of the chapter, it has been the motivating force and provided the guidance, platform and financial support in organizing the activities since the inception of the chapter. This has begun to attract the attention of academics, intellectuals and society at large.

The UK Chapter, in close collaboration with the UCOST aims at achieving the Academy's mandate and hopes to achieve the following objectives:

i) Promote science education in Uttarakhand

- ii) Provide a forum for the fellows and members of the NASI for fruitful interactions in the field of Science & Technology
- iii) Act as a link between the leading /renowned national/ international scientists and the science teachers and students in the state of Uttarakhand.

In addition to various activities related to above objectives the state chapter has instituted the Best Science Teacher Award of the year to promote science education in the state.

The state of Uttarakhand has 27 Fellows and 50 Members of NASI. The chapter has since its inception has successfully organized various activities of science popularization that includes, Popular Lectures, Workshops Seminars, Brainstorming Sessions S&T Exhibition and Science Days etc.



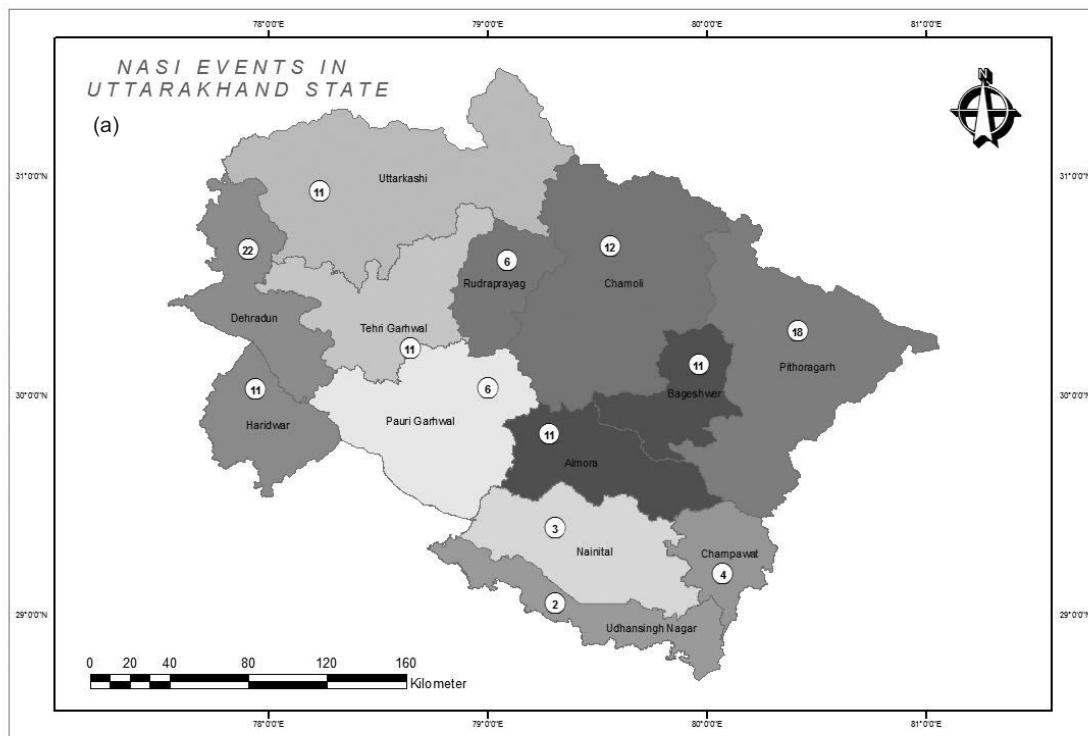


Fig. 2 (a) Map Showing NASI Events in Uttarakhand State

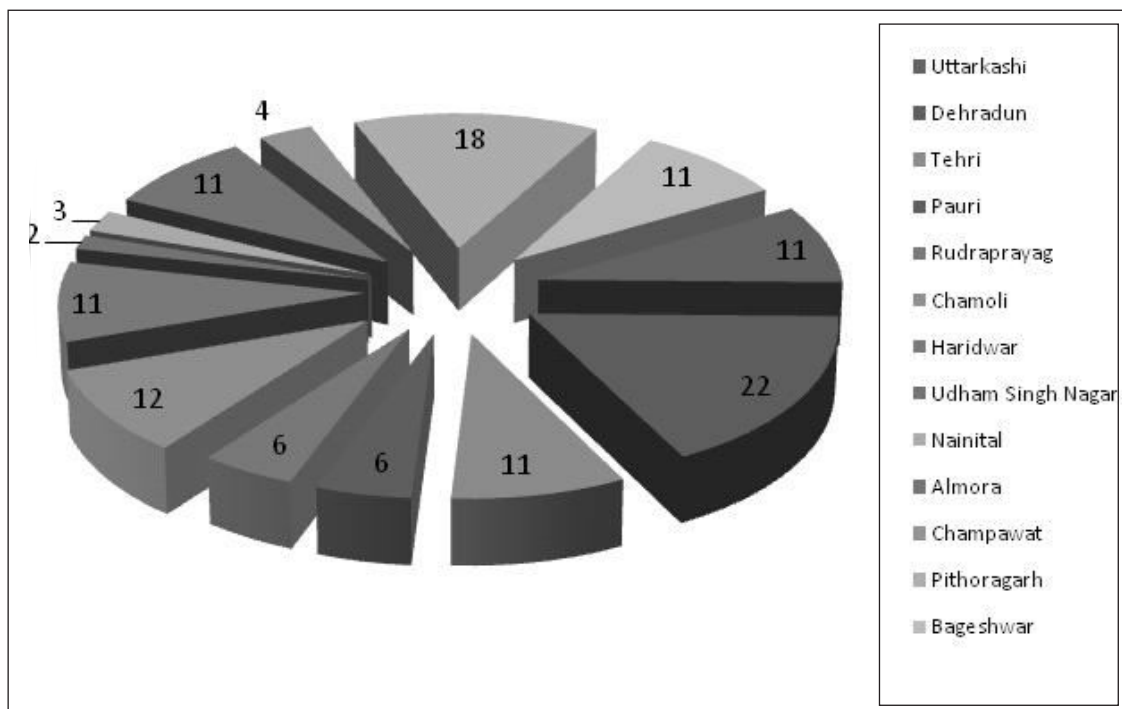


Fig. 2 (b) Graphical Representation of NASI Events in Uttarakhand State



## NASI PLENARY LECTURES

UCOST every year organizes the Uttarakhand State Science & Technology Congress as a flagship programme. The event is organizing for 3 days providing a platform to the scientists/researchers /students to interact with senior scientists/experts of their respective subjects. Since 2009, during the inaugural session of state Science & Technology Congress, a NASI plenary lecture is also organized which is delivered by the NASI Fellow on various issues of S&T.

### “CO<sub>2</sub> Climatedism and Challenging Climate”

**Venue :** 9th USSTC,  
Vigyan Dham, Jhajra, Dehradun.

**Date:** 26 Feb 2015

**Prof. A. N. Purohit**

Former VC H.N.B. Garhwal University, Srinagar &  
Chairman, NASI-UK Chapter



Fig. 3 Prof. A.N. Purohit Delivering Prof. R.N. Tondan Memorial Lecture

### NASI Plenary Lecture by Prof. A. N. Purohit

Prof. A.N. Purohit delivered the Prof. R.N. Tondan memorial lecture on “CO<sub>2</sub>, 'Climatedism' and Changing Climate” during 9<sup>th</sup> USSTC 2015. Prof. Purohit emphasizes different aspect of the climate, the earth surface and its micro climate. He elaborate how the climate formed by the abiotic factors. Prof. Purohit told that Scientists have a good understanding of what

has changed earth's climate in the past and the factors like Sun's output, Earth's orbit, Drifting continents, Volcanic eruptions, Greenhouse gases responsible for climate change and their role in changing climatic condition. He explained the how the climate is warming and basically, incoming solar radiation is the main climate driver. Its energy output increased about 0.1% from 1750 to 1950, increasing temperatures by 0.2°F (0.1°C) in the first part of the 20th century. But since 1979, when we began taking



measurements from space, the data show no long-term change in total solar energy, even though Earth has been warming. Repetitive cycles in Earth's orbit that occur over tens of thousands of years can influence the angle and timing of sunlight. In the recent past, drifting continents make a big difference in climate over millions of years by changing ice caps at the poles and by altering ocean currents, which transport heat and cold throughout the ocean depths. Huge volcanic eruptions can cool Earth by injecting ash and tiny particles into the stratosphere and Role of natural Methane and carbon dioxide. The current scenario is that the earth heating up due to of industrialization and gases produced from vehicles, power plants, deforestation, and other sources are building up in the atmosphere, acting like a thick blanket over our planet. Rising global temperatures are expected to raise sea level, and change precipitation and other local climate conditions. Changing regional climate could alter forests, crop yields, and water supplies. It could also affect human health, animals, and many types of ecosystems.



Fig. 4 Prof. A.N. Purohit receiving Prof. R.N. Tondan Award by the Hon. Sh. Harish Rawat, Chief Minister & Hon. Minister of Science & Technology, Sh. Surendra Singh Negi, Govt. of Uttarakhand

Deserts may expand into existing rangelands, and features of some of our national parks may be permanently altered. He concluded that awareness is needed to combat with climate change issues.

## Previous Years NASI Plenary Lectures

Year	Presenter	Topic	During	Venue	Date
<b>2013</b>	<b>Prof. L. M. S. Palani</b> Former Director, G.B.Pant Institute of Himalayan Environment & Development, Kosi Katarmal, Almora	Biodiversity conservation and management	8 <sup>th</sup> Uttarakhand State Science & Technology Congress	Doon University, Dehradun	26 <sup>th</sup> Dec 2013
<b>2012</b>	<b>Dr Manju Sharma</b> Former Secretary, Department of Biotechnology (DBT), GoI New Delhi	Biotechnology for Human kind: Relevance and Excitement	7 <sup>th</sup> Uttarakhand State Science & Technology Congress	Graphic Era University, Dehradun	21 <sup>st</sup> Nov 2012
<b>2011</b>	<b>Dr. Lalji Singh</b> Former Vice Chancellor, Banaras Hindu University, Varanasi, Uttar Pradesh	Genetic diversity in Indian populations and its health implications	6 <sup>th</sup> Uttarakhand State Science & Technology Congress	Kumaun University, S.S.J. Campus, Almora	15 <sup>th</sup> Nov 2011
<b>2010</b>	<b>Dr. R.S. Tolia</b> Former Chief Secretary, Govt. of Uttarakhand	Indian Mountain Initiative: Role of Science & Technology	5 <sup>th</sup> Uttarakhand State Science & Technology Congress	Doon University, Dehradun	10 <sup>th</sup> Nov 2010
<b>2009</b>	<b>Late. Dr. Vinod Bhakuni</b> Scientist-In-Charge Molecular and Structural Biology Division, CSIR CDRI, Luchnow	Drug Discovery Approaches	4 <sup>th</sup> Uttarakhand State Science & Technology Congress	G.B.Pant University of Agriculture & Technology, Pantanagar, U.S.Nagar	10 <sup>th</sup> Nov 2009



## POPULAR LECTURE (2014-15):

Prof. L.M.S. Palni, Former Director, G.B. Institute of Himalayan Environment, Kosi Katarmal, Almora and Fellow NASI delivered popular lecture on “ Biodiversity is life-Biodiversity is our life”. He explained that without biodiversity life can not exist in this planet. He further explained that the deforestation is the key factor for biodiversity loss. Due to regular deforestation, it will effect the soil erosion, less percolation of rain, reduced soil fertility, threatened to many species, which ultimately influenced the reciprocal relationship of every live factors. He elaborated the role of biodiversity and dependence on biodiversity since ages. He also emphasized on “Why the need to save the biodiversity and how it can be done”. He conclude that biodiversity conservation and management is needed for the survival of planet Earth.

### Biodiversity is Life: Biodiversity is our Life

**Venue:** Vigyan Dham, Jhajra,  
Dehradun

**Date:** 11<sup>th</sup> Nov, 2014

#### **Prof. L. M. S. Palani**

Former Director, GBPIHED, Kosi-  
Katarmal, Almora, Dean Graphic Era  
University, Dehradun.



Fig. 5 Prof. L.M.S. Palni Delivering Lecture on Biodiversity



Fig. 6 Sh. Y. D. Panwar, Delivering Lecture on IPR

## Intellectual Property Right (IPR)

**Venue:** Vigyan Dham, Jhajra, Dehradun

**Date:** 27<sup>th</sup> Jan, 2015

**Sh. Yashwant Dev Panwar,**

Director, PFC, TIFAC, DST, GoI, New Delhi

Sh. Yashwant Dev Panwar has delivered a lecture of "Intellectual Property Rights & Its Uses" on 27<sup>th</sup> Jan, 2015 at Vigyan Dham, Jhajra. He describe various kinds of IP and its protection methods in India & abroad. He also told that why we are lacking behind in global in no. of IP. He elaborate various kind of IPR like Patent, Design Trademark and GI etc. and concluded that IP is needed for the economic development of the Country.

## Nano-medicen : Cancer & Beyond Existing Strategy for Drug Delivery platform

**Venue:** Vigyan Dham, Jhajra, Dehradun

**Date:** 23<sup>rd</sup> May 2014

**Prof. Anu Puri,**

Centre for Cancer Research, Maryland, USA

Popular lecture delivered by Prof. Anu Puri, Centre for Cancer Research, Maryland, USA on "Nano-medicen : Cancer & Beyond Existing Strategy for Drug Delivery platform". Prof. Puri emphasize for setting up of Country level drug discovery and development program. She elaborates Nano Technology to assist academic investigators in advancing new therapies from the discovery phase into early drug development, including evaluation of therapies in human and/or



Fig. 7 Prof. Anu Puri Delivering Lecture on "Nano-medicen :Cancer & Beyond Existing Strategy for Drug Delivery platform"

clinical proof of concept. She conclude that Nano technology can operate new pathway for Drug discovery and she shown keen interest to promote this technology in Uttarakhand State.



Popular lecture delivered by Prof. Harish Chandra Pokhriyal, Director, School of Open learning, University of Delhi on "Participatory Learning by Community Involvement". Prof. Pokhriyal told that Knowledge about science and technology (S&T) is inevitable in this modern hi-tech world. There is a great demand for communicating and popularizing science among the masses. The Constitution of India has a special provision to develop the scientific temper humanism and spirit of enquiry. The S&T Policy of India stresses on the dissemination of scientific knowledge and inculcation of scientific temper among the masses. Most of the S&T and related institutions or laboratories have a social mandate for science popularization and development of scientific temper among the society. He focused on how to communicate the science in the society, what are the gap between the science and society and how the science can play an important role for sustainable development of society. However, despite keen public interest in science, multiple nations report shows that their populations are lacking in basic factual knowledge about science. This begs the question of where and from whom people are gathering their information about science and technology. Scientists are perceived to be outside of the normal boundaries of society. The relationship

## Participatory Learning by Community Involvement

**Venue:** Vigyan Dham, Jhajra, Dehradun

**Date:** 28<sup>th</sup> Jul 2014

**Prof. Harish Chandra Pokhriyal,**

Director, School of Open Learning, University of Delhi

between scientists and the public is thereby influenced by the perception of the media used to communicate science among the people. There is a widespread belief that "Scientists have a basic responsibility to interact with the public", while some within academe suggest that popularization should be a secondary activity (which, incidentally, brings into question the academic's reputation and motivations). Prof. Pokhriyal discussed several success story of participatory learning by society how the public participation makes the science easy to understand and implement.



Fig. 8 Prof. H.C. Pokhriyal Delivering lecture on "Participatory Learning by Community Involvement"

## Previous Year's Popular Lectures

Year	Presenter	Topic	Venue	Date
2012	<b>Prof. M.G.K Menon</b> Former Union Minister of Science & Technology	Science & Society in the service of the people of Uttarakhand	Indian Council of Forestry Research & Education, Dehradun	24 <sup>th</sup> May, 2012
2012	<b>Prof. Balram Bhargava</b> Dept. of Radiology, All India Institute of Medical Science, New Delhi	Challenges & Opportunities for healthcare innovation in India	Indian Council of Forestry Research & Education, Dehradun	24 <sup>th</sup> May, 2012
2012	<b>Dr. V.P. Sharma</b> Former Director, ICAR, New Delhi	Preventive Measures: Water Borne Diseases	Govt. Girls Inter College, Mussoorie	26 <sup>th</sup> May 2012
2010	<b>Prof. Rajender S. Varma</b> Sustainable Technology Division, National Risk Management Research Laboratory, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268, USA	Greener Syntheses and Chemical Transformations: Sustainable Alternative Methods and Applications of Nano-Catalysts	Doon University, Dehradun	01 <sup>st</sup> Dec 2010
2010	<b>Prof. Rajender S. Varma</b> Sustainable Technology Division, National Risk Management Research Laboratory, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268, USA	Greener Syntheses and Chemical Transformations: Sustainable Alternative Methods and Applications of Nano-Catalysts	H.N. B. Garhwal University, Srinagar	29 <sup>th</sup> Nov 2010
2010	<b>Dr. B.S. Rawat,</b> Head, Dept. of Electrical and Biomedical Engineering, University of Nevada, U.S.A	Energy Challenges of Future	Uttarakhand state Council for Science & Technology Conference hall, Dehradun	04 <sup>th</sup> Jan 2010
2010	<b>Dr. E.J. Thomas,</b> The School of Chemistry, University of Manchester, UK	Alternatives to allylstannanes for remote stereocontrol	Uttarakhand state Council for Science & Technology Conference hall, Dehradun	04 <sup>th</sup> Jan 2010
2008	<b>Late Dr. Vinod Bhakhuni</b> Scientist-in-Charge Molecular and Structural Biology Division CSIR-Central Drug Research Institute (CDRI), Lucknow	The Drug Discovery Constraints	Uttarakhand state Council for Science & Technology Conference hall, Dehradun	05 <sup>th</sup> Feb 2008
2008	<b>Late Dr. Vinod Bhakhuni</b> Scientist-in-Charge Molecular and Structural Biology Division CSIR-Central Drug Research Institute (CDRI), Lucknow	The Drug Discovery Constraints	SGRR (PG) College Dehradun	06 <sup>th</sup> Feb 2008



## BRAIN STORMING SESSIONS

**Venue:** Vigyan Dham Jhajra, Dehradun

**Date:** 26.02.2015

**During:** 9<sup>th</sup> State Science congress

Four brain storming sessions were organized during the 9th State Science congress. Many eminent dignitaries were called upon which took part in the ensuing discussions.

### (1) Brain Storming Session on "Science Communication"

**Prominent Personalities:**

The session was chaired by Mrs. Deeksha Bisht, Acting Director, NISCAIR, CSIR, Dr. K.S. Krishnan Marg, Pusa Campus, New Delhi, India, Sh. Gauhar Raza Chief Scientist and Head, Science Communication Multimedia, CSIR-National Institute of Science Communication and Information

Resources, Dr. K.S. Krishnan Marg, New Delhi, Prof. LMS.Palni, Former Director, GBPIHED & Dean Biotechnology, Graphic Era University, Dehradun, Sh. Hasan Jawaid Khan, Editor, Science Reporter, NISCAIR, CSIR, Dr. K.S. Krishnan Marg, Pusa Campus, New Delhi, India, Dr. G. P. Kothiyal, Former Head, Glass & Advanced Ceramics Division, Bhabha Atomic Research Centre, Trombay, Mumbai, Dr. Irfana Begum, Project Coordinator, EDUSAT, Vigyan Prasar, Dr. Sanjay Jain, Head Museum Project, OIL and Natural Gas Corporation, Dehradun(UK), Dr. Manisha Uniyal, Assistant Professor, Deptt. of Zoology, SGRR(PG) College, Dehradun, Dr. B.S.Rawat, Assistant Professor, Dept. of Mathematics, D.B.S.(PG) College, Dehradun, Dr. Shail Kulshratha, Assistant Professor, Department of Chemistry, DBS (PG).College, Dehradun, Sh. Ragubeer Kandwal, Grassroot Organisation for Welfare, Tilwara, Rudraprayag, Uttarakhand, Prof. Gopal Singh Rawat, Scientist-G, Department of Habitat Ecology, Wildlife Institute of India, Chandrabani, Dehradun, Prof. B.L. Sah, UGC-Academic Staff College, Kumaun



Fig. 9 Sh. Gauhar Raza delivering Lecture During BSS on "Science Communication"



Fig. 10 Group Photograph of Science Communication Experts & Students

University, Nainital, Dr. Brij Mohan Sharma, Secretary, SPECS, Smt. Kamla Pant, Secretary, PAHAL, Dehradun, Dr. D.P. Uniyal, Senior Scientific Officer, UCOST and Mr. Manmohan Singh Rawat convener of BSS.

## (2) Brain Storming Session on "Employing S&T Resources for Creating Skill Revolution in Uttarakhand"

### Recommendations:

1. Creation of Science Communicator forum for frequent interaction and sharing latest technologies effective for Science Communication.
2. Science Communication should be the part of curriculums in school and colleges.
3. UCOST should organize science communication workshop from time to time. However, this workshop should be planned keeping the target audience in mind.
4. UCOST should taken up R& D project to know the impact on Science Popularization activities in the State.
5. More science awareness programme should be organized i.e. workshop, seminar, conference awareness week" for non science people and students.

### Prominent Personalities:

The session was chaired by Col.(Rtd.) D. P. Dimri, Former National Advisor, Skill Development, ATDC, Govt. of India, Ministry of Textile & coordinated by Dr. K.K. Raina, Vice Chancellor, DIT University, Dehradun.

The eminent Personalities from Skill development domain like Sh G. P. Srivastava, Chief Advisor – ASSOCHAM, New Delhi, ShJaikant Singh, Head Partnership Development, National Skill Development Corporation, New Delhi, Dr. Vimal Dimri, Dy. Director (Training) New Delhi, Dr. Durgesh Pant, Director, Uttarakhand Space Application Centre (USAC), Dehradun, Sh. Shavez Baksh, consultant, Uttarkhand Skill Development Mission, Dehradun, Prof. S. D. Samantray, Head of Department, Computer Science & Engineering, G.B. Pant Institute of Agriculture & Technology, Pantnagar, U.S. Nagar, Sh. Pankaj Gupta, President, Industry Association of Uttarakhand, Dehradun, Sh. C. S. Nautiyal, Additional Director, Directorate of Industries, , Dehradun, Ms.Neelima Garg, CII, Dehradun, Dr. Kirti Joshi & Sh. Manoj K. Singh, UCOST participated in the brainstorming session.





Fig. 11 Brain Storming Session (BSS) on Skill Development

### Recommendations:

Some of the major recommendations

- Establish an S&T grid within the state where all the government departments and the R&D institutions network with each other. Later develop & then strengthen this S&T corridor in the state by increasing its ambit.
- UCOST should be made the nodal agency providing a common platform for the state level mission & the NSDC at New Delhi.
- Scientific innovations to be used for promoting entrepreneurial skills and to promote local skills.
- Involvement of more ITI's & Students for vocational training
- Education with the inclusion of hands on training in collaboration with the industries is a must.
- Development of Clusters like food processing units, souvenirs industry, forestry extensions, & puja kits were some of the areas which should be worked on priority basis.
- A framework for Uttarakhand in terms of roadmap for skilling across higher education and Intermediate and vocational education.

## (3) Brain Storming Session on "Blending Ayurveda with Modern Science and Reverse Pharmacology"

### Prominent Personalities:

Sh. Rajiv Gulati, Ranbaxy Laboratories Ltd., Gurgaon, Haryana, Padmshree Vaidya Balendu Prakash, VCP Cancer Research Foundation, Dehradun, Dr VK Dua Officer-in-charge, Malaria Research Centre Field Station, Rishikesh, Dr. Vivek Bhosale, MBBS, MD, Scientist, Central

Drug Research Institute (CDRI), Lucknow, Dr. R. S. Bhakuni Scientist, Central Institute of Medicinal & Aromatic Plants (CIMAP), Lucknow, Dr. Sheelendra Pratap Singh Scientist, CSIR- Indian Institute of Toxicology Research, Lucknow, Ms. Anamika Gulati Patanjali Food & Herbal Park, Haridwar, Dr. P. D. Chamoli Joint Director, Ayurveda, Govt. of Uttarakhand, Dr. Vinay Sharma District Ayurvedic Officer, Haridwar, Prof. Kamini Kaushal Gurukul Ayurvedic College, Haridwar, Vaidya Y. S. Malik Indra Nagar, Dehradun, Dr. Ashwini Kamboj Uttaranchal Ayurvedic College, Dehradun, Dr. Kumud Upadhyay Uttarakhand Ayurved University, Dr. Vijay Kumar Juyal, Registrar, HNB Uttarakhand Medical Education University, Dr. Arvind Chaudhari Ayurmax Hospital, Dehradun, Vaidya Harsh Sehgal Trilok Ayurveda, Rajendra Nagar, Dehradun.

### Recommendations:

An intensive discussion over various issues related to integrations of Ayurveda with modern science and importance of reverse pharmacology for its global promotion was held among experts and participants. Experts of brain storming session unanimously agreed on following critical aspects:

1. It is obvious that extraction and isolation of single ingredient and developing it as drug is neither technically feasible, nor financially viable in Ayurvedic drug development process. We must propagate Ayurvedic formulations exactly as already known and have been used on patients for centuries, however, major emphasis on safety, efficacy, quality of Ayurvedic drugs and their clinical observations under reverse pharmacology need to be given and should be well documented.
2. Robust documentation of clinical observations for ayurvedic formulations and publication of clinical data should be encouraged which will be instrumental to make a strong foundation of Ayurvedic drug promotion.
3. Standardization and meticulous documentation of process parameters, in-process and final product chemistry of ayurvedic formulations should be done following the modern science of pharmacology and medicine. Reproducibility of quality product should be ensured by setting the process parameters.
4. Reverse pharmacology should be promoted to prove hypotheses and create global credibility of Ayurvedic drugs having robust clinical base of documented therapeutic effects. In order to

achieve the targets, interdisciplinary efforts mediated by R&D institutions of State, Central governments and private organizations should be streamlined.

5. Analytical facilities in laboratories equipped with advanced instrumentation are required for the progress of reverse pharmacology research and development. However, a holistic approach considering the principals of Ayurveda should be followed while doing reverse pharmacology.
6. Presence of toxic metals in proven Ayurvedic drugs developed following the methods outlined in Ras-Shastra is prominent hurdle in their global promotion. Therefore, R&D on nanocrystal or nanoparticles of mercury, lead, copper, cadmium, etc. should be encouraged as some dispersed reports have shown that nanocrystals of toxic metals acquire non-toxic property.
7. Ayurvedic drugs should be tested as per the regulatory norms for safety and efficacy. Government should provide funds for such analyses of products or formulations developed by traditional healers or Vaidyas.
8. Quality material should be used in Ayurvedic drug development and chemistry of active metabolites of herbal drugs needs to be evaluated.
9. Since people consume ayurvedic formulations with allopathic drugs, therefore, it is important to promote R&D on herb- allopathic drug interaction in order to identify drugs having Narrow Therapeutic Index. Effect of ayurvedic



Fig. 12(a) BSS on Blending Ayurveda with Modern Science and Reverse Pharmacology

drugs on genes or gene product should also be promoted.

10. In order to set the heavy metal limits for Ayurvedic formulations, the international guidelines set up by WHO and other Institutions (American Herbal product Association, Canada Natural Health product Directorate, etc.) should be followed. Presence of mycotoxins or pesticides in herbal drugs should also be given proper attention.
11. In order to check the irregularities in quality of the Ayurvedic drugs, the good manufacturing practices (GMP), quality control and regular audit similar to allopathic mechanism should be made mandatory.
12. Awareness programs for traditional healers or Vaidyas should be organized for their capacity building and to make them understand the regulatory norms and IPR issues related to drug development.



Fig. 12 (b) Participant during BSS on Blending Ayurveda with Modern Science and Reverse Pharmacology



## 4. Brain Storming Session on "Orientation of Science Teacher in Science and Technology"

### Prominent Personalities:

Sh. R. Shaha, Former Director, TIFAC, Department of Science & Technology, New Delhi, Dr. Sandeep Bansal, Scientist (INSPIRE), Department of Science and Technology, Technology Bhavan, New Mehrauli Road, New Delhi, Dr. Ashish Kumar Rastogi Science Research Centre, Jawaharlal Nehru University, New

Delhi, Dr. R. K. Johari, Asso. Professor, Department of Zoology, DAV (P.G.) College, Dehradun, Dr. J.M.S. Rana, Asso. Professor Department of Physics HNB Garhwal University, Badshahithoul Campus, Tehri, Dr. Anita Rana, Asso.Prof. Department of Zoology, P.G. College Reshikesh, Dr. O. P. Nautiyal, Scientist Uttarakhand Science Education & Research Center, Dehradun, Dr. Sanjay Aggarwal, Director, Dolphin Institute of Technology, Dehradun, Prof. Uma Palni, Former Head, Department of Botany, Kumaun University Nainital, Dr. P. P. Badoni, Asso. Professor, Department of Chemistry, Pauri Campus, HNB Garhwal University.



Fig. 13 Expert of BSS on Orientation of Science Teacher



Fig. 14 Dr. A.K. Rastogi delivering lecture during BSS

### Recommendations:

1. Infrastructure facilities should be there in schools of rural areas.
2. Science and Technology awareness programmes should be organized at school level.
3. Preference should be given to the girls for small scale science projects based on science in their surrounding, science in daily life, traditional knowledge with the involvement of their science teachers.
4. Science literature should be published in Hindi and should be available at school level.
5. Science teachers training should be done on yearly basis.
6. Science forum should be established at district level.

# Celebration of National Science Day-2015

Date: 28th Feb, 2015

Venue: Vigyan Dham, Jhajra, Dehradun

National Science Day is celebrated in India on 28th February each year to mark the discovery of the Raman Effects by famous Indian Physicist Sir Chandrasekhara Venkata Raman on 28th February 1928.

The event is celebrated all over the country in Schools, Colleges, Universities and other Academic, Scientific, Technical, Medical and Research Institutes. On the occasion of first National Science Day on 30th May 2000, The NCSTC announced institution of the National Science Popularization awards for recognizing outstanding efforts in the area of science communication and popularization. Sir C. V. Raman worked at Indian Association for the cultivation of Science, Kolkata, West Bengal, India during 1907 to 1933 on various topics of Physics making discovery of the celebrated effect on scattering of light in 1928, which bears his name and that brought many accolades including the Nobel Prize in 1930.

## Poster Competition:

The Council's organized National Science Day on 28th February 2015 in the collaboration of Oil and Natural Gas Corporation, Dehradun & NASI, UK Chapter during the NSD, a science poster competition was organized and the theme was "Alternate Sources of Energy". A committee constituted for the selection of best poster under various categories and selected students received their awards by Prof. S.K. Joshi, Former Director General, CSIR. Beside this Dr. Joshi motivated the students for opting science as a career.

### Senior Group:

S.No.	Name of Students	Class/School	Prize
1	Aanchak Rawat	XIA/KV FRI	I <sup>st</sup>
2	Hemant Luthra	XIA/KV FRI	II <sup>nd</sup>
3	Mukul Masat	ITM Dehradun	III <sup>rd</sup>
4	Chandni Bisht	XC/KV Ordinance, Raipur	Consolation

### Consolation Prize :

S.No.	Name of Students	Class/School	Prize
1	Chandni Bisht	XC/KV Ordinance, Raipur	Consolation

### Junior Group:

S.No.	Name of Students	Class/School	Prize
1	Ishita Sahoo	Brightland's School	I <sup>st</sup>
2	Sakshi Dabral	Brightland's School	II <sup>nd</sup>
3	Lakshita	Doon International	III <sup>rd</sup>

### Consolation prize:

S.No.	Name of Students	Class/School	Prize
1	Shivam Thapa Nagar	KV Birpur	I <sup>st</sup>
2	Manpreet	KV Upper Camp	II <sup>nd</sup>
3	Harshit Yadav	KV Upper Camp	III <sup>rd</sup>





Fig. 15(a) Award distribution during NSD 2015 by Dr. S.K. Joshi, Former Director General CSIR & Dr. Rajendra Dobhal, Director General UCOST



Fig. 15 (b) Awardees with dignitaries during National Science Day - 2015

## State Science and Technology Exhibition:

With a view to encourage, popularize and inculcate scientific temper among the children of the state, UCOST in collaboration with NASI-UK Chapter & ONGC Dehradun organizes state level science exhibition in Vigyan Dham, Jhajra, Dehradun.

An exhibition was inaugurated by Hon. Minister S&T, Sh. Surendra Singh Negi.

In the exhibition, the exhibitors not only display their scientific talents through their models and exhibits, but also get an opportunity to interact with eminent scientists and scholars of the region.

### Objectives of the Exhibition:

- a. To provide a forum for students/Scientists to pursue their natural curiosity and inventiveness to quench their thirst for creativity;
- b. To make students feel that science is all around us and we can gain knowledge as well as solve many problems also by relating the learning process to the physical and social environment;
- c. To lay emphasis on the development of science and technology as a major instrument for achieving goals of self-reliance and socio-economic and socio-ecological development;
- d. To highlight the role of science and technology for producing good quality and environmental friendly materials for the use of society;
- e. To encourage students to visualize future of the nation and help them become sensitive and responsible citizens;
- f. To annualize how science has developed and is affected by many diverse individuals, cultures, societies and environment;
- g. To develop critical thinking about global issues to maintain healthy and sustainable societies in today's environment;

- h. To apply mathematics and information technology to visualise and solve problems pertaining to everyday life etc.;
- i. To appreciate the role of science in meeting the challenges of life such as climate change, opening new avenues in the area of agriculture, fertiliser, food processing, biotechnology, green energy, disaster management, information and communication technology, astronomy, transport, games and sports etc.; and
- j. To create awareness about environmental issues and concerns and inspiring children to devise innovative ideas towards their mitigation.

### List of Exhibitor in State Science & Technology Exhibition:

- 1) Oil and Natural Gas Corporation, Dehradun
- 2) Survey of India, Dehradun
- 3) Forest Research Institute, Dehradun
- 4) National Research Development Corporation, New Delhi
- 5) Society of Pollution and Environmental Conservation Scientists, Dehradun
- 6) Graphic Era University, Dehradun
- 7) University of Petroleum & Energy Studies, Dehradun
- 8) Industries Association of Uttarakhand
- 9) Instruments Research & Development Establishment, Dehradun
- 10) Centre for Aromatic Plants, Dehradun
- 11) Himalayan Action Research Centre, Dehradun
- 12) Centre for Technology Development, Dehradun
- 13) Indian Institute of Soil & Water Conservation, Dehradun
- 14) Dehradun Institute of Technology, Dehradun
- 15) United Nations Industrial Development Organization (UNIDO), Dehradun
- 16) Bharat Gyan Vigyan Samiti, Dehradun





Fig.16 (a,b,c) Exhibitor showing their exhibits

## National Technology Day-2015

On the occasion of National Technology Day (11th May, 2015) Dr. S. S. Negi, Outstanding Scientist (Director), Instrumental Research Development Establishment (IRDE), Dehradun delivered lecture on "Military application of Electro Thermal Imaging optics". He explained the how the technology can improve the military appliances and the Research and development of IRDE and their role in the military. He further elaborates the difficulties of military during war due to lack of technologies. He further emphasized on role of thermal imaging in various military appliances and various technologies developed by IRDE, of thermal imaging and their role during the war. He also elaborate a night vision device, lesser technology etc and the night vision camera. Dr. Negi highlighted the advantage of Night Vision Cameras during Military operations. The human eye is a very sensitive and versatile image detector but has a number of physical limitations. An electronic image intensifier can provide a fundamental improvement and perception gain over the unaided eye by capturing more photons from the scene and using these more efficiently. More photons are collected by employing an objective lens of larger diameter than that of the pupil of the dark-adapted eye. The only limitations in this respect are the practical considerations of size and weight of the instrument depending upon the application. The collected photons can be used more efficiently by detecting them with higher quantum efficiency than that of the retina. The most suitable type of detector for this purpose appears to be a photoemissive



Fig.17 Dr. S.S.Negi delivering lecture on the Occasion of National Technology Day

cathode consisting of a compound of the alkali metals, sodium, potassium and caesium with antimony. Surfaces of this kind have quantum efficiencies of upto about 20% for white light and can make much more efficient use of the night-sky radiation than the retina. On the other hand, an increased integration time beyond the 0.2 second of the fully dark adapted eye is only of limited use in practical applications because it reduces the ability to detect moving objects which appear to become more and more blurred. It is thus possible in principle to obtain considerable improvement in perception over the dark adapted eye by employing an instrument with a large diameter of its objective lens and an efficient photocathode. However, this potential perception gain can be achieved in practice only if the detected photons in the form of emitted photoelectrons produce scintillations on a final viewing screen that are bright enough to be registered on the observer's retina. This condition leads to the requirement of a minimum amount of light amplification or lumen gain in the instrument. Such a lumen gain can be achieved with the aid of image-intensifier tube. Much research has been done, especially in the fields of electronic image intensifier tubes, as well as optical technology relating to the optical components of a night vision system (i.e. the objective lens and the magnifying eyepiece) with a view to making the performance these night vision devices better and better. He concluded that IRDE have taken up various R&D projects to support the demand of all the three armed forces, so that they can safe guard our borders. He also committed that his Institute will organize many more programmes in collaboration with UCOST & NASI- UK Chapter for Science popularization in the State.



Fig. 18. Dr. Rajendra Dobhal, Facilitating to Dr. S.S.Negi



## NASI BEST SCIENCE TEACHER AWARD

The National Academy of Sciences (NASI), Uttarakhand Chapter and Uttarakhand State Council for Science & Technology every year facilitate Best Science Teacher Award. NASI Best Teacher Awards nominations were invited through advertisement published in different newspapers.

However, 30 nominees from different Schools of Uttarakhand have been received their applications with in the given time. A NASI committee was set up

to select the best teacher for selection of the Award. After going through the Bio-data, enclosed testimonial, teaching experience and board results the committee recommended Sh. Neeraj Kumar Joshi, Asst. Teacher of Mathematics, GIC, Josha Munsiyari for NASI Best Teacher Award 2014-15 for his outstanding contribution in the field of Science Popularization.

S. No.	Name of Teacher	Designation	School Name	Year of Award	Subject
1	Dr. Bhuwan Chandra Pandey	Lecturer	Govt. Inter College, Khoont, Almora	2008	Botany
2	Sh. Narayan Singh Rana	Lecturer	Government Kirti Inter College, Uttarkashi	2009	Botany
3	Sh. Umesh Chandra Pandey	Lecturer	Govt. Inter College Dinapani, Almora.	2010	Mathematics
4	Sh. Alakh Narayan Dubey	Assistant Teacher	Govt. Higher Secondary School, Aagar, Tehri Garhwal	2011	Science
5	Sh. Aatma Prakash	Assistant Teacher	Govt. Inter College Chinka, Chamoli	2012	Mathematics
6	Sh. Kalayan Singh Rawat	Lecturer	Govt. Inter College, Maldevta	2013	Biology
7	Sh. Neeraj Kumar Joshi	Assistant Teacher	Govt. Inter College, Josha, Munsiyari	2014-15	Mathematics



Fig. 19. Sh. Neeraj Kumar Joshi receiving Best Science Teacher Award from Honorable Chief Minister Sh. Harish Rawat on the occasion of 9<sup>th</sup> USSTC (26<sup>th</sup> Feb. 2015)

## WORKSHOPS/SEMINARS IN S&T ISSUES:

### i. NASI Uttarakhand Chapter Workshop on “Scientific Paper and Project Writing”

One day workshop on “Scientific Paper and Project Writing” was organized on 17th May 2014 in which a total of 120 participants from Sardar Bhagwan Singh (PG) College, Dehradun; Doon University; Wildlife Institute of India, Dehradun; Oil & Natural Gas Corporation (ONGC), Dehradun; Dolphin (PG) Institute of Biomedical & natural Sciences; Forest Research Institute, Himalayan Environment Studies & Conservation Organization (HESCO), University of Petroleum & Energy Studies (UPES); Sri Guru Ram Rai (SGRR) P.G College; Maya Institute of Technology; Wadia Institute of Himalayan Geology; DAV (PG) College, Dehradun; DBS (PG) College, Dehradun and Graphic Era University, Uttarakhand Space Application Centre (USAC); Gurukul Kangri University, Haridwar; Uttarakhand Science Education Research Centre (USERC) and Uttarakhand Council for Science and Technology (UCOST) participated. Activities held during the workshop are summarized as follow:

The workshop was initiated with registration of the



participants and lightening the lamp by Chief Guest Sh. Vijay Kumar Dhaundiyal, IAS, Additional Secretary S&T, Director General UCOST, Dehradun.

Dr. D.P. Uniyal, Workshop Convener, Sr. Scientific Officer, Uttarakhand State Council for Science & Technology (UCOST), Dehradun. He highlighted the background and importance of the program and raised issues and tactics in the art of paper writing

with introduction of the invited speakers. He also gave a glimpse of last year workshops conducted in collaboration with the NASI in which about 150 participants from across the state participated. He



welcomed the dignitaries and participants and wished that the program will be beneficial for the budding researchers and scientists. Dr. U.C. Srivastava from General Secretary, NASI, Allahabad shed light on the NASI, its objectives and various activities throughout the India. He told that NASI regularly organized this type of workshop throughout the country. He explained, “why this workshop?” and briefly narrated how idea of this program was conceived.

Special Guest, Prof. R.C. Joshi, Chancellor, Graphic Era University, Dehradun addressed the gathering wherein he emphasised on types of research i.e. Radical and Incremental Innovation. He stressed on the review of literature before setting out the objectives after finding gaps of research under review



of literature. He told that Incremental Innovation is the contemporary thrust area of research in every field of science and Technology.

Further, Padm Vibhushan Dr. Manju Sharma, former



Secretary, DBT, Govt. of India, New Delhi & Former President, NASI, Allahabad shed light on National



Academy of Science India (NASI), its mandate and activities such as workshop, sensitization, awareness and training programs. She said that NASI has had top scientists and academicians who guided the policies in NASI and at Govt. level in order to harness the research and development for society. She explained on the fact that research should be done keeping three "P's" in mind i.e. Publication-Patent-Product Development (PPP) and the developed product should be sustainable, economically viable and environmental friendly. Finally, she said that science and technology is the major vehicle of societal transformation and it is unavoidable in developing nation like India. Guest



of honour Padm Shri Prof. A.N. Purohit, former Vice Chancellor, H.N.B Garhwal University & Advisor NASI, UK Chapter narrated experience of his own PhD days and told the participants not to dishearten with the rejection of research papers and enjoy writing the papers. He suggested acknowledging the references while writing research papers. Guest of Honour Dr. Rajendra Dobhal, Chairman & Managing Director, NRDC, New Delhi & Secretary, NASI, UK Chapter explained importance of right and appropriate use of english, which is the language of science communication, and told that even commas and full stop are critical Which change the sense of whole sentence. He also explained the importance of paper writing for the career.

Padm Bhushan Dr. V.P. Sharma, former Additional Director General, Indian Council for Medical Research (ICMR), New Delhi delivered theme



address where in he discussed variety of science writing i.e. Article, Notes, Communication, Reviews, and Book Chapter etc. He suggested the participants to get organized before writing any research article



and to prepare list of points to be represented in paper and for it, always take sufficient time. He explained the cage or various headings of a paper i.e. title, abstract, key points, introduction, materials & methods, results and discussion along with acknowledgement and references. A good paper contains logical sequence of the investigated matter with text and illustrative materials such as figures, graphs and tables.

In his address, Chief Guest Sri Vijay Kumar Dhaundiyal, IAS, Director General, UCOST, Dehradun draw the attention of scientific community on two major issues of societal concern: Bureaucracy



in Science and its feature in state like Uttarakhand. One should focus on the trilogy of Content, Patent and Marketing while doing research. He raised that motto of doing science that it should be the 'help of man at distant end'. He concluded his address by saying that researchers should always remember and question him/herself, "Mere hisse ka vigyan mera



kitna hai aur mere samaj ka kitna hai" ....?

The session was concluded with the vote of thanks by Dr. Neeraj Kumar, Executive Secretary, NASI, Allahabad. The latter half of the workshop was divided into two Technical Sessions.

## Technical Session-I

The session was started with brief note of Session Chairman Dr. V.P. Sharma. Expert Prof. Paramjit Khurana, Foreign Secretary NASI delivered her lecture on "The art of paper writing" and said that research is not finished until it is published. In this context, researchers should focus on publication of their research findings. She beautifully explained various silent features which young researchers often do not notice, such as number of objective under a title, use of English and data presentation using



figures, graphs and table and discussion part.

The first session workshop was ended up with lecture of Session Expert Prof. U.C. Shrivastava, General Secretary, NASI wherein he primarily gave stress on setting out Objectives of the research. He said that identifying Objectives is very critical issue and should be carefully set after rigorous exercise of reviewing the literature and finding out the gaps. After finding gap area in existing literature of particular topic, the Objectives should be divided in General and Specific Objectives. He said that still there are sufficient gap in biodiversity related studies in Himalayan region.

## Technical Session-II

The session was started with brief note of Session Chairman Prof. U.C. Shrivastava and then Expert Dr. D.P. Uniyal, Workshop Convener, Sr. Scientific Officer, UCOST delivered his lecture on "Project Writing, Funding Mechanism and IPR issues & Management". He explained that project writing is skill; right topic/title is important which shows the importance and meaning of the project. He also explained that for a good project, gap area is to be highlighted which shows the novelty. Besides this he stressed that objectives should be that much which PI can fulfill in specified time period. Budget justification is another major issue and should be justified while writing the project. He also explained about the funding



agencies/mechanism in the country for S&T in R&D/SCP/EDP/Awareness. He enlisted major funding agencies such as, MoEF, MoES, MnRE, MHRD, MoWR, MSME, DBT, DST, ICAR, ICMR, CSIR, UGC, DRDO, DAE, DOD, ICSSR and various Industries under Corporate Social Responsibility (CSR). He also explained how UCOST and other funding agencies in state such as State Biotech Program (SBP) and Uttarakhand Forest Dept. provide funds to carry out research.

The workshop was ended up with Interactive Session under Chairmanship of Prof. V.P. Sharma and all the experts of Technical Session along with Dr. Rajendra Dobhal and Dr. Niraj Kumar, Executive secretary NASI in which participant raised their queries and experts satisfied them with rational answers.

## ii. NASI Uttarakhand Chapter Workshop on “Technological Empowerment of Women”

One day workshop on “Technological Empowerment of Women” was organized on 18th May 2014 in which more than 150 participants from various institutes like SBS (PG) College, Dehradun; Doon University; Wildlife Institute of India, Dehradun; Oil & Natural Gas Corporation (ONGC), Dehradun; Dolphin (PG) Institute of Biomedical & natural Sciences; Forest Research Institute, Himalayan Environment Studies & Conservation Organization (HESCO), University of Petroleum & Energy Studies (UPES); Sri Guru Ram Rai (SGRR) PG College; Maya Institute of Technology; Wadia Institute of Himalayan Geology; DAV (PG) College, Dehradun; DBS (PG) College, Dehradun and Graphic era University, Uttarakhand Space Application Centre (USAC); Gurukul Kangri University, Haridwar; Uttarakhand Science Education Research Centre (USERC) and Uttarakhand Council for Science and



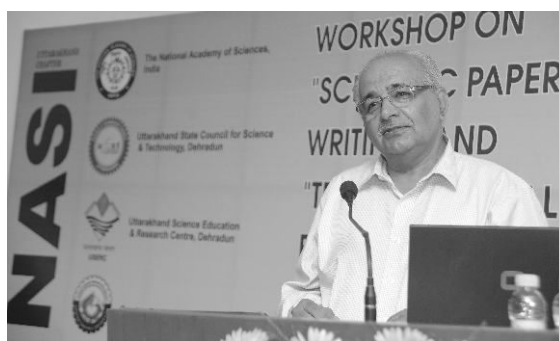
Technology (UCOST) participated. Activities held during the workshop are summarized as follow:

The workshop started with registration of the participants. Later, inaugural function was started with lightening the lamp by dignitaries and brief



introduction and welcome address by Dr. Neeraj Kumar, Executive secretary, NASI, Allahabad. He highlighted on why the theme of “Technological Empowerment of Women” was taken for this workshop. He welcomed all the delegates, participants with brief introduction of the invited speakers.

The guest of Honour Dr. B.R. Arora, Former Director Wadia Institute of Himalayan Geology, Dehradun & Chairman NASI UK Chapter delivered his talk by quoting Madam Mary Curie and her family members who won the Nobel Prize and highlighted the contribution of female in Science & technology. However, he regretted that in spite of immense contribution, the women community has not getting proper recognition in S&T. He argued to the women



community to follow the path which has been built by several women leaders in world. He also emphasised on the societal responsibility and efforts to support women aspirations and break the discriminating attitude.

Dr. Sanjay Jasola, Vice Chancellor, Graphic Era Hill University, Dehradun said that it is welcome effort to



organize workshop on “Technological Empowerment of Women” when major breakthrough has been witnessed by us in the field of S&T itself. He



emphasised on to devise the method and strategy which allow women to work in S&T mediated empowerment.

Dr. Manju Sharma facilitated Dr. Brijmohan Sharma, Secretary, Society of Pollution & Environmental Conservation Scientists (SPECS), Dehradun for its outstanding effort in S&T popularization in Uttarakhand. SPECS has recently won the National



Award-2014 for S&T popularization conferred by DST and was given by S&T Minister Govt. of India Sri Jaypal Reddy.

Dr. Rajendra Dobhal, Chairman and managing Director, NRDC, New Delhi & Secretary, NASI UK Chapter shed light on the Uttarakhand region efforts



towards women empowerment on education and societal transformation by taking an example of establishment of MKP Kanya Mahavidyalaya in year 1902. With major contribution of women in nation's development by opting career in Army, Police and Intelligence, he was hopeful that this trend will be continued even in S&T.

Dr. Manju Sharma explained, “Why NASI is here” with this kind of theme, she said that being a significant contributor in growth and development of



a nation, condition of the women is still worse particularly in developing world and raising the issues of women is now a global phenomenon and our motto should be on ensuring their maximum contribution in field of S&T. With this she also said that women are part and parcel of nation building and they themselves should come forwards to take challenge. She told that the Prime Minister Sh. Atal Bihari Bajpayee declared 2001 as the year of Women Empowerment. She also emphasised that women produces half of the food in India but her participation in agricultural science is negligible. She highlighted the major recommendation at the concluding session of the workshop:

She hoped that Central Govt. and UCOST will take over such recommendations for implementation.

Chief Guest Prof. S.P. Singh, Former Vice Chancellor, HNB Garhwal University & Advisor NASI, UK Chapter, said that it is the right time to think over



making opportunities for women community especially in S&T. He said that this is disheartening to see most of Indian Universities and colleges are consumers of existing knowledge, rather than creator. Therefore, theoretical study in academics should now be encouraged with practical/ research and skill development. He shed light on various programs of Indian Govt. which have been devised to propagate culture of women empowerment in S&T. The session was terminated with the vote of thanks by Dr. U.C. Shrivastava, General Secretary, NASI.

## Technical Session-I

The session was started with brief note of Session Chairman Prof. U.C. Shrivastava thereafter, Dr. Jyoti Sharma, DST, Govt. of India delivered her lecture on "Schemes of DST for Women". She said that even women of NGO also much enthusiastic to the R&D, however, they face numerous difficulties such as



getting right mentor, lack of technical support, feeling outsider within the host institute, and mentoring for publication, however, DST is working towards it. She shed light on various schemes of DST for women who want to pursue career in S&T. She suggested the participants to visit the websites of various funding agencies on regular basis to know various programs and policies for women.

The first session workshop was ended up with lecture of Dr. Subhra Chakravarty, National Institute of Plant Genome Research (NIPGR), New Delhi, who explained the efforts made by her group in Proteogenomics, a branch of biological science in which she is a pioneer worker. Most of the researchers

in her lab are women who work dedicatedly and she said that calibre and dedication of women towards any assignment is commendable, which should be properly catered. Her deliberation was applauded by



the participants, where she narrated some of the path breaking research on metabolic pathways and immunity in Chick Pea etc applying proteogenomics.

## Technical Session-II

The Chairman Prof. U.C. Shrivastava started the session and then Expert Padmshree Dr. Anil P. Joshi, Founder, HESCO, Dehradun delivered his lecture. He said that the real science associate us with the society, if it is not fulfilling the need of the society, then it is worthless. The researchers should have to understand the relevance of research first then start to execute the tasks. He emphasised that science has lot for urban and very less for rural. He suggested to take up the



S&T intervention in the existing rural wisdom for advancement of rural society. He briefly shed light on efforts made by his organization HESCO. Later, Dr. Kiran Negi, Scientist, HESCO, Dehradun explained the HESCO's efforts in her lecture, "Women

Empowerment using Indigenous Resources of Mountain”. She beautifully explained how, horticulture, Agriculture, Aromatic plant, Bee Keeping, Fibre, Water Mill can be a major tool to strengthen the economy of rural folk, and how HESCO has made it. She also gave a glimpse of Mahila Bachat Bank (Women Saving Bank)/ Swanidhi established in rural areas to cater the need of finance of rural women.



She also explained 'Decentralized Economic Development Pursuit' by keeping 'Ecological-Economic Drive' by afforestation, water farming, soil enrichment measure, non-carbon emitting pursuit, resource based enterprises. She showed the need of strengthening of rural producer-consumer network. The session was ended with the interactive discussion with Experts and participant in which participant raised their queries and experts satisfied them with answers.

### Recommendations:

**Following recommendations was summarized by the panelist:**

- 1) More Workshops should be organised on this topic in all over the state.
- 2) Gap area should be identified before writing scientific paper.
- 3) Research paper should be justifies statistical data.
- 4) Repetition of statistical data in the research paper should be avoided .
- 5) References should be carefully written.
- 6) Encourage Science education for women.
- 7) Development of Conducive workplace for women.
- 8) Creation of scholarships for women.
- 9) Establishment of Women Information Centres.
- 10) Arrangements of mentorship for women.
- 11) Organize Sensitization, training programs for women.
- 12) Suitable Infrastructure development for women
- 13) Encouragement through rewards, recognition etc.
- 14) Technological Empowerment of women in rural area.
- 15) Women should be the part of Nation Building Process.
- 16) Science should be a part of societal growth
- 17) Science Education should be inculcating in women through technology.
- 18) Female representation in agricultural Science.
- 19) Mentorship is very much needed in women for science education.
- 20) Women should involve in decision making process.
- 21) Literacy-Agriculture-Health should be emphasized.



### iii International Conference on “Our Genes & Genomes-Past, Present & Future”

International conference held at ICFRE, Dehradun in collaboration (Uttarakhand Medical University, Caddif University, U.K , UCOST & NASI, UK Chapter) on 4th February, 2015.

The main objective of the conference was to discuss the current status of genetics and genomics in rapidly evolving biomedical sciences and biotechnology engineering. The conference provided platform to the scientist and young researcher to interact with world leading scientists.



Fig. 20. Dignitaries setting on dias on the occasion of International Conference

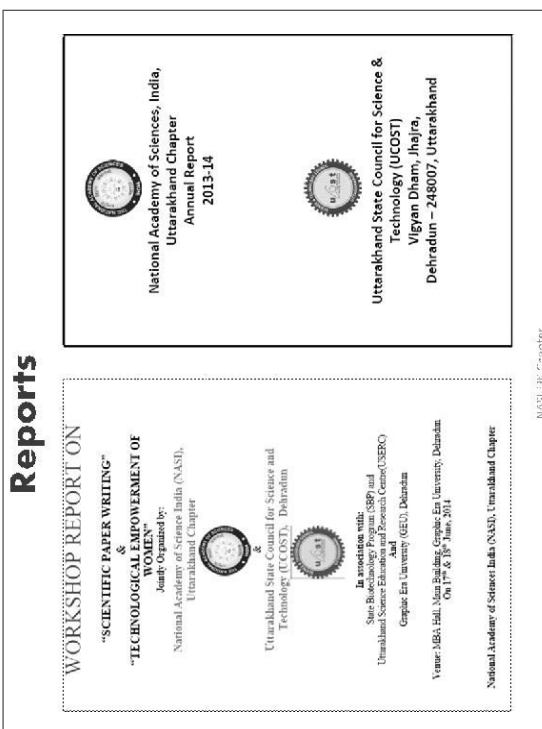


Fig. 21. Prof. Perry Elliott, The Heart Hospital, Univ. College, London, UK, delivered lecture on **“Rising heart disease-is it all in genes?”**



Fig. 22. Prof. Mary Proteus, Institute of Human Genetics, Edinburgh, Scotland delivered lecture on **“Genes and Genomes: Medicine & Health”**

# Publication & Reports





# नासी की दो दिवसीय कार्यशाला का आयोजन

## प्रथम- वैज्ञानिक शोध पत्र व परियोजना लेखन

उत्तराखण्ड राज्य विज्ञान एवं प्रौद्योगिकी परिषद (यूकॉस्ट) एवं राष्ट्रीय विज्ञान अकादमी भारत (नासी) के संयुक्त तत्वाधान में दिनांक 18 जून, 2014 को ग्राफिक एरा विश्वविद्यालय, देहरादून में दो दिवसीय कार्यशाला का शुभारम्भ किया गया जिसका प्रथम दिवस का मुख्य विषय था "वैज्ञानिक पेपर लेखन"। आयोजन में उत्तराखण्ड विज्ञान शिक्षा एवं अनुसंधान केन्द्र (यूसर्क) तथा राज्य जैव प्रौद्योगिकी कार्यक्रम द्वारा सक्रिय सहयोग प्रदान किया गया।



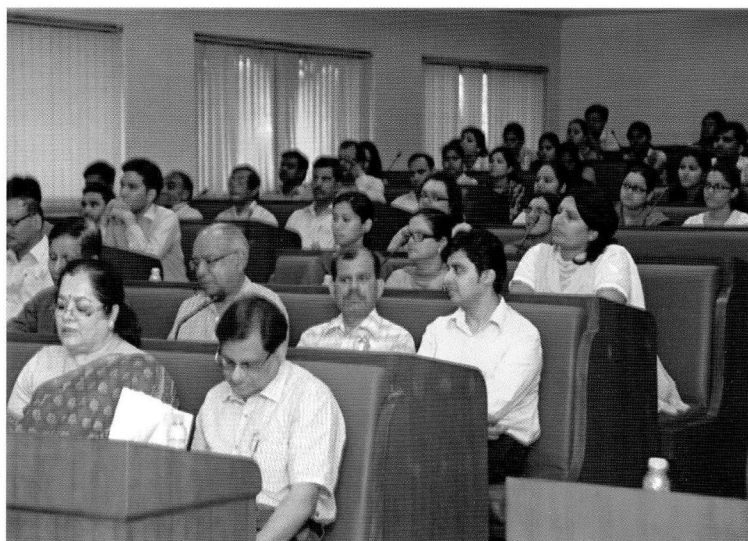
उद्घाटन समारोह में अपने संबोधन में मुख्य अतिथि यूकॉस्ट के महानिदेशक, श्री विजय कुमार ढोंडियाल ने युवा वैज्ञानिकों से कहा कि प्रदेश की विज्ञान नीति में युवाओं को शोध करने एवं शोध लेखन पर बढ़ावा देने हेतु विशेष जोर दिया जायेगा। साथ ही उन्होंने प्रदेश के विकास के लिए विज्ञान का रोड मैप भी शीघ्र ही तैयार किये जाने की आवश्यकता पर बल दिया।

कार्यशाला के सम्मानित अतिथि एन0आर0डी0सी0, नई दिल्ली के अध्यक्ष एवं प्रबन्ध निदेशक, डा0 राजेन्द्र डोभाल ने युवाओं को वरिष्ठ वैज्ञानिकों के अनुभवों के लाभ स्तरीय शोध ग्रन्थों एवं जनरलों में अपने शोध पत्र छापने में करने को कहा की अपील की है तथा विशेष रूप से अंग्रेजी में शोध पत्र लेखन में वैज्ञानिकता लाने पर जोर दिया।

कार्यशाला का थीम व्याख्यान पद्मभूषण प्रो० वी०पी० शर्मा, पूर्व अतिरिक्त

महानिदेशक, भारतीय चिकित्सा शोध परिषद, नई दिल्ली ने दिया। उन्होंने वैज्ञानिक शोध पत्र लेखन कला की बारीकियों से प्रतिभागियों को विस्तार से

जानकारी दी तथा इससे सम्बन्धित सभी विषयों पर अनेक जिज्ञासाओं का समाधान भी किया।





## FORTHCOMING EVENTS

1. Workshops/Seminars/ Conferences
2. Popular Lectures
3. Environment Summit
4. Brain Storming Sessions on S&T Issues
5. National Science Day
6. International Biodiversity Day
7. National Technology Day
8. World Environment Day

## NASI-Uttarakhand Chapter

### Fellows

1. AGRAWAL, Dharma Pal NASI Senior Scientist, Formerly Sr.Professor & Area Chairman; Hon.Director, Lok Vigyan Kendra Ashirwad, East Pokharkhali, Almora - 263601; Email : dpalmora@gmail.com; Tel. 05962-233868, 08979465526, 09458150865(M);
2. ARORA, Baldev Raj Former Director, Wadia Institute of Himalayan Geology, 33 Gen. Mahadeo Singh Road, Dehra Dun - 248001; Email : arorabr@wihg.res.in; Tel. 0135-2525294(O), 2761045(R);
3. BAJPAI, Sunil Professor, 211/1 Saraswati Kunj, Indian Institute of Technology Roorkee - 247667; Email : sunilbajpai2001@yahoo.com; Tel. (01332) 285079(O), 285385(R);
4. BHUSHAN, Ravi Professor, Department of Chemistry, I.I.T. Roorkee, Roorkee - 247667; Email : rbushfcy@iitr.ernet.in; rbushfcy@gmail.com; Tel. 01332-285795(O), 271162, 285089(R);
5. CHOWDHERY, Harsh, Former, Joint Director, Botanical Survey of India, 192-Kaulagarh Road, Dehra Dun - 248195; Email : bsinc2001@rediffmail.com; Tel. (0135) 2755478, 2753433(O);
6. GAUR, R.D. Professor Emeritus, Ex Head, & Dean, Faculty of Science, HN 653, Hanumantpuram, Lane 6, Ganga Nagar, Rishikesh - 249201; Email : rdgaur2009@gmail.com; Tel. 0135-2431187(R), 09412961288(M);
7. GOYAL, Kundan Lal Director(IMD), Gen. Manager, Energy Research, ONGC, Dehradun; 8A, Bengali Mohalla Road, Dehradun-248001; Email : klgoyal@hotmail.com; Tel. 0135-742414;
8. GUPTA, Anil Kumar Director, Wadia Institute of Himalayan Geology (DST, Govt. of India), 33, General Mahadeo Singh Road, Dehra Dun - 248001; Email : anilg@wihg.res.in; anilg@gg.iitkgp.ernet.in; Tel. (0135) 2525101, 103(O), 2521734(R);
9. GUPTA, Raj Kumar Director & Consultant Ecologist, Centre for Research on Ecology Environmental Applications, Training & Education (CREATE), 91/2, Vijay Park, Dehradun - 248001; Tel. 0135-2623437(R);
10. GUPTA, Vinod Kumar Professor & Head, Chemistry Department, 22/2 NITI Nagar, IIT Roorkee, Roorkee - 247667; Email : vinodfcy@gmail.com; vinodfcy@iitr.ernet.in; Tel. (01332) 285801(O), 285043, 274458(R);
11. GUPTA, Yugul Kishore Former Professor & Head, Dept. of Chemistry, Rajasthan Univ.; J/5, Phase II, Shivalik Nagar, Hardwar - 249403; Email : ykg1924@yahoo.com; Tel. 0133-2430426, 2430587(R);
12. JOSHI, Anil Prakash Founder Secretary, Himalayan Environmental Studies and Conservation Organisation (HESCO), Shuklapur, P.O. Ambiwala, Dehradun; Email : hesco1@sancharnet.in; dranilpjoshi@yahoo.co.in; Tel. (0135) 2642391, 2642736(O);
13. KHATTTRI, Kailash Nath Formerly Emeritus Scientist, CSIR; 100 Rajendra Nagar, Dehradun - 248001; Email : knkhattri@hotmail.com; Tel. 0135-2758542(R);
14. KUMAR, Anil Professor, Department of Chemistry, Indian Institute of Technology Roorkee, Roorkee - 247667; Email : anilkfcy@iitr.ernet.in; Tel. 01332-285799(O), 285180, 275478(R);
15. PALNI, Lok Man S., Former Director, G.B. Pant Institute of Himalayan Environment & Development, Kosi-Katarmal, Almora - 263643; Email : lmspalni@rediffmail.com; Tel. 05962-241015(O), 241034(R);

16. PANDEY, Anil Kumar Scientist D, Aryabhata Research Institute of Observational Sciences, Manora Peak, Nainital - 263129; Email : pandey@aries.ernet.in; Tel. (05942) 235136, 235583(O), 235583(R);
17. PANGTEY, Yash Pal Singh Formerly Professor, Botany Department, DSB Campus, Kumaun University, Nainital - 263002; Email : y\_pangtey@yahoo.com; Tel. (05942) 235596(O), (05946) 284546(R);
18. PUROHIT, Aditya Narain Former Vice-Chancellor, HNB Garhwal University; 'Almi Anchal', 181/1 Dobhalwala, Dehradun - 248001; Email : purohit\_aditya@hotmail.com; Tel. 0135-2713219(R);
19. RAWAT, Gopal Singh Professor, Department of Habitat Ecology, Wildlife Institute of India, P.B. 18, Dehra Dun - 248001; Email : rawatg@wii.gov.in; Tel. (0135) 2640111-115 Extn. 222(O), 315(R);
20. RAY, Subrata Professor in Metallurgical and Materials Engineering & Dean, Sponsored Research and Industrial Consultancy, Indian Institute of Technology Roorkee, Roorkee - 247667; Email : surayfmt@iitr.ernet.in; Tel. (01332) 285732, 285245(O), 285575(R);
21. SAGAR, Ram, Former Director, Aryabhata Research Institute of Observational Sciences, Manora Peak - 263129, Nainital, Uttaranchal; Email : sagar@aries.res.in; ram\_sagar0@yahoo.co.in; Tel. 05942-235136, 235583(O), 235053(R), 09412085436(M);
22. SINGH, Surendra Pratap Formerly Vice-Chancellor, HNB Garhwal University; 41/1, Vasant Vihar, Dehradun - 248006; Email : surps@yahoo.com; Tel. 09758765300(M);
23. SRI NIWAS Professor of Geophysics, Department of Earth Sciences, Indian Institute of Technology Roorkee, Roorkee - 247667; Email : srsnpfes@iitr.ernet.in; pandeysnpfes@gmail.com; Tel. 01332-285570(O), 285579, 275739(R);
24. SRIVASTAVA, Deepak Chandra Professor, Department of Earth Sciences, Indian Institute of Technology - Roorkee, Roorkee - 247667; Email : dpkesfes@iitr.ernet.in; dpkesfes@gmail.com; Tel. (01332) 285558(O), 275112, 285112(R), 09456381281(M);
25. TALUKDAR, Samarendra Nath Director, Institute of Petroleum Exploration, O.N.G.C., Dehradun;
26. VENKATACHALA, Bangalore Srinivasa R Emeritus Scientist, 16, East Canal Road, Dehradun - 248001; Tel. 0135-2650299(R);
27. VERMA, Arun Professor, Mathematics Department, University of Roorkee, Roorkee - 247667;

## NASI-Uttarakhand Chapter Life Members

1. ARIF, MOHAMMAD, Scientist E, Govt. of India, Ministry of Defence, Defence Institute of Bio-Energy, Research, Goraparao, Haldwani, NAINITAL - 263139, Email : arif527@rediffmail.com; Tel. 05946-232800 Ext. 223(O), 232832, 219405(R), 09412977248(M);
2. BIST, HARI DATT, Formerly Professor, Centre for Laser Technology, IIT, Kanpur, 14/35 G.B. Pant Marg, P.O. Bhotiya Parao, HALDWANI-263139 (UTTARANCHAL),
3. DEHADRAI, P.V., Director (P&E), ONGC, Tel Bhawan, DEHRADUN - 248001,
4. DITTAKAVI, RAMESHWAR RAO, Scientist F, Wadia Institute of Himalayan, Geology, 33 General Mahadeo Singh Road, DEHRADUN-248001, Email : raodr@wihg.res.in; Tel. 0135-2525303(O), 2723118(R), 09997476234(M);
5. DOBHAL, RAJENDRA, Director General, Uttarakhand State Council for Science & Technology, Vigyan Dham, Jhajra, Dehradun, 248006, Email : dg@ucost.in. Phone No. : 0135-2102769, 2102770



6. GAIROLA, RAJENDRA PRASAD, Professor, Department of Physics, P.O. Box 25, H.N.B. Garhwal University, SRINAGAR GARHWAL - 246174, Email : rpgairola\_ec@rediffmail.com; Tel. 01346-252331(O), 252414(R), 09456303066(M);
7. GAKKHAR, SUNITA, Professor, Department of Mathematics, Indian Institute of Technology, Roorkee, ROORKEE, Email : sungkfma@iitr.ernet.in; Tel. 01332-285171(O), 285693(R), 09719242545(M);
8. GHILDIYAL, JAGDISH CHANDRA, Reader, Department of Botany, Govt. P.G. College, KOTDWAR (GARHWAL) - 246149,
9. GHOSH, A.K., Central Research Laboratory, Anti Biotic Project, P.O. Virbhadra, RISHIKESH,
10. GILL, TEJENDRA SINGH, Lecturer, Department of Zoology, Kumaun University, NAINITAL,
11. GUPTA, ABHAYA KUMAR, Lecturer, CNI Boys College; 31/1, Kailash Vihar, Near Shiv Mandir, Lodpur, Raipur Road, DEHRADUN - 248008;
12. GUPTA, MUNENDRA NATH, Formerly Head of Botany; 31/1, Kailash Vihar, Ladpur, Raipur Road, DEHRADUN - 248008; Tel. 09411206218(M);
13. GUPTA, UMA SHANKER, Professor, Department of Mathematics, University of Roorkee, ROORKEE - 247667,
14. HRADAYNATH, R., Formerly, Director &, Distinguished Scientist, IRDE, 39/4 A, East Canal Road, DEHRADUN - 248001,
15. KHULBE, RAGHUBAR DATT, Professor, Department of Botany, D.S.B. Campus, Kumaun University, NAINITAL - 263002, Tel. 35596;
16. KULSHRESHTHA, CHITRA, Lecturer in Mathematics, Government Girls Inter College, RISHIKESH - 249201,
17. KUMAR, ANIL, Professor & Head, Dept. of Molecular Biology, & Genetic Engineering, CBSH, G.B. Pant University of, Agriculture & Technology, PANTNAGAR - 263145, Email : ak\_gupta2k@rediffmail.com; Tel. 05944-233898(O), 09411195450(M);
18. KUMAR, SARVESH, Lecturer, Department of Zoology, D.S.B. Campus, Kumaun University, NAINITAL - 263002,
19. LAXAMI, A.B., Department of Mathematics, D B S College, Kumaun University, NAINITAL,
20. LOHANI, ANAND BALLABH, Ex Professor of Mathematics, Windsor Cottage, Mallital, NAINITAL - 263001, Tel. 05942-237489(R), 09410141789(M);
21. MALVIYA, S.C., Dean, College of Basic Sciences, Pant Nagar Agri. University, PANT NAGAR,
22. MISRA, ASHWANI KUMAR, Senior Chemist, 195/1 Rajpur Road, DEHRADUN - 248009,
23. MITTAL, PRAMOD KUMAR, Principal, Government Degree College, Lansdowne, PAURI-GARHWAL,
24. NANDI, SHYAMAL KUMAR, Scientist F & Group Head, BCM-BTA, GB Pant Institute of Himalayan, Environment & Development, Kosi-Katarmal, ALMORA - 263643, Email : shyamal\_nandi@rediffmail.com; Tel. 05962-241041, 241154(O), 09411703555(M);
25. NATH, MALA, Professor, Department of Chemistry, Indian Institute of Technology, - Roorkee, ROORKEE - 247667; Email : malanfcy@iitr.ernet.in; Tel. 01332-285797(O), 270602(R), 09897135529(M);
26. NAUTIYAL, ANANT RAM, Director, HAPPRC, HNB Garhwal University, Post Box No. 14, SRINAGAR GARHWAL - 246174, Email : arn@softhome.net; Tel. 01368-251733, 252172(O), 52675(R);
27. NAUTIYAL, M.C., Professor, High Altitude Plant, Physiology Research Centre, H.N.B. Garhwal University, P.B. No. 14, SRINAGAR

- GARHWAL - 246174, Email :  
mcnautiyal@gmail.com; Tel. 01346-252172,  
251733, 253760(O), 252590(R);
28. NAUTIYAL, PRAKASH, Professor, Department  
of Zoology, H.N.B. Garhwal University, P.O.  
Box 96, SRINAGAR GARHWAL - 246174,  
Email : pn.mahseer@yahoo.com; Tel. 01370-  
267322, 267384(O);
  29. NAVNEET, Professor, Department of, Botany &  
Microbiology, Gurukul Kangri University,  
HARDWAR - 249404, Tel. 0133-454690;
  30. NEGI, SHARAD SINGH, Former Director,  
Forest Research Institute, P.O. New Forest,  
DEHRADUN-248006, Email :  
sharadnegi@hotmail.com; Tel. 0135-  
2755277(O) 2756803(R), 09411173194(M);
  31. PANDE, VIJAY, Professor of Mathematics,  
Kumaun University, Tilak Pur, ALMORA -  
263601, Email : vijpande@gmail.com; Tel.  
05962-237744(O), 230825(R);
  32. PANDEY, ANITA, Scientist 'D', Environmental,  
Physiology and Biotechnology, Core, GB Pant  
Institute of, Himalayan Environmental &  
Development, Kosi-Katarmal, ALMORA -  
263643, Email : pandeyanita1@rediffmail.com;  
Tel. 05962-241041(O), 241054(R),  
09412093585(M);
  33. PANDEY, KAILASH NATH, Professor & Head,  
Department of Botany, Kumaun University,  
S.S.J. Campus, ALMORA - 263601, Email :  
kailash\_nathpandey@yahoo.co.in; Tel. 05962-  
237745(O), 231054(R);
  34. PUNETHA, NILAMBER, Retired Principal, 167,  
Bajethi Ward, Near PG College,  
PITHORAGARH - 262502, Email :  
punethan\_bot@indiatimes.com;  
punethan\_bot@yahoo.com; Tel.  
09759165372(M);
  35. RAI, HAKIM, Formerly Scientist F, Wadia  
Institute of Himalayan, Geology; 125  
Bhoorgaon (Panditwari), P.O. Prem Nagar,  
DEHRADUN - 248007, Tel. 0135-2771236(R);
  36. RAJWAR, GOVIND S., Professor & Principal  
Narendra Nagar Govt. Degree College B-1  
Rishi Avenue, Ugrasen Nagar, P.O.  
Virbhadr, RISHIKESH - 249202, Email :  
rajwars@hotmail.com; Tel. 0135-  
2669856(O), 2454131(R),  
09412324599(M);
  37. RAWAL, RANBEER SINGH, Scientist E, GB  
Pant Institute of Himalayan, Environment &  
Development, Kosi-Katarmal, ALMORA -  
263643, Email : ranbeerrawal4@gmail.com;  
Tel. 05962-241041(O), 241038(R),  
09410392114(M);
  38. RAWAT, M.S.M., Former Professor & Head,  
Department of Chemistry, Post Box 63,  
H.N.B. Garhwal University, Srinagar,  
GARHWAL - 246174, Email :  
msmrawat@gmail.com; Tel. 01346-  
252229(O), 252902(R), 09411104325(M);
  39. SHARMA, RAJESH, Scientist F, Wadia  
Institute of Himalayan, Geology, 33, General  
Mahadeo Singh Road, DEHRADUN-  
2480001, Email :  
sharmarajesh@wihg.res.in; Tel. 0135-  
2525183(O), 2722098(R),  
09897162714(M);
  40. SINGH, SHIVPAL, Former Associate  
Professor, Department of Zoology; 9A,  
Sewak Ashram Road, DEHRA DUN -  
248001, Tel. 0135-2742653(R);
  41. SINGH, SHYAM LAL, Emeritus Fellow,  
UGC, 21, Govind Nagar, RISHIKESH -  
249201, Email : vedzcmrz@gmail.com;  
sh42@rediffmail.com; Tel. 0135-  
2431624(R), 09412025236(M);
  42. SINVHAL, SHAMBHU DAYAL, C/o Prof. H.  
Sinvhal, Department of Earth Sciences,  
University of Roorkee, ROORKEE - 247667,
  43. SRIVASTAVA, ANIL KUMAR, Lecturer, 4,  
Raipur Road, DEHRADUN,
  44. SRIVASTAVA, G.S., Professor, Department  
of Mathematics, Indian Institute of

- Technology, Roorkee, ROORKEE - 247667;  
Email : girssfma@iitr.ernet.in; Tel. 01332-285763(O), 271468(R), 09897071469(M);
45. SRIVASTAVA, S.P., Professor of Chemistry, University of Roorkee, ROORKEE,
  46. SRIVASTAVA, SATISH KUMAR, Senior Scientist, Directorate of Coldwater, Fisheries Research, BHIMTAL - 263136 NAINITAL,  
Email : satishsrivastava@mail.com; Tel. 05942-247280, 247279(O), 09453950801(M);
  47. SUNDRIYAL, R.C., Former Director, Herbal Research & Development, Institute, Mandal, Gopeshwar, DIST. CHAMOLI, UTTARAKHAND, Email : sundriyalrc@yahoo.com; Tel. 01372-254210, 09410394846(M);
  48. THAKUR, VIKRAM CHANDRA, Director, Wadia Institute of Himalayan, Geology, 33, General Mahadeo Singh Road, DEHRADUN - 248 001,
  49. TIWARI, NAVIN CHANDRA, Chemist, Pollution Monitoring, Lab., Amravati Colony - IIIrd, Talli Bamori, HALDWANI - 263 139,
  50. TRIPATHI, YOGESH CHANDRA, Sr. Scientist & Head, Chemistry Division, Forest Research Institute, P.O. New Forest, DEHRADUN - 248006, Email : tripathiyc@gmail.com, tripathiyc@icfre.org; Tel. 0135-2752671, 2224207(O), 2750210, 2224582(R), 09412050775(M);