

101ST INDIAN SCIENCE CONGRESS

Inaugural Session

The 101st Indian Science Congress was inaugurated in the morning of February 3, 2014 by Dr. Manmohan Singh, Hon'ble Prime Minister of India, in the presence of Shri N. N. Vohra, Hon'ble Governor, J & K State; Shri S. Jaipal Reddy, Minister for Science and Technology & Earth Sciences, Government of India; Dr. Farooq Abdullah, Minister for New and Renewable Energy, Government of India; Prof. R.C. Sobti, Hon'ble Vice Chancellor, Babasaheb Bhimrao Ambedkar University(A Central University), Lucknow, and General President, Indian Science Congress Association; and Prof. M. P. S. Ishar, Hon'ble Vice Chancellor, University of Jammu. The inaugural session was attended by a large number of distinguished scientists, academicians, Vice Chancellors of various Universities, Members of J& K Council of Ministers, Members of Parliament, senior functionaries from the State government, representatives from Industry, students and scholars.

The Hon'ble Prime Minister of India, Dr. Manmohan Singh, while delivering his inaugural address emphasized that India needs to leverage the ability of modern science to deliver value to society. He opined that affordable innovations for human healthcare, sustainable agriculture, clean energy and total solutions for water-related challenges are some areas where Indian science could seek global leadership.

“Indian scientists must learn from the past, connect with the present and focus on the future. Our basic research must be directed to make new discoveries with innovative efforts to develop affordable solution,” he said, adding that science should be a driving force propelling India as a resurgent civilization which holds out both hope and opportunity to young citizens. He also announced another National Mission on High Performance Computing with an outlay of Rs 4500 crores and said that the Government was also considering establishment of a National Geographical Information System with outlay of Rs 3000 crores. He urged the corporate sector to join hands with the Government in realizing the goals set for the nation.

The Prime Minister was happy to announce that India would partner with the international scientific community in the establishment of the world's Major Research Development Projects, Dr. Manmohan Singh also shared that the country is joining The European Organization for Nuclear Research, known as CERN, as an associate member.

Emphasizing the needs to ensure food security and to improve land and water productivity, the Hon'ble Prime Minister stated that we have to launch a national drive for an ever green revolution. He opined that safety must be ensured & urged and that the country should not succumb to unscientific prejudices against Bt. crops. He also mentioned about the setting up to five Indian Institutes of Science Education and Research (IISERs), eight new IITS and the development of backward linkages between the Government departments such as Space, Atomic Energy and CSIR with universities to enable cross-fertilization of ideas, establishment of the National Science and Engineering Research Board and initiation of schemes like INSPIRE to attract youngsters to science and technology.

On the occasion of the Inaugural session of the 101st Indian Science Congress, the Hon'ble Prime Minister presented ISCA awards to scientists namely Dr. Rajender Lakshman Karandikar, Prof. S.M. Pal Khurana, Dr. G. Shireesh Reddy, Prof. P. C. Trivedi and Prof. Abhijeet Banerjee. He also felicitated and gave mementoes to Nobel Laureate Prof. Y .T. Lee, Prof. Yash Pal, Prof. A. K. Sood, Prof. Avinash Chander, Prof. V. P.Kamboj, Prof. I. J. S. Bansal, Prof. Ashok Saxena, Prof. S.S. Katiyar and Shri V.M. Trehan. On this auspicious occasion a book entitled "India Culture of Science-Glorious Past and Bright Future" edited by Dr. R. C. Sobti was released by the Hon'ble Prime Minister of India Dr. Mohammad Singh,.

The keynote address was delivered by Shri S. Jaipal Reddy, Hon'ble Minister for Science and Technology and Earth Sciences, Government of India. In his address Shri Reddy said that the inclusiveness of our national growth would rely heavily upon the availability, accessibility and affordability of the products of innovation. "The innovation ecosystem, should, therefore, build into it, inclusiveness of growth as one of the key dimensions," he added. The Union Minister further said that the Ministry of Science and Technology in association with other sister ministeries and departments was launching some prestigious programmes in mega science, high performance computing, National Geographical Information System and many more.

He said that being the flag bearers of the scientific community, the Indian Science Congress delegates need to carry the message of Science to the people of India. "There is also a need of an ecosystem for propelling India among the top 10 or 15 nations in innovation sector. This would call for trust among the inter-institutional linkages, risk bearing potentials in our financial appraisal systems, application mindset in educational sector, venturing mindset among our investors, entrepreneurial spirit in the industrial community and leadership focus in the country," he said.

Shri Reddy further further opined that inclusive development agenda of the country could be best served by making all cross sections of the society, both the innovators as well as beneficiaries of innovation. He announced that the Government was soon launching an overseas scholarship programme to bridge national gaps in critical and frontier areas of Scientific research.

Jenab Omar Abdullah, Hon'ble Chief Minister, J & K State in his address called for open science and liberal dissemination of knowledge. "There should be no monopoly on Science. All innovations should have universal, implications and consequences that would lead to amelioration of human miseries. Global public goods like cure for AIDS or cancer and diffusion of technologies to better and improve services and systems for mankind cannot be patented," he said. Speaking in favour of open science, he said there is need for liberal dissemination of knowledge. "Open science is more conducive to the rate of growth of society's stock of knowledge. In keeping with his views, Shri Abdullah made a "call for an approach that aligns befitting returns from science and knowledge".

He said while patents on innovations may give a sense of ownership to the innovator and science entrepreneur, the benefits of science should not be exclusive. He said Governments should try to make innovation quests profitable by encouraging research and development by

subsidizing processes and making innovation in science and technology as the centre piece of public policy.

Prof. R. C. Sobti, General President, Indian Science Congress Association, in his Presidential Address, highlighted the efficacy and importance of Indian Science Congress for the growth and development of science and technology in the country.

Prof. M.P. S. Ishar, Vice Chancellor, University of Jammu in his formal vote of thanks, thanked all dignitaries for sparing their valuable time for the historic occasion and also thanked all those associated with the 101st Indian Science Congress for their whole hearted support. He expressed his special thanks to Sh. N. N. Vohra, Hon'ble Governor, J &K State & Chancellor, University of Jammu and Jenab Omar Abdullah, Hon'ble Chief Minister J & K State & Pro-Chancellor, University of Jammu for the constant support and guidance extended by them in the successful organization of the 101st annual session of the Indian Science Congress. He also thanked all the Hon'ble Ministers of J& K Government, Hon'ble Members of Parliament and Legislators J & K State for their kind support.

The inaugural function was conducted by Prof. Manoj Dhar, Registration, University of Jammu.

CHILDREN SCIENCE CONGRESS

The Children Science Congress popularly known as Rashtriya Kishore Vaigyanik Sammelan is organized every year along with the Indian Science congress. It is a unique opportunity for the young students, in the age group of 10- 17 years from all over the country, to improve the scientific treatment and expand their innovative talents in the field of science and technology.

The children Science congress in the 101st Indian Science Congress was inaugurated by Dr. A. P. J. Abdul Kalam, Formar President of India on February 4,2014. Prof. Yashpal, Formar Director, Indian Space Research Organization and Former Chairman, University Grant Commission, delivered the key Key Note Lecture in the Inaugural session.

More than 7000 students from different government and privet schools of jammu and nearby areas were invited to participate in the inaugural function. In a completely packed auditorium with dignitaries, child scientists, delegated and students from the schools of jammu and adjoining areas, Dr. kalam mesmerized the audience by delivering his inaugural address on 'innovation Empowers Nation' . Dwelling in to the theme of inclusive Development, Dr. Kalam encouraged children to see the things though a whole new spectrum. He spoke about the "Culture of Excellence" in which children are not afraid of chasing their dreams, are not dithered by failures and are in competition not with someone but themselves. There is constant zeal for excellence. He inspired children to "dare to imagine the impossible and achieve." Dr. Kalam also mentioned the resent achievements of the Indian Scientific Community such as the launch of PSLV-D5 running on indigenously built cryogenic fuel engine system, Mars Orbiter Mission, use o9f genetically modified crops in- solving problems of food security etc. he expressed his

strong conviction that it is time when the young vibrant minds of India should replace the old and unimaginative ones and steer the nation towards growth and prosperity. This was followed by an interactive session of the students with Dr. Kalam and Prof. Yashpal.

Prof. Arun kumar, General Secretary (Scientific Activities), Indian Science Congress Association, welcomed the guests and Prof. Pankaj Shivastava, Convener of the children Science Congress highlighted the objectives of the programme. Prof. Mohan Paul Singh Ishar, Vice Chancellor, University of Jammu, addressed the gathering. Prof. R. C. Sobti, General President, Indian Science Congress Association presided over the function.

Eight students were awarded with the INFOSYS – ISCA Travel Award during the Inaugural function. The selection of the awardees was made on the basis of a write up submitted by the students and evaluated by an Evaluation Committee on “What developments in science during the last two years have influenced him/her and why?”. The first five awardees namely Ms. Manya Sharma, Mr. Pranshu Nigam, Ms. Parul Uppal, Ms. Harsita Aggrawal and Ms. Bhavya Padha were given a plaque and certificate while Ms. Farheena Naaz and Ms. Neetu were awarded certificates.

After the Inaugural Ceremony, Dr. Kalam also inaugurated the Children Science Exhibition. Fifty four stalls were established to showcase the projects and exhibits of the child scientists from thirty five States the Union Territories of India. 207 students and teachers took part in the programme this year. The child scientists were selected on the basis of national level competitions organized by National Council of Science and Technology (Govt. of India) and National Council of Science and Technology (NCSTC), Department of Science and Technology (Govt. of India) and National Council of Education Research. The students through NCSTS displayed their projects on the focal theme “Energy: Explore, Harness and Conserve”.

Sixteen students and the teachers who escorted them displayed their award winning scientific models selected from the Jawaharlal Nehru National Science, Mathematics and Environment Exhibition organized by NCERT at Gangtok. Every day about 800-1000 school students from the local schools visited the exhibition as per the time schedule allotted to them on all the three days.

During the three day programme, different activities were organized for the students. Two workshops on “Fun with science Experiments” by Prof. Mineesh Gulati (Physics activities) and Dr. Ashiq Hussain (Chemistry activities) were organized.

Invited lectures, interactive sessions, documentaries were a part of the three day Children Science Congress. Some of the activities included were:

- A special lecture by Dr. Santosh K. Kumari, Lecturer, Institute of Mathematical Science, J&K on a “Quiz on The Great Mathematician Ramanuja”.
- A special lecture by Prof. M.G. Deo, a Padamshree awardee and Former Director, Cancer Research Institute, Pune on “Scouting and Nurturing Science Talent in Rural and Tribal India”

- Screening of documentaries on “Discovering Little scientists” and “Discovering Adivasis Little Scientists.
- Interactive sessions on “Photimetry” and “Gene and DNA”
- Special Lecture by Prof. M. Gulati on “Science with Fun”.
- A Quiz organized by the Ministry of Earth Sciences, Government of India.
- Interactive Session with Dr. B.P. Singh, Head, NCSTC and Dr. D. K. Pandey Scientist F. NCSTC, DST (Government of India).

The children Science Congress culminated with a gala Valedictory function where certificates were distributed to the Child Scientists and the teachers who accompanied them. Jenab Abdul Rahim Rather, Hon'ble Finance Minister, J&K Government was the Chief Guest of the function. Prof. M.P.S. Ishar, Vice Chancellor, University of Jammu presided over the function. Dr. B.P. Singh, Head NCSTC and Dr.D.K. Pandey, Scientist F were the Guests of Honour.

WOMEN SCIENCE CONGRESS

The 3rd Women Science Congress in the 101st Indian Science Congress was organized at University of Jammu from February 5-7, 2014 on the theme “Women in Science, Technology and Innovation“. This programme motivated the participation of a large number of women scientist from various institutions across the country. The Women Science Congress was inaugurated by Dr. Farooq Abdullah, Hon'ble Union Minister for New and Renewable Energy in the presence of Mrs. Usha Vohra, First lady of the State of Jammu and Kashmir, who was the Guest of Honors on the occasion; Prof. R. C. Sobti, General President, Indian Science Congress Association and Prof. M.P.S. Ishar, Vice Chancellor, University of Jammu. Prof. Kasturi Datta, School of Environment Science, Jawaharlal Nehru University was the Keynote Speaker.

In his inaugural address, Dr. Farooq Abdullah opined that the Women Science Congress will provide an excellence platform to celebrate the achievements of Indian women in science and also deliberate on ways to enhance their participation in science, research and development and decision making processes relating to Indian women in science and technology and making them equal partners in all processes of development and governance is not only desirable but essential for all round national development and progress.

Expressing his concern over the fact that the number of women professionals, especially the women scientist in our country, is still miniscule, science streams remain largely male dominated and there are very few women in nation science academies or in decision-making positions in science establishments. He said efforts must be made to overcome this disparity. He stressed the need for creating opportunities for women scientist who due to social compulsions quit profession immediately after marriage.

Mrs. Usha Vohra in her address stressed on the need for generating a scientific temper among the students. She said that there is a need for creating self-employment opportunities for women in the ever expanding field of Science and Technology and wished the women scientists and the Science Congress all success.

Prof. Kasturi Datta delivering the key note address said women empowerment cannot be complete without their equitable participation in science and technology as they have a special role to play.”Given scope, they can bring a wave of creating and generative energy in the field of science and technology.” She opined. She was of the opinion that the gender disparity which is palpably evident in the education sector hits inclusive growth very adversely. She expressed that Science and Technology brings economic growth and well-being to people, not only because of the empowerment of women through science and technology, but also because of the enrichment of science and technology through women’s participation.

Engagement of women at the grass root level is inevitable for worldwide science and technology capacity building, she added. Dr. Kasturi Datta, gave her keynote address on *‘Hyaluronam Binding Protein 1 (HABP1) - Candidate for Tumour Biomarker ‘and stated that their research data suggested that HABP1 might act as a biomarker for tumour formation and matastasis.*

The three days Women Science Congress had a special lecture session along with six sessions which had various presentations over a broad range of fields. About forty eight (48) oral presentations were made during the six sessions namely:

- Healthcare and Management of Infectious and Non- communicable Disease/ Disorders.
- Advances in information technology
- Environmental and conservation
- Innovation and advances in physical Sciences
- Advances in sciences and technology for women Empowerment
- Advances in biotechnology and disease management

This programme served for showcasing the contributions of outstanding women scientist of India such as Dr. Indra Chakraborty, Chief advisor, WSSO, PHED Government of West Bengal; Dr. Bindu dey, Department of Biotechnology, Ministry of S& T, Government of India; Dr. Kamana Mishra, Director, R & D, Celvive Inc., Rutgers, NY, USA; Dr. Alka Sharma, Department of Biotechnology, Ministry of S&T can develop for empowering women including rural women.

The Valedictory session of the women Sciences congress was organized on February 7, 2014. Mrs Shamima Firdose, MLA Chairperson, Stat commission for women was the chief guest and Dr. Shashi Ahuja, Advisor, Department of sciences and technology, Government of India was the guest of Honour. During her address, Mrs Shamima Firdose laid stress on removing the gender bias and said that girls should be brought up in an indiscriminate environment. She further said that in today’s world, women have proven themselves in all the spheres. They shoulder the dual responsibility of a homemaker as well as in her area of work. Dr. Shashi Ahuja gave a detailed overview of the major presentations at the women sciences congress and highlighted about certain important efforts and programmes that were implemented in the direction for the promotion of women in science by the Government of India and Department of Sciences and Technology in particular.

SCIENCE COMMUNICATORS' MEET

The Seventh Science Communicators' Meet (SCM) also known as "Rashtriya Vigyan Sancharak Sammelan", one of the important events of the 101st Indian Science Congress, was inaugurated by Prof. R. C. Sobti, General President ISCA on February 4, 2014. Prof. M.P.S. Ishar, Vice Chancellor University of Jammu, was the Guest of Honour. Dr. B.P. Singh, Head, NTSTC, DST, New Delhi along with Prof. Arun Kumar, General Secretary (Scientific Activities) and Er. N.B. Basu, General Secretary (Membership Affairs), ISCA also graced the occasion. Prof. Kamal K. Kapoor, convener emphasized the mission and objectives of the meet to the august gathering. Dr. G. S. Rautela, DG, NCSM, Kolkata, Prof. Namrata Sharma, Dr. Pawanesh Abrol, Dr. B.K. Bajaj, Dr. Rani Dei from University of Jammu and Dr. Parthasarathi Das from CSIR-IIM, Jammu chaired and co-ordinated various technical sessions.

Science Communicators' Meet is unique in the sense that it is inter disciplinary and the participants are from various disciplines like life Sciences, engineering, forensics, information technology, medical sciences etc. The science communicators enable the transgressing out of the science from the laboratory and research papers to public forum for debate, discussion, appreciation and acknowledgement.

The Seventh Science Communicators' Meet comprised of four Technical sessions and two poster sessions in which fifteen oral and nineteen poster presentations were held during the entire session spread over two days.

The technical sessions comprised of presentation in "ICT for inclusive Growth and Development", "Popularizing Science: Learning for Experience", "S&T Applications for Sustainable Development", "Applied Biology and Technological Innovations". The deliberations were held on a variety of themes that included the significance of green chemistry in sustainable development, renewable energy, social entrepreneurship, mushroom / medicinal plants cultivation, waste management, human rights and legal issues. Emphasis was given to further strengthen the academia-industry collaboration for inclusive growth. The use of technologies like distributive, mobile and cloud computing was also deliberated upon.

Jenab Feroz Ahmad Khan, Hon'ble minister of S&T, IT and Medical Education, J&K Govt. was the chief guest of the valedictory function. Prof. Talat Ahmed, Vice Chancellor, University of Kashmir, Prof. M.P.S. Ishar, Vice-Chancellor, University of Jammu, Prof. S. B. Nimse, President (Elect), ISCA, Dr. P. Asthana, DST and Dr. Manoj Patariya, Director, NCSTC, DST, Prof. Arun Kumar, General Secretary (Scientific Activities) and Dr. Amit Krishnar De, Executive Secretary from ISCA were among the dignitaries present on the occasion.

A large number of delegates from all over the country, international science academicians, scholars and students from universities and colleges participated in the Meet.

SCIENCE EXHIBITION

Following the inauguration of 101st Indian Science Congress on February 3, 2014, the first edition of 'India Vision 2020 Mega Expo 2014' was inaugurated by Sh.S. Jaipal Reddy, Hon'ble minister for Science and Technology, Jammu & Kashmir State and Prof. M.P.S. Ishar, vice-chancellor, University of Jammu. A large number of national/international delegates including eminent scientists, industry leaders, technocrats policy makers, entrepreneurs, innovators and academicians also graced the occasion.

In the exhibition, various exhibitors showcased their technologies and innovation and also displayed their achievements in implementation of science & technology the exhibition was organized in an area of 3600 square meters with participation of more than 30 organizations. Some of the main pavilions were of Defence Research & Development Organization (DRDO), Indian Council of Medical Research (ICMR), National Institute of Food Technology Entrepreneurship and Management (NIFTEM), Indian Oil Corporation (IOC) Department of Biotechnology (DBT) Sher-e-Kashmir University of Agriculture science & Technology, Jammu, Agriculture Department, J&K Govt. etc.

The Defense Research & Development Organization (DRDO) pavilion won the 'Exhibition of the Year' Award. The DRDO showcased its strength in defense technologies. Twenty four DRDO Laboratories and establishments from different parts of the country displayed indoor and outdoor models of products such as Agni and other missiles unmanned air vehicles, Automatic underwater vehicles, a variety of radars, Torpedo etc. Descriptive posters nearly covered the entire spectrum of products. Scientists from participating laboratories were available to discuss various defense technologies with the visitors.

Indian Council of Agricultural Research (ICAR) displayed some of the most prominent and effective developments for farmers and farming technology. Shere-Kashmir University of Agriculture Science & Technology, Jammu displayed the achievement of their former students and various courses they offer to pursue a passionate endeavour of being an Agriculturist or Scientist. Agriculture, Floriculture and Horticulture departments of Jammu & Kashmir Government displayed machineries which help farmer for better and an increased yield they displayed products which are made out of their own research and are available in the state only

The Science Exhibition was visited by thousands of students from various schools, collage .polytechnics and other institutions. Members of civil society teaching fraternity and scientists also visited the Exhibition students rush made this exhibition a fundamental success

RURAL INNOVATORS EXHIBITION

The Rural innovators Exhibition was organized under the banner "National Innovation Foundation India an autonomous body of the department of Science & Technology Government of India About 30 innovators from rural areas including farmers form the states of Gujarat ,Bihar ,Tamil Nadu , Assam Andhra Pradesh ,Rajasthan ,Himachal Pradesh and Jammu And Kashmir displayed their exhibits in the exhibition some of the innovative products invented By the people

of rural areas included fuel efficient water heater, a cooker for preparing coffee Motorcycle driven agriculture machine and seed dibbler ,a stick for helping visually challenged, a samawar with a gas burner ,a saree making machine etc

This was for the first time that a Rural Innovators Exhibition was organized in the Indian Science Congress.

A large number of people visited the exhibition and all the products were highly appreciated.

VALEDICTORY SESSION

The 101st session of the Indian science congress concluded on February 7 ,2014, in which Dr. Hamid Ansari Hon'ble Governor J&K State Jenab Omar Abdullah Hon'ble Chief Minister J&K State ,Dr Farooq Abdullah Hon'ble Union Minister for New and Renewable Energy Prof .R.C. Sobti General president , Indian Science Congress Association Prof. M.P.S Ishar Vice Chancellor ,University of Jammu and Prof. S.B. Nimse, President (Elect) ISCA.

Sh. Hamid Ansari, Hon'ble Vice President of India, in his valedictory address, said that science and society had a major influence in shaping the world and that science literacy was an important aspect of societal trust in science , without which science can neither thrive nor serve society he further emphasized that science and Technology are indispensable for addressing major contemporary challenges of economic growth and social transformation of societies he stressed on the integration of science with broader need of the society and cautioned against its commercialization that has afflicted society in epidemic proportion.

"The health of a nation now depends, more and more on, among other factors, the health of the state of its science and technology," he said, adding the interface between science and society has been a major influence in shaping the world, "particularly in our times". The influence of science and technology on people's lives is growing every day, he noted.

Stressing on the need of utilizing science, technology and innovations for the benefit of common man; Jenab Omar Abdullah, Hon'ble Chief Minister, J&K State, identified agriculture, horticulture and bio-mass energy generation as the areas in Jammu and Kashmir requiring intervention of science for inclusive and comprehensive growth. "In Jammu and Kashmir about 70% population is rural and agriculture is their mainstay. Horticulture and related activities are also of pivotal importance in the State's economy", he said, adding that the intervention of scientific innovations and technological advancement in these fields are imperative for overall development and growth of the State. "I would like that the researches in the labs should smoothly transfer to the people and scientific innovations are utilised for the amelioration of common people", he said.

He further added that Jammu and Kashmir has greater scope of generating energy from the abundantly available bio-mass in the shape of weeds in Dal and other lakes. "My Endeavour

is to invite scientific intervention in converting these weeds into the energy for the economic welfare of the State and the people.

This regard I have taken up this issue with various scientists and technological institutions”, he said and ask the Indian Science Congress to venture in this field and provide a feasible mechanism to the State to achieve the cherished goal in this regard. The Chief Minister also sought scientific intervention in the inclusive develops me and management of agricultural and horticultural practices in high altitude areas like Leh and Kargil. He said that most of the Kandi areas in the State are rained and require technological support to undertake agriculture activities that would enable the farmers to earn remunerative income and help significant increase productivity and production. He said this avenue is also open to the scientists for research.

The Chief Minister congratulated the participants and the organizers of the Indian Science Congress, a suggested that the recommendations finalised in the Congress for utilization of scientific innovations for inclusive growth should be sent to all the State Governments besides the Government of India. The Chief Minister expressed the hope that the next Indian Science Congress will not take 100 years to travel to Jammu and Kashmir and that the organizers would schedule the next Congress in the State as soon as possible. He congratulated the University of Jammu once again and welcomed the Hon’ble vice President, Dr. M. Hamid Ansari for addressing the valedictory session of the Congress.

In his speech, Dr. Farooq Abdullah, Union Minister for New and Renewable Energy, described organizing or Indian Science Congress in Jammu and Kashmir as a historic event said that it has provided a grease opportunity for creating scientific temper among the students and research scholars in the State Kr. Farooq Abdullah highlighted the achievements, India has registered in the field of science and technology and stressed the need of maintaining the pace of progress in this direction. He congratulated the organizers of the Congress.

Sh. N. N. Vohra, Hon’ble Governor, Jammu and Kashmir, also delivered his address. He called for sustained efforts so that scientific innovations reach the grassroots level, thereby helping various sections of society in addressing their daily problems. “Innovations are the foremost objectives of scientific experiments and unless they are able to solve the problems faced by different segments of society, it has no meaning, “the Hon’ble Governor said, he hoped that the seminars, lectures and deliberations held during the Congress further strengthened the momentum of the scientific innovations, which would go a long way in contributing to the socio-economic development of the country.

The Hon’ble Governor congratulated Prof. R. C. Sobti, General President, Indian Science Congress Association and Prof. M. P. S. Ishar, Vice Chancellor, University of Jammu and his team for the successful organization of the Indian Science Congress and hoped that the delegates had an enriching experience and a comfortable stay during the five day event. He remarked that, initially, holding of Indian Science Congress in Jammu for the first time appeared to be a huge challenge, primarily because of infrastructural facilities available in the city, but he is glad that the event was organized smoothly. He lauded Jenab Omar Abdullah, Chief Minister, J&K State and the entire administration extending their support to the event.

Prof. R. C. Sobti, General President, Indian Science Congress Association welcomed Dr. Hamid Ansari, Hon'ble Vice President and other dignitaries in his address. He presented a report of the activities and events that were organized during the five day event and hoped that it was a fruitful experience for all participants.

Prof. M. P. S. Ishar, Vice Chancellor, University of Jammu earlier delivered the welcome address. On this occasion, awards and mementoes were also presented by Hon'ble Vice President of India. The Young Scientist Awards were also presented. Dr. Hamid Ansari also released the book entitled, "Contemporary Bio Psychological Aspects in the era of Science & Technology" authored by Prof. R. C. Sobti.

On the occasion, the General President (Elect) Dr. S. B. Nimse announced that the 102nd Indian Science Congress would be held at University of Mumbai from January 3 to 7, 2015.

Prof. Naresh Pandha, Local Secretary, 101st Indian Science Congress presented the formal vote of thanks'

TECHNICAL PROGRAMMES

Some Important Plenary/Special Invited Lectures

S.No.	Title of the Lecture	Invited speakers
1.	Innovation Inclusive Growth & Knowledge Economy	Dr.R Chidambaram, Homi Bhabha Chair Professor and Principle Scientific Adviser to Government of India
2.	Scientific Innovation in Security	Sh.Avinash Chander, Scientific Advisor to Raksha Mantri and Secretary, department of Defence (R&D)
3.	Ensuring Sustainable Development :Role of Science, Technology and Innovation	Dr.Krishan Lal, Former President, Indian National Science Academy, New Delhi
4.	War and Peace: Conflict and Cooperation in an Insect Society	Dr.Raghavendra Gadagkar, President, Indian National Science Academy, New Delhi, INSA SN Bose Research Professor and JC Bose National Fellow
5.	Phenotype Micro array of Mycobacterium smegmatis in different antibiotics: Role of secondary messenger in antibody sensitivity	Dr. Dipankar Chatterjee, Indian Institute of Science Bangalore
6.	Biotechnology for health care and Agriculture An Overview.	Dr. V.P. Kamoj, Biotech Consortium India Ltd., New Delhi
7.	Legacy of Shanti Swarup Bhatnagar and The Scientific Research in University and National Laboratories in Contemporary	Prof. Arun K. Grover, Vice Chancellor, University of Panjab

	Times.	
8.	Discovery of the Nitric Oxide and Cyclic GMP Signaling Pathway and Application To Drug Development	Dr. Ferid Maurad, Nobel Laureate
9.	Herbicide Selectivity: A Key Component Of Sustainable Intensification In Agriculture	Dr. Robert Edwards, The Food and Environment Research Agency .York UK
10.	Genetics: A Glimpse of Medicine in the Future	Dr Robert Roberts, Ruddy Canadian cardiovascular Genetics Centre, Ontario, Canada
11.	Science in Democracy-Exchanging and sharing Knowledge	Kleiner Ing Matthias, Germany
12.	Innovations in Food Industry Sector: Reducing Risk of Non-Communicable Disease (NCDC)	Janaki Gooneratne, Consultant Scientist, Former Senior Dy. Director, Industrial Technology Institute , Colombo
13.	Discovery of the Higgs Boson and Beyond	Dr. Rohini Godbole, Centre for High Energy Physics, Indian Institute of Science, Bangalore
14.	Innovations in Material Sciences: Trends and Opportunities	Prof. R. K. Khandal, Uttar Pradesh Technical University, Lucknow
15.	Mega Science in India, The Ultimate Innovation	Dr. Bikash Sinha, Department of Atomic Energy Variable Energy Cyclotron Centre, Kolkata
16.	Space, Science and Technology in India for Inclusive Development	Dr. T. K. Anuradha, ISRO Satellite Centre ,Bangalore
17.	Indian Fisheries and Aquaculture: Advances, Innovations Concerns	Dr. W. S. Lakra, Central Institute of Fisheries Education, Mumbai
18.	Technology Led Dairy Development in India: Future Road Map	Dr. A. K. Srivastava, National Dairy Research Institute, Haryana
19.	Innovation Centric India: Using Science Policy as a strategic Tool for increasing competitiveness	Dr. Naresh Kumar, Planning and Performance Division, CSIR
20.	Cyber Security: Issue and Challenges	Dr. R.K. Shamasuher, Tata Institute of Fundamental Research, Mumbai
21.	Role of Micronutrients in Health and Disease	Dr. G. Subrahmanyam, Director, Narayan Medical Institution
22.	Nanotechnology in Drug Research –Towards Meaningful Experimentation and Innovation	Prof. Shubini Saraf, Department of Pharmaceutical Sciences, Lucknow
23.	Communicating Science for Inclusive and Sustainable Development	Dr. Gopal Singh, Department of Mass communication, Baba Saheb Bhimrao Ambedkar University, Lucknow

PARALLEL SYMPOSIA: AN OVERVIEW

The five day event had around 24 parallel Symposia in which more than a hundred lectures were delivered during the Symposia

Names of the Symposia	Themes/Session	Chairpersons	Coordinators	No. of Invited speakers
Prof. Awtar Singh Paint Symposium	Frontiers in Cardiovascular Science and Medicine	Dr. Pierce Grant and Dr. N. S. Dhalla	Prof. Gangadhar	6
	Frontiers in Cardiovascular Science and Medicine 2	Dr. Pierce Grant and Dr. Pawan K. Singhal	Dr. K. Jaiswal	5
Prof. Arya Bhatta Symposium	Algebra and its Interaction and Advances in Mathematics	Dr. R. P. Bambah and Dr. S. B. Nimse	Dr. Achyuta Samanta	5
	Algebra and its Interaction and Advances in Mathematics 2	Dr. I. B. S. Passi and Dr. Caesar Milies Polcino	Dr. Abhay kumar Nayak	2
Prof. Niel Ratan Dhar Symposium	Chemistry and Futuristic Role	Dr. S. K. Joshi and Dr. M. M. Salunkhe	Dr. Ranjit Kumar Verma	5
Prof. B. K. Bachhawat Symposium	Delivery System	Dr. V. S. Chauhan and Dr. N. K. Ganguly	Dr. S. P. Trivedi	6
Prof. Amulya Chandra Ukail Symposium	Futuristic Approaches to Biology of Infectious Diseases	Dr. V. P. Kamboj and Dr. V. M. Katoch	Dr. Nirupama Agarwal	4
Prof. V. Ramalinga-Swami Symposium	Recent Advances in Liver Sciences: Translational Approaches-1	Dr. S. K. Sarin and Dr. V. M. Katoch	Prof. Manoj Dhar	12
Prof. V.R. Khonalkar Symposium	Molecular Imaging and Targeted Radionuclide Therapy Towards Achieving Personalized Medicine for Cancer	Dr. Richard P. Baum And Dr. Y. Chawla	Dr. Manoj Kumar Charabarti	7
	Molecular Imaging and	Dr. K. K. Talwar and Dr. S. C. Sharma		3

	Targeted Radionuclide Therapy Towards Achieving Personalized Medicine for Cancer		Dr. Sasmita Rani Samantha	
Prof. Ruchi Ram Sahni Symposium	Innovation in management of mother earth & its resources	Dr. Ashok Sahni & Dr. B. Sathya Narayana	Dr. Gauravendra Swaroop	6
Prof. Y. Subbarao Symposium	Genomics & proteomics	Dr. M. R. S. Rao	Dr. B. P. Chatterjee	5
Prof. O. P. Ghai Symposium	Technology innovation in child survival	Dr. R. C. Mahajan & Dr. N. K. Ganguli	Dr. Anant Kumar	4
Prof. J. D. S. Handane Symposium	Genomics & proteomics-II	Dr. M. Watanabe & Dr. M. K. Mehra	Dr. Subodh Jain	4
Prof. B. Pal Symposium	Molecular biology & plant breeding	Dr. D. Pantal & Dr. C. S. Nautiyal	Dr. S. Ramakrishna	5
Prof. Ram Nath Chopra Symposium	Science & technology imperatives & opportunities for sustainable development of J & K	Sh. N. N. Vohra Hon'ble Governor, J & K State	Prof. M. P. S. Ishar	6
Prof. Obaid Siddiqui Symposium	Futuristic biology	Dr. Shamim Jairajpuri & Dr. Avtar Krishan	Dr. Kumkum Swarup	5
Prof. K. N. Udupa Symposium	Contemporary & futuristic medicine	Dr. A. K. Singh & Dr. R. C. Mahajan	Dr. S. B. Mahato	5
Prof. B. C. Guha Symposium	Futuristic approaches in management of diseases-cancer	Dr. R. C. Sobti & Dr. S. K. Gupta	Dr. Suman Mishra	5
Prof. Birbal Sahni Symposium	Biodiversity: strategies for implementation of COP-II outcomes-II	Dr. R. Ramamurthi & Dr. B. P. Pandey	Dr. Vijay Laxmi Saxena	2
Prof. Vishwa Nath Symposium	Advances in physical sciences	Dr. Naresh Padha & Dr. Vipin Saxena	Dr. B. C. Yadav	4

Prof amar nath tandon symposium	Disaster management & climate change	Dr. Harsh k. Gupta & dr. Pradeep sahni	Dr. Naval kishore	7
Pt. Madan mohan malaviya special symposium	Futuristic & inclusive education			5

Lectures Delivered During the Symposia Prof. Awtar Singh Paintal Symposium

Speakers	Lectures
Lopaschuk G.D. University of Alberta, Canada	Stimulating cardiac glucose oxidation as an approach to treat heart failure
Singal Pawan K. University of Manitoba, Canada	Oxidative stress and heart failure: Evolution of the idea and current understandings
McManus Bruce University of British Columbia and Providence Health Care, Vancouver, Canada	Better Biosignatures to Reduce the Burden of Heart and Lung Failure
Ostadal B. Institute of Physiology, Academy of Sciences, Czech Republic, Prague	Sex differences in cardiac ischemic injuries and protection
Morad Martin Cardiac Signaling Center of USC, Canada	Ca ²⁺ signaling in human induced pluripotent stem cell-derived cardiomyocytes (iPS-CM) from normal and Catecholaminergic polymorphic ventricular tachycardia (CPVT)- afflicted subjects & Probing the nanodomains of cardiac Ca ²⁺ signaling proteins by viral biosensors.
Pierce Grant N. University of Manitoba, Canada	A new dietary approach for the control by hypertension

Dr.Arya Bhatta Symposium

Speakers	Lectures
Del Rio Angel University of Murcia, Spain	Groups of Units
Polcino Milies Cesar Instituto de Matematica e Estatistica, Brazil	Group Codes
Bhatia Rajendra Indian Statistical Institute, New Delhi	Matrix Monotonicity and Convexity
Kimmerle W. University of Stuttgart, Germany	Isomorphisms of and within group rings
Hales Alfred W.	Irreducible polynomials over finite fields and

University of California, USA	their applications
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Prof. Neil Ratan Dhar Symposium

Speakers	Lectures
Salunkhe M.M. Central University of Rajasthan	Organic transformations in ionic liquid
Kumar Subodh Guru Nanak Dev University, Amritsar	Fluorescent Molecular Receptors for Recognition of Anions in Water
Satyamurthy N. Indian Institute of Science Education and Research, Mohali	Structural Motifs in Chemistry
Olya Stoilova Bulgairan Academy of Sciences, Bulgaria	Electrospun poly(3-hydroxybutyrate)- based hybrid materials: design and potential applications
Hundal M.S. Guru Nanak Dev University, Amritsar	Synthesis and characterization of POM based inorganic- organic

Prof. B.K. Bachhawat Symposium

Speakers	Lectures
Kondapi A.K. University of Hyderabad, Hyderabad	Proteins Nanoparticles: Efficient and Safe Targeted Drug Delivery System
Mukherjee Biswajit Jadavpur University, Kolkata	Voriconazole- containing poly-lactide-co glycolide nanoparticles for pulmonary delivery
Jain Sanyog National Institute of Pharmaceutical Education and Research, Punjab	Nano carriers: A powerful Oral Bioavailability enhancer tool for small drug molecules, proteins and vaccine antigens
Banerjee Rinti Indian Institute of Technology, Mumbai	Nanotechnology Platforms for Trigger Responsive Drug Delivery
Gupta Kailash C. CSIR- Indian Institute of toxicology research, Lucknow	Polysaccharide- Derived Non- Viral vectors for Efficient delivery of Biomolecules In- vitro and In-vivo
Anand Sneha Indian institute of Technology, Delhi	Techno-economical Global Health care Solutions

Prof. Amulya Chandra Ukail Symposium

Speakers	Lectures
Hasnain S.E. Indian Institute of Technology, Delhi	Mycobacterium tuberculosis, The TB pathogen outsmarts human intelligence
Chattopadhyay A. CSIR- Centre for Cellular and molecular Biology, Hyderabad	Role of membrane cholesterol and cytoskeleton in leishmanial infection
Ghosh Amit National Institute of Cholera and Enteric Diseases, Kolkata	Safety and immunogenicity of a novel live oral recombinant cholera vaccine developed in India

Khurana Dheeraj Postgraduate Institute of Medical Education and Research, Chandigarh	Stroke Medicine – The Future
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Prof. Awtar Singh Paintal Symposium: Session II

Speakers	Lectures
Dhalla N.S. University of Manitoba, Canada	Experimental evidence for the beneficial effects of anti platelet agents in atherosclerosis, myocardial infarction and heart failure
Srivastav D. University of California, USA	Reprogramming approaches for cardiovascular disease
Agrawal D.K. Creighton university School of Medicine, Omaha, USA	Vitamin D in Coronary Artery disease
Goel Ramesh K. Ahmeda University, Ahmedabad	Diabetic Cardiomyopathy: Target Directed or Drug Directed Targets?
Gupta S.K. Delhi Institute of Pharmaceutical Sciences & Research, New Delhi	Medical herbs play significant role in attenuation of ischemia and reperfusion injury

Prof. Arya Bhatta Symposium:Session II

Speakers	Lectures
Nimse S.B. University of Lucknow, Lucknow	Frontiers in Mathematical Sciences Research
Bakshi G.K. Panjab University, Chandigarh	The rational group algebra of a finite group

Prof.V. Ramalingaswami Symposium

Speakers	Lectures
Pati Nirupama T.	Immunogenetic basis of viral persistence
Malhotra Pawan	siRNA as new approaches for HBV therapy
Acharya S.K.	Current and future treatment of HBV
Mukhopadhyaya A	Pleiotropic role of bone marrow cells in liver diseases
Kumar anupam	Mechanisms of liver Injury and micro-environment
Wuestefeld Torsten	RNAi based functional genetics to unravel molecular mechanism of liver regeneration. New therapeutic targets for HCC using functional genetics
Kumar vijay	Hbxoncoproteins subverts multiple cellular machineries to induce liver cancer
Ramakrishna Gayatri	Genetic and Epigenetic mechanisms of HCC
Acharya S.K.	New Molecular targets for HCC

Chawla Y.K.	From genetics to therapeutic
Sarin S.K.	Directly Acting antiviral drugs for Non Alcoholic fatty Liver disease
Duseja Ajay	Molecular targets of management of NASH

Pt. Madan Mohan Malviya Special Symposium

Speakers	Lectures
Sharma Mool Chand	Inculcating 'Scientific Temper' - An Imperative for Futuristic and Inclusive Education
Aggarwal K.K.	Navigating private Higher Education Institutions
Punjab Singh	Mismatch between between policies and developmental realities
Khosla P.K.	Focus based Education
Bajpai ADN	Futuristics and Inclusive Education

Prof. V. R. Khonalkar Symposium

Speakers	Lectures
Biersack H.J. University of Bonn, Germany	Recent Advances in target radionuclide Therapy in treatment of Metastatic Cancer
Wester hans J. Technische Universitat Munchen, Germany	Modern Aspects and Tracer Techniques in Nuclear Medicine Imaging and Therapy- An Approach towards Personalized medicine
Alavi Abass University of Pennsylvania,US	Unparalleled impact of PET, PET- CT and PET- MRI on the Day to day Practice of Medicine
Thakur M.L. Thomas Jefferson University, US	Targeted Genomic Biomarkers for Diagnosis and Therapy: From Basic Research to Clinical; Prospective
Baum R.P. Centre for molecular Radiotherapy and molecular Imaging, germany	Present and Future of targeted molecular Imaging and Therapy (THERANOSTICS) as a Personalized Pathway to Diagnosis and Treatment
Mishra A.K. France	[18] SiF-DPG Site Selective Versatile synthon for one step 18F labeling: A model to prepare homo/heterodimeric radio ligands for enhanced affinity targeting for positron emission tomography
Brenner M.W. Charite University Medicine Berlin, Germany	Quantitative Molecular Imaging for Treatment Planning and Response Monitoring in Oncology

Prof. O.P. Ghai Symposium

Speakers	Lectures
Prinja Shankar	Economic Cost in Child Survival and Gains

PGIMER School of Public Health, Chandigarh	
Paul Vinod K.	Child Survival Technology and their Impact
Kumar Rajesh Postgraduate institute of medical Education & Research, Chandigarh	Measuring the impact of NHRM on maternal and child Survival
Duggal Mona Translational Health Science and Technology Institute	Health Innovations for Improving Child Survival

Prof. Ruchi Ram Sahni Symposium

Speakers	Lectures
Bajpai Sunil Birbal Sahni Institute of Palaeobotany, Lucknow	Earth Through time and its Imprints on Biotic Evolution: Indian record in Global Perspective
Kishore Naval Panjab University , Chandigarh	Ground water management – A key to sustainable water resources
Razack Mumtaz University of Poitiers, France	Numerical modeling at the service of better understanding and sustainable management of complex aquifers. Examples of volcanic aquifers in the East African Rift
Shah P.N. Remote Sensing Applications Centre ,Uttar Pradesh	Innovations through Geospatial Technology Contributing for
Syad Khalil M. Coastal Protection and Restoration Authority, USA	Challenges of restoring a sinking delta plain
Dutta Venkatesh Babasaheb Bhimrao Ambedkar University, Lucknow	Technology Choice, Innovations and Sustainability: Decentralised Wastewater Management for Urban and Peri-urban Areas

Prof Y.Subbarao Symposium

Speakers	Lectures
Watanabe M. Mie Chuo Medical Center, Japan	Nanomedicine in Prostrate Cancer Therapy
Shiraishi Taizo Mie University Graduate School of Medicine, Japan	Utilization of Virtual Slide System in Biomedical Field in Japan
Sugimura Haruhiko Hamamatsu University School of Medicine, Japan	Origin of human cancer, A lesson from Molecular Epidemiology of Gastric Cancer
Batish Satdev USA	Surviving the sequencing revolution in clinical laboratory: the pitfalls and the promise of next generation sequencing in genetic diagnostics
Ramesh C.	Unveiling the RAD51 Protein Interactome to

India	Understand Genome Instability and Chemoresistance
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Prof. J.B.S. Haldane Symposium

Speakers	Lectures
Mehra N.K. All India Institute of Medical Sciences, New Delhi	From Genome to Genetic medicine: Opportunities and Challenges
Anant Srikant	Overexpression of novel protooncogene RBM3 induced stemness in colon cancer through beta catenin signaling
Rao M.R.S. Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore	Cancer genomics: An experience with Glioblastoma multiforme
Jensen Roy A. The University of Kansas Cancer Center, USA	BRCA1 regulates Epidermal Growth Factor Receptor (EGFR) Expression via MicroRNA.

Prof. B.P.Pal Symposium

Speakers	Lectures
Mukherjee Sunil K.	RNAi: History and a few recent developments and applications
Chattopadhyay Debasis National Institute of Plant Genome Research, New Delhi	How to exploit Tomato Genome Sequence for basic and applied research
Sharma T.R. National Research Centre on Plant Biotechnology, New Delhi	Cloning and Applications of Rice Blast Resistance Genes
Bains Navtej S.	Genomics-plant breeding interface with special reference to wheat
Pental Deepak	Innovations in Science and Technology for Inclusive Development

Prof.V.R.Khonalkar Symposium: Session II

Speakers	Lectures
Kapoor Rakesh Regional Cancer Center, P.G.I.M.E.R. Chandigarh	Individualized radiation therapy in cancer patients. "Current Approaches"
Hassan Iffat University of Kashmir, J&K	Pulmonary involvement in Systemic Sclerosis: An imaging
Singh Baljinder Department of Nuclear Medicine, PGIMER, Chandigarh	Molecular Imaging in drug development- from Bench to Bed

Prof. Ramnath Chopra Symposium

Speakers	Lectures
Ahmad Talat University of Kashmir	Earth and Solar Resources as influencing factors of sustainable development of J&K
Vishwakarma Ram IIIM, Jammu	Opportunities for Aroma Industry in J&K: Creation of new industrial Biotechnology Parks
Koul A. SKUAST, Jammu	Technological breakthroughs that can help transform Temperate Sericulture based livelihood Economy of J&K farmers
Wani Shafiq SKUAST, Kashmir	Breaking the technological barriers in transformation of farmers in Jammu, major niches for economic Kashmir and Ladakh
Srivastava R.B. DEHAR, Leh	Basket of Technologies that can transform the economy of people of cold arid region of ladakh
Partap Tej SKUAST, Kashmir	Converting unsustainable to sustainable farming economy in J&K: The Technology factors

Prof. Obaid Siddiqui Symposium

Speakers	Lectures
Wood Brent University of Washington, USA	Diagnosis and Monitoring of Hematopoietic Neoplasms by Flow Cytometry
Murthy Aditya Indian Institute of Science Bangalore	Neural Control of Action: Insights for the Oculomotor System
Krishan Awtar University of Miami, USA	Laser Flow Cytometric detection of tumor stem cells in body cavity fluids of patients suspected to have a malignancy
Gupta S. K. National institute of immunology, New Delhi	Breaking the technological barriers in transformation of farmers in jammu, major niches for economic Kashmir and ladakh
Khan M.Y.	On the Molecular Origami of Fibronectin and its involvement in Manifestation and Regulation of the Physiological Functions of the Proteins in vivo

Prof. K.N. Udupa Symposium

Speakers	Lectures
Agrawal D.K. Creighton University, USA	Vitamin D regulates high cholesterol high fructose-induced changes in coronary artery disease
Seth P.K. Indian Institute of Toxicology Research,	Biomarkers for selected CNS disorders

Lucknow	
Jana Nihar Ranjan National Brain Research Centre, Gurgaon	Understanding the physiological function of malin and pathogenesis of Lafora's progressive e myoclonus epilepsy
Mishra Ram McMaster University, USA	Novel allosteric modulators of dopamine D2 receptor: Implications for the treatment of Parkinson's Disease and Schizophrenia
Bhoop Singh Bhupinder Panjab University, Chandigarh	Systematic Development of Nanostructured Drug Delivery Systems for Enhanced Patient Efficacy and Safety.

Prof. B.C. Guha Symposium

Speakers	Lectures
Dhar Animesh Kanas University Medical Center, USA	A Novel Epigenetic Target in Pancreatic Cancer for Prevention and Therapy
Welch Danny R.	Metastasis Suppressors as Targets for Cancer Therapy
Gupta K.P. CSIR-Indian Institute of Toxicology Research, Lucknow	Molecular basis of the prevention of tumour development following combinatorial strategies
Dixit Madhu CSIR- Central Drug Research Institute	Biochemical and molecular characterization of inducible nitric oxide synthase in the patients of chronic myeloid leukemia
Evdokia Pasheva Bulgarian Academy of Sciences, Bulgaria	The Role of HMGB1 protein in inflammation and cancer: a putative therapeutic target

Prof. Birbal Sahni Symposia

Speakers	Lectures
Ramamurthy R. S.R.M. University, Chennai	Biodiversity Governance and Conservation: Implementation of CPO – 11 outcomes”
Datta Soumana University of Rajasthan, Jaipur	Sustaining livelihoods through biodiversity conservation for inclusive growth---role of bmcs and pbrs in Rajasthan.
Regina Mary R. Auxilium college, Tamil Nadu	Women and biodiversity : the core of existence
Singh Mewa University of Mysore, Mysore	Ecological Principles concerning spatial, temporal and behavioral distribution of mammals in the western ghats

Prof. T. N. Khoshoo Symposium

Speakers	Lectures
Sharma K. K. MDS University, Ajmer	Development of Teaching Modules to sensitize Students for Biodiversity Conservation: Biodiversity Documentation and

	Conservation through live Zoology in Practical Curriculam
Jena J. K. National Bureau for Fish Genetic Resources, Lucknow	Management of Fish Genetic Resources for Sustainable Production and Utilization in India

Prof .Vishwa Nath Symposium

Speakers	Lectures
Beri Suman	Unfolding the Secrets of Universe- The Large Hadron Collider (LHC)
Yadav B. C. Babasaheb Bhimrao Ambedkar University, Lucknow	Nanomaterial : Synthesis, Characterization and application
Saxena Vipin Babasaheb Bhimrao Ambedkar University, Lucknow	Importance of Modeling in the Distributed Computing Network System
Kumar Devesh Babasaheb Bhimrao Ambedkar University, Lucknow	Intermolecular interactions in Liquid Crystals

Prof. Amar Nath Tandon Symposium

Speakers	Lectures
Sahni Pradeep	Mainstreaming disaster management with development planning in India
De Silva Sena S	Climate Change Impact on Aquaculture: Mitigation and Adaptation
Linden Olof	Adaptation to climate change, coastal Management and Development in South Asia
Zubai Lareef	Characteristic Climate Variability and Climate Change Over Sri Lanka for Adaptation
Singh K.P. Panjab University, Chandigarh	Climate Change and its impact on water resources in North West India
Pandey B.N. Magadh University, Bihar	The message from water
Razack Moumtaz University of Poitiers, France	Numerical Modeling at the Service of better Understanding & Sustainable Management of complex aquifers. Examples of volcanic aquifers in the East African Rift.

PROF. RAM NATH CHOPRA SYMPOSIUM SCIENCE AND TECHNOLOGY IMPERATIVES AND OPPORTUNITIES FOR SUSTAINABLE DEVELOPMENT OF J & K

Among other parallel Symposia that were organized during the 101st Indian Science Congress, the Prof. Ram Nath Chopra Symposium held a special significance as its theme ‘ Science and Technology Imperatives and Opportunities for Sustainable Development of J & K was related to the science and technology issues in the states of Jammu and Kashmir.

The session was chaired by Sh. N. N. Vohra, Hon’ble Governor J & K and Chancellor, University of Jammu while Prof. M. P. S. Ishar, Vice Chancellor, University of Jammu was the coordinator of the session.

The speakers of the session included Prof. Talat Ahmed, Vice Chancellor, University of Kashmir, Dr. Ram Vishwakarma, Director, Indian Institute of Integrative Medicine, Jammu Dr. Tej Pratap, Vice Chancellor, Sher-e-Kashmir University of Agricultural Science and Technology, Kashmir, Dr. Ajay Koul, Director Research, Sher-e-kashmir University of Agricultural Science and Technology, Jammu, Dr. R. B. Srivastva, Director, DEHAR, Leh and Dr Shafiq Wani, Director Research, Sher-e-Kashmir University of Agricultural Science and Technology, Kashmir.

Prof. Talat Ahmad, Vice Chancellor, University of Kashmir delivered a lecture on “Earth and Solar Resources as influencing factors of sustainable development of J & K.” He outlined the goals of sustainable development and stressed on energy transition to high efficiency in production and use, coupled with increasing reliance on renewable resources. He elaborated on the various aspects of glacier formation and its sustenance. He also presented a detailed account on the scientific reasons leading to earthquake and ways and means to protect ourselves from such disasters. Prof. Ahmad suggested that in addition to minerals, the J&K State has good potential of production of solar and geo-thermal energy in Ladakh.

Dr. Ram Vishwakarma, Director, Indian Institute of Integrative Medicine, Jammu dwelt in detail on “Opportunities for Aroma industry in J & K: Creation of new industrial Biotechnology parks.” He suggested that J & K States has specific opportunity to emerge as an aroma industrial State. He informed that scientific infrastructure, various Prototype Projects have been started in J & K and various crops have been introduced for aroma industry. He emphasized on various strategies which need to be followed for setting up the Biotechnology parks in the States. Besides, he elaborated on various initiatives taken by the IIIM, Jammu in developing research infrastructure at Leh.

Dr. Tej Pratap, Vice Chancellor, Sher-e-Kashmir University of Agriculture Science and Technology, Kashmir spoke on ‘ Converting unsustainable to sustainable farming economy in J & K . He elaborated on the technology factors and the landmark changes of the 21st century in the villages of Himalaya region and stressed that ones with links to economically dynamic towns where jobs and markets are readily available. He advocated repositioning of research, formulation of policies and investment strategies for an effective facilitative role. He spoke of value addition by way of skill development of the new generation of village farms, development

of village agro enterprises and market linkages for converting unsustainable to sustainable farming economy in the Himalayan region.

Dr. Ajay Koul, Director Research, Sher-e-Kashmir University of Agricultural Science and Technology, Jammu delivered a lecture on the topic “Technological breakthroughs that can help transform temperate sericulture based livelihood economy of J&K farmers.” He focused on current status, components and various factors affecting silkworm rearing. He outlined the major constraints in silk production and stressed on precautions such as pre rearing disinfection, leaf for Chawki worm, leaf storage, leaf sizing, bed cleaning, moulting care etc. to be taken for good silkworm rearing.

Dr. Shafiq Wani, Director Research, Sher-e-Kashmir University of Agricultural Science and Technology, Kashmir spoke on ‘Breaking the technology barriers in major niches for economic transformation of the farmers in Jammu, Kashmir and Ladakh.’ He stressed on the imperatives and opportunities of bringing in ‘Kashmiriyat’ in farm research. He stressed that gaps exist between what is achieved at the research farms and the farmer’s field. Therefore, rethinking is required in farms research involving important actors like farmers and extensionists in the process of technology development. He advocated adoption of approach for quality seed availability using informal systems through participatory seed production programme in partnership with farmers. This approach according to him, would help in undertaking client oriented breeding programmes for identification of location specific varieties. He advocated greater linkages between research institutions and key stakeholders for effective generation, dissemination and utilization of agricultural technologies.

Dr. R. B. Srivastva, Director, DEHAR, Leh spoke on how the basket of technologies could transform the economy of people of cold arid region of Ladakh.

The Hon’ble Governor appreciating the presentations made by the distinguished speakers, called for a greater cooperation and synergy of efforts between the varsities and research institutions/government department vis-à-vis conduct of research in the areas relevant for sustainable development of J&K.

In his concluding remarks, he stated that the session was crucial and thus warranted good presence of officials from various state government departments/research institutions, He emphasized the need to speed up efforts towards amelioration of miseries of the people through interventions of Science and Technology.

He also emphasized that more interactions of this kind should be held so as to evolve better strategies for combating various problems being faced by the masses. He further suggested that a document based on the presentations made by the panelists should be prepared and submitted to the state government for appropriate action.

Earlier, Prof. M. P. S. Ishar, Vice Chancellor, University of Jammu thanked Sh. N. N.Vohra, Hon’ble Chancellor of University of Jammu for taking this initiative of having a special symposium on ‘Science and Technology imperatives and opportunities for sustainable development of J&K’. Prof. Ishar further added that it was a unique opportunity which brought

together distinguished scientists to deliberate on the issues pertaining to science and technology imperatives and opportunities for sustainable development of J&K.

The formal vote of thanks was presented by Prof. Manoj Dhar, Registrar, University of Jammu.

PUBLIC OUTREACH PROGRAMMES

Public outreach/ Interaction programs were also organized during the five day 101st Indian Science Congress. These were organized by the Indian Council of Medical Research, Indian Space Research Organization, Ministry of Earth Sciences, DBT- Bill Gates Foundation, and Development of Atomic Energy and Indian Council of Agriculture Research.

Highlights of some of the Public Outreach Programs are as under:

Public Interaction session by Defence Research & Development Organization (DRDO)

An important facet of DRDO's participation in the 101st Indian Science Congress was the public Outreach session titled "Innovations in Defense Technologies" held on February 5, 2014. During the session, Dr. Malakondaiah, Distinguished Scientist and Chief Controller R&D (HR & Technology Management) and six other senior DRDO scientists talked about divers activities and achievements of the organization. Dr. Malakondaiyah spoke on Materials for Defence; Mrs. Tessa Thomas, Project Director A-4, ASL Bhabha Atomic Research center talked about Innovation in Missile system; Dr. Sudershan Kumar, DS & Director, CFEES spoke about innovative technologies to Counter CBRN Threat; Mr. Manoj Bali, Director, LIC spoke on LIC Technologies; Dr. V. V. Parlikar, Associate Director, R&DE (E) talked about Defence application of Unmanned systems; Dr. A Ganju, Director SASE spoke on current practices and innovatives of Defence Research in Mitigation of cryospheric Hazards in Himalaya and Dr. R. B. Shrivastava, OS & Director, DIHAR spoke on seeding and Nurturing Innovative Technology for Food and Health.

This was followed by an Interactive Session with the engineering students.

Public Interaction session by Development of Atomic Energy (DAE)

A public interaction session on 'Innovative contributions of the Bhabha Atomic Research Center in National Development' was held on February 5, 2014. Five senior scientist of Bhabha Atomic Research Center (BARK) made presentations on various contributions of the center.

Dr. B. K. Dutta, Head, Human Resource Development Division gave an overview of the functioning of the BARC Training School and highlighted the various methods used for attracting the best talent in the country. Dr. A. K. Sharma, Head Food Technology Division, talked about the applications of Radiations Technology in Agriculture and Food Preservation. Prof. Gota of the Advanced Center for Treatment, Research and Education in Cancer, talked about the application of various nuclear techniques to cancer detection and treatment. Shri R.

Koul Head, Astrophysical science division, discussed the contributions of BARC to the emerging field of high energy Gamma-Ray Astronomy.

Public Interaction session by Indian council of Agriculture Research (ICAR)

The Indian council of agriculture Research organized a public outreach session on February 5, 2014. Dr, R.B. Singh, past president, national academy of agriculture science, noted thinker and visionary , chaired the session and interacted with participants.

Dr. Singh emphasized upon the importance of agriculture as a profession of national interest. Dr. Rameshwar Singh, Project Director, Directorate of Management in Agriculture (ICAR) made an illustrative presentation on the ICAR services being offered to entrepreneurs and farmers. Dr. Jagdeep Saxena, Editor, DKMA outlined objectives of the public outreach session and motivated audience for interaction.

Public Interaction Session by Space Research Organization (ISRO)

A Public interaction session was organized by the Indian Space Research Organization with the following themes:

- Re – kindling student interest in science: Experiences from ISRO Chandrayan and MOM programme .
- Use to Space Technology in Decentralized Planning and Development.
- Space based Location/Navigation Services and their Applications.
- Citizen - centric applications of Space Technology with Special Reference to Disasters.
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The session was attended by large number of students and scholars.

RECOMMENDATIONS OF SECTIONAL PROGRAMMES

1. Agricultural and Forestry Sciences

- A road map of total food grain requirement (domestic and export) and a plan for production at the suitable sites, procurement and storage.
- Nutrition enriched staple food crops – development, characterization and availability for people with chronic malnutrition.
- Designer crops with less tillering or even with single tiller with synchronous flowering in case of cotton and suitable harvest, reduce post harvest loss and lead to better crop management.

- For feasible conservation strategies to protect or restore plant reservoirs and native pollinators, creation of new protected natural areas to ensure food provision, mating and nesting site for pollinators requires multidisciplinary research approaches, development of novel management and conservation practices and a strong commitment to disseminate the results of these studies to the public and policy makers.
- Mechanization to be developed suitable for small holder farms and marketing arrangement at the rural areas where farmers will have access to the market and low cost storage facility. Contract farming can also be mobilized to encourage the farmers to produce better crops with money back arrangement.
- No till or low till farming sequester about 200 k carbon per ha/yr with deep fried and micro – sprinklers would bring efficient water saving and success of 2nd revolution of India.
- Private – public joint research project fashioned in network mode involving relevant laboratories and competent scientists may be planned to undertake C4/NUE (Nitrogen Use Efficiency)/N₂ fixation research in the major food grain crops like rice and wheat.
- Weeds cause about 40% crop yield loss and are a serious threat for the crop management of cereal crops, pulses, oilseeds, cotton, sugarcane etc. Direct seeding, zero tillage and use of water efficient crops require more science based weed management to obtain potential yield of genetic gains of improvement crops.
- Integrated approach of use of modern agricultural practice, consolidation of lands and mechanization need to be strengthened.
- GM research and value added GM crops need to be strengthened and GM crops should be available from laboratory to the land on the basis of scientific basis. Adequate funding is also required to support such genomics based competitive. GM crop research.

2. Animal, Veterinary and Fishery Sciences

- Basic biology should be made integral part of undergraduate and post graduate studies in biotechnology, microbiology, bioinformatics and other modern biology disciplines.
- With view to conserve biodiversity, emphasis on strengthening of classical Zoology in the syllabus of undergraduate (U.G.) and post graduate (P.G.) programmes be given which is not reflected in new UGC syllabus. UGC may be requested to restructure the syllabus in the light of this recommendation.
- National funding agency should provide sufficient funding for research on animal taxonomy as classical taxonomy has gone on Blackfoot during last 2 decades and proper identification of species of biodiversity importance has become a problem for young researchers.
- Bioresources are the wonderful gift of the nature to the mankind whose sustainability can be effectively linked to rural livelihood and economic development, so science education should aim at attracting students for proper management and sustainable utilization and innovative idea of bioresources.
- The assemblage of species with which we share the planet represents a vast untapped genetic library, with undiscovered pharmaceuticals and other beneficial substances. So programmes needed to be initiated for the exploration of other less known potential varieties of life forms with a view to ensure livelihood, food, health and financial security.
- Ensuring dangers of climate changes to biodiversity be recognized and integrating measures be undertaken on priority.
- Biotechnological tools and innovative ideas should be used for conservation, management and restoration of all types of habitat.
- Check list of local fauna be prepared to know the status of biodiversity and submit the same to the concerned agency to undertake conservational measure.

3. Anthropological and Behavioural Sciences (including Archaeology, Psychology, Educational Sciences and Military Sciences)

- It is to be recommended, that India need to step up its public spending on both health and education with a greater focus on quality and honest spending.
- It is recommended that to attain the need of social justice to all and specifically to the communities of farfetched areas, these communities should come forward to meet with the pace of development by enhancing their quality of living.
- It is recommended, that greater emphasis be made on basic education with passionate objectives to bring education for economically deprived and marginalized communities.
- It is recommended, that an approach of holistic education be developed for each learner to enhance the understanding regarding the surging needs and challenges of national development.
- It is recommended that to attain both inclusive and positive development, proper teaching and training be ensured for child care to all future mothers.
- It is recommended, that behavioural scientists have to play a greater role in rectifying and managing the social vagaries in terms of prejudices, stereotypes, fanaticism, terrorism and political adventurism by developing work ethics and social harmony in all walks of life, where each individual might associate with greater responsibility and commitment with the programmes destined for inclusive development.

4. Chemical Sciences

- Timing of Sessions particularly the extra added Symposia should not clash with the Sections timing.
- Poster presentation for Award should be published properly as only 3 posters were considered for award while there were more than 250 posters in sections. All papers if a

copy is sent to ISCA head quarters and other to sectional president can be considered for award.

- Regional Science Congress should be held in next year in area where it was never held earlier e.g. Uttarakhand, H.P.

5. Earth System Sciences

6. Engineering Sciences

Recommendations For Utilisation of Renewable Energy Sources (RES) For Domestic As well As Commercial Application

Introduction of cluster base system installation in remote/Village area where no Grid power supply is there.

- (a) To accord such units as a pilot project for motivation as well as to establish worthiness and functioning of system to eliminate doubts in residents of such area.

- Outreach of R.E.S. through

- Demonstration.
- E- Media
- New Prints
- To award identified well performing unit with proper incentives in enhancing R.E.S.
- Assuring availability R.E.s products and services at a glance.
- Proper financing mechanism for large / medium scale R.E.S. products are some of the significant recommendation.
- To adopt newly introduced fuels cell Technology.
- To design and manufacture intelligent chargers for Grid interface.
- To ensure economic viability through time to time reassessment of the cost.

7. Environmental Sciences

- There is an urgent need of restoration of curable waste lands of our country by giving emphasis on ecological, agro-ecological and socio-economic consideration for the benefit

of local communities so that they can further plan for long term management of the target areas. Strong and due financial support must be provided to all the stake holders.

- Exploration, documentation and conservation of biodiversity of wetlands, sacred forest/groves and all hot spot areas are recommended as most of our biodiversity data are under-documented in global scale in accordance with IUCN database. Blend of cultural, religious and scientific values should be incorporated in the policies pertaining to ecological restoration and biodiversity conservation for fostering bio-economy.
- An all India coordinated project on assessment of air quality in terms of inorganic pollutants (NO_x, SO_x, CO₂, CO, SPM, etc.) and organic pollutants (pollen grains, spores, bioaerosols, etc) has to be initiated in metropolis and other major cities of our country for documentation and mitigation that will help our clinicians for easy diagnosis and treatment of respiratory and other diseases.
- Easy access to pure drinking water (i.e., free of heavy metals, pathogens, pesticides, dyes, xenobiotics, etc) to the remote villages must be ensured. Thus, it is recommended to provide facilities in researches for assessment and maintenance of the quality of both surface and ground water.
- Special emphasis should be given to the traditional indigenous knowledge based natural resources (especially herbal medicine) as Indian traditional medicine system such as Ayurveda, Unani, etc. as they have long been tested as alternative medicine as well as are cost effective.
- Bioremediation and other related technologies need to be strengthened further involving biodiversity to solve environmental pollution related problems. Emphasis should be given to all the stakeholders.
- There is an urgent necessity to assess the alien exotic species which invaded our land and aquatic ecosystem and declined our natural indigenous flora. A national policy should be adopted for extermination of such alien species and in addition, they may be utilized as fuel, manure and other purposes.
- As per recommendation of the Kyoto Protocol in 1997, the greenhouse gases must be phased out. Hence proper research should be undertaken to assess the emission of greenhouse gases. There is an urgent need of further research to develop new technologies for the reduction of greenhouse gas emission.

- Global climate change is a very important concern for the coming generation. So, it is important to develop strategy to mitigate the impact of climate change on flora and fauna including human being. Special emphasis should be given to the ecologically sensitive areas of the country including coastal zones.
- There is an urgent need for strengthening of the existing scientific institutions working on various aspects of environment and development and also Departments of Environmental Sciences working in various Universities in terms of manpower, budget and infrastructure.
- As there are only few Institutions/Centers/Departments related to environmental sciences are existing in the country so new Institutions/Centers/ Departments devoted for the Environmental Sciences should be established at various locations of the country so that the country would be able to produce quality research in the field of environmental sciences and also to produce eminent and able environmentalists in the country who may create environmental awareness among the common masses and may also provide innovations for conserving our Mother Earth. Thus, our environment can be visualized in a holistic way and this will certainly make the Mother Earth more sustainable in future.

8. Information and Communication Science & Technology (Including Computer Sciences)

- To harness ICT for inclusive development, It's use should be promoted more and more among the rural masses as well as women's communities.
- The IT and ITES / BPO industries are to set up beyond the metros and focus should be given at other places including state capitals and district head quarters also.
- Govt. should promote in building India centric software and hardware industries as well as help in accelerating in driving for domestic market IT adoption and for enhancing software development business competitiveness in the country.

- Effective policy should be framed by the Union and State Governments to encourage the ICT educated youths to become entrepreneurs for setting S/w and H/w industries in the country.
- Focus should be given to energies the masses with the use of ICT with the help of internet connectivity and its convergence with mobile phones for the purpose of providing centralized services and benefits of e-governance
- The members of the section have unanimously recommended that the name of the section should be renamed as “INFORMATION AND COMMUNICATION SCIENCE & TECHNOLOGY (INCLUDING COMPUTER AND LIBRARY SCIENCES).

9. Material Sciences

Materials Science is of Interdisciplinary nature dealing with Education, Research and Development in the area of Applied Sciences. It deals with improvement in properties and applications of conventional materials as well as development of New materials with functional properties. This is directly or Indirectly linked to the Industrial as well as economic growth of the country. Taking experience from all developed countries as well as Upcoming Developed countries, efforts should be made to boost Materials Science education and research in the Universities and higher education system. Currently this is not included as subject in the UGC-NET examination since this is either taught as part of Physics or Chemistry main subject. Therefore, this should be introduced as independent Master course program, of course with emphasis on regional industrial and societal needs. Both traditional as well as high end Materials and Technologies for current health care, energy and programs strategic nature be given equal weightage while funding the projects.

Efforts be made to rope in Industries so that the fruits of applied research are riped by the Industries and the products reach the common man as well as help in elevating economy of the country.

10. Mathematical Sciences

- All participants of the section of Mathematical Sciences express their thanks to the Vice chancellor and other dignitaries of Jammu University, Jammu for hosting and providing good hospitality during 101st Indian Science Congress.
- All participants express their satisfaction and happiness on the deliberations and discussions held in various sectional programs.
- They also express thanks and gratitude to the local secretary Prof. J.P.Singh Joorel, Prof. Rahul Gupta (Chairperson. Dept. of Statistics), Prof. Dalip Singh (Chairperson, Dept. of Mathematics), Dr. Parmil Kumar (Asst. Profesora, Dept. of Statistics) other faculty

11. Medical Sciences

- More local volunteers/support are needed for running academic/scientific activities in Conference.
- A 24*7 active helpline is must for such a grand meeting and a docket number or such response numbers should be provided for reference till solving the query/problem in satisfactory manner.
- Transport/accomadation facility information should be handled in a more co-ordinated manner.

12. New Biology (including Biochemistry, Biophysics & Molecular Biology and Biotechnology)

- New Biology Section was well organized. Talks were of high scientific standard. Attendance in each and every session was quite good.
- There was not much formal discussion since most speakers left immediately after his/her talk or the particular session was over. However in some informal discussion it

was suggested that it would be better if one or two sessions (mini symposium) could be arranged on specific important area -

- **Cancer Biology**
- **Nanomedicine**
- **Proteomics & Genomics etc**

13. Physical Sciences

- The Physics research scenario was discussed and it emerged that research on grassroot technologies like solar energy, water harvesting, pollution control, energy production, etc. is being pursued at premier research institutions in the country. It is important that universities of the country can also bring in change in this aspect and they need to be encouraged in this direction. Thus, the forthcoming Physical Science Section of the 102nd session of the Science Congress can address these issues possibly under the title Physics Research for Sustainable Development. Any of the topics mentioned above may be addressed in detail as a mini-symposium.
- The fact that only few posters (03) were shortlisted for Best Poster Award did not go well with the participants. Their contention is that all their efforts in preparation of the poster, attending the Science Congress after travelling long distances, etc. were in vain if their posters are not considered seriously. Collective opinion was that the Science Congress should consider all the posters for the award and then select the best two. This would encourage young researchers to actively participate in the Science Congress.
- There was also disappointment that Travel grant and Local Hospitality was limited to only few invited speakers (2+3). Many invited speakers suggested that this number should be increased to at least 12 members, if not all. This will help the Sectional President in inviting motivated, dedicated and active researchers/ speakers who can share their knowledge and experience with the youngsters and motivate them to carry out quality research work. In fact this is the need of the hour, for our country.

14. Plant Sciences

- Renaming of the Plant Sciences Section to Botany.

- Equitable distribution of Research Grants/Funds sanctioned by the Government to all branches/subjects and not restricts the Lion's share to selected fields.
- Best poster should be selected out of the posters displayed during the session and NOT out of those send to the ISCA office.
- Need of change of NET Syllabus for the recruitment of Lecturer/Researchers in Botany. The syllabus should be in Botany and not Life Sciences.
- Fundamental and Basic Sciences should be given due weight age .
- Setting up of Gardens for cultivation of Medicinal Plants. Collection of these from the wild should be discouraged.
- The Weightage of impact factor/citation index be given up. Since the funds are wasted on getting research work published in Journals of the impact factor.
- Encourage researches to publish in Indian Journals. These Journals could be rated by the National Academy of The Sciences.
- Co-supervisor/Advisors should be appointed for Ph.D. and other dissertations from India and abroad to make them more meaningful.

