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Professor and Dean

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Educational qualification:	MSc (Chemistry) 1989: Agra College (Agra University, Agra), India Ph D (Chemistry) 1994: Dayalbagh Educational Institute, Agra, India. Ph D Topic: "A study on aerosol composition and deposition flux of selected pollutants at Agra".																		
Post Doc:	1994-98 (Atmospheric Chemistry)- National Physical Laboratory, New Delhi (India) Department of Meteorology, Stockholm University (Sweden)																		
Previous jobs:	<table border="1"> <tr> <td>Professor</td> <td>Jawaharlal Nehru University, New Delhi</td> <td>2008-continued</td> </tr> <tr> <td>Scientist E-I</td> <td>CSIR-IICT, Hyderabad</td> <td>2005-2008</td> </tr> <tr> <td>Scientist C</td> <td>CSIR-IICT, Hyderabad</td> <td>2001-2005</td> </tr> <tr> <td>Scientist B</td> <td>CSIR-IICT, Hyderabad</td> <td>1998-2001</td> </tr> <tr> <td>CSIR Pool Officer</td> <td>CSIR-NPL, New Delhi</td> <td>1997-1998</td> </tr> <tr> <td>CSIR Res. Assoc.</td> <td>CSIR-NPL, New Delhi</td> <td>1994-1997</td> </tr> </table>	Professor	Jawaharlal Nehru University, New Delhi	2008-continued	Scientist E-I	CSIR-IICT, Hyderabad	2005-2008	Scientist C	CSIR-IICT, Hyderabad	2001-2005	Scientist B	CSIR-IICT, Hyderabad	1998-2001	CSIR Pool Officer	CSIR-NPL, New Delhi	1997-1998	CSIR Res. Assoc.	CSIR-NPL, New Delhi	1994-1997
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Research interests:	Environmental Chemistry and Climate Change: (Air Pollution, Aerosol Chemistry and Climate Change, Environmental Analytical Chemistry, Atmospheric Dust, Transport and Chemical Transformations, Chemistry of Rain and Snow, Reactive Nitrogen, Air Pollution Biomonitoring, Bioaerosols, Metal Aerosols, Carbonaceous aerosols, Atmospheric Mercury).																		
Awards:	<ul style="list-style-type: none"> • International START Young Scientist Award 2000 by IGBP-START (<i>System for Analysis, Research and Training for global change</i>) Washington DC, USA. • CSIR Young Scientist Award 2004 in Earth and Atmospheric Sciences by Council of Scientific and Industrial Research, New Delhi. • M S Krishnan Gold Medal 2004 for Atmospheric Chemistry Studies by Indian Geophysical Union (IGU). • Thomas Kuhn Honour Pin Award 2002 by The International Union of Air Pollution Prevention & Environmental Protection Associations (IUAPPA) and the International Academy of Sciences. • IICT Gaurav Samman, 2005 Award by Indian Institute of Chemical Technology, Hyderabad. 																		
Scholarships:	National Scholarship- 1983-86 (<i>Awarded for overall distinction</i>) National Integrated Scholarship- 1981-83 (<i>Trough Talent Search Examination</i>)																		
Head of the Department/Area	Dean, School of Environmental Sciences, Jawaharlal Nehru University New Delhi. Ex-Area Leader (III), School of Environmental Sciences, Jawaharlal Nehru University New Delhi.																		

In-house executive responsibilities completed	Director, Trans-disciplinary Research Cluster Chairperson, Campus Development Committee Chairperson, Environmental Task Force Chairperson, Animal Birth Control (ABC) Committee Convener, Jan-Jan JNU Open Day 2016 Convener, Jan-Jan JNU Open Day 2017 Chairperson, Entrance Exam Committee, SES JNU. Chairperson, Academic Affairs Committee, SES, JNU
Member, Board of studies	Member, RDC, Dayalbagh Educational Institute, Dayalbagh, Agra Member BoS, Studies, Department of Political and Social Sciences, Dayalbagh Educational Institute, Dayalbagh, Agra Ex-Member, Academic Advisory Committee, Centre for Inner Asian Studies, School of International Studies (SIS), JNU Ex-member, BoS, Manav Rachna Engg. College, New Delhi Member, Center Committee of the Centre for Studies in Science Policy, School of Social Sciences, JNU Ex-member, DRC CCS University Meerut Member, Research Degree Committee, Guru Nanak Dev University, Amritsar. Ex-member, Academic Advisory Board, TERI
Member of Academic Council	Jawaharlal Nehru University New Delhi Academic Committee, Indian Military Academy (IMA), Dehradun Academic Committee, Naval Academy (INA), Ezimala Ex-member, Academic Committee, College of Military Engg., Pune Ex-member, JNU Standing Committee on Defense Institutions Ex-member, Academic Committee, Military College of EME, Secunderabad
Member of Professional/Academic Bodies	Fellow, Indian Geophysical Union Ex-Member, Environmental Pollution Control Authority ((EPCA). Assessor, National Assessment and Accreditation Council (NAAC) Ex-Member EIA Accreditation Committee, NABET (Quality Council of India) Deputy Director, South Asian Nitrogen Center. Vice President, Society for Conservation of Nature (SCON) Associate Fellow of Andhra Pradesh Academy of Sciences Ex-member, MHRD-GIAN, Sectional Committee for Earth & Environmental Sciences Ex-member, MHRD-GIAN, Sectional Committee for Inter-disciplinary Sciences
Member of Court	Jawaharlal Nehru University New Delhi
Resource Person	Jury member, DST INSPIRE science project evaluation programme Jury member, AICTE, New Delhi Science project evaluation Jury member, Science Day Student Exhibition, NPL, New Delhi Expert member and Indian Mentor, Air Pollution India Training Programme organized by Swedish Meteorology and Hydrology Institute, Norrkoping, Sweden (2009-10). Member of Expert committee of EPTRI on Andhra Pradesh Govt GO-111 regarding safeguards of drinking water in Usman Sagar and Himayat Sagar in Hyderabad (2007) Expert member, Ministry of Environment, Forests and Climate Change, New Delhi Expert, Syllabus Review Committee, Department of Political and Social Sciences, DEI, Dayalbagh, Agra Expert member of selection committees and panels of various institutions and departments.
Editor in Chief	Current World Environment International journal
Editorships	Aerosol and Air Quality Research J Indian Geophysical Union Ex-EB member, Indian Journal of Chemistry-A

Member of the International Advisory Board	Member, Advisory Board, Member, Advisory Committee of Knowledge and Awareness Mapping Platform [KAMP] – A Knowledge Alliance with CSIR-NISTADS Member, Advisory Board, Hanell International
Advanced Leadership training	LEAP Trained Faculty under MoEd (MHRD) Leadership for Academicians Programme
Co-ordinator	JNU ENVIS funded by MoEFCC. MPhil/PhD syllabus revision Committee SES JNU Ex-coordinator-BA Course for other JNU schools South Asian Coordinator under Indo-Swedish project for Atmospheric Chemistry measurements
Courses Teaching/taught:	MPhil/PhD level: -Air Pollution (ES 632) MSc level: - Environmental Chemistry (ES 103) - Metrology (ES 203) BA level: -Introduction to Environmental Science (ES 301)
Projects/Programmes Associating/Associated with	<ul style="list-style-type: none"> • Holistic Environment (Founder) • Young Holistic (YoHo) for students • Holistic Environment collaboration with QCI • UKRI GCRF-South Asian Nitrogen Hub. • UGC UPEII Project on Atmospheric mercury (<i>Ongoing</i>). • UGC major research project on Air pollution and plant stress (<i>Just completed</i>) • AIT-UNEP project on rural aerosols and climate change. • DRSNet-India (Deposition Research Network through students) • Atmospheric Brown Cloud (ABC) project with IMI Stockholm University, Sweden. • Indian Space Research Organization-Geosphere Biosphere Programme (ISRO-GBP) project on sources of urban atmospheric aerosols at Hyderabad. • Indo-Swedish Project on Aerosol and Precipitation Chemistry under RAPIDC programme of SIDA. • CAD (Composition of Asian Deposition) programme of DEBITS (IGBP) • ISRO-GBP Integrated Campaign on Aerosol Radiation Budget (ICARB) Campaign. • ISRO-GBP Land campaign II on Atmospheric Chemistry. • International comparison of QA/QC in chemical analysis under EANET (East Asia Precipitation Network), Japan. • Indian Reference Material (IRM) project. • ONGC (Oil and Natural Gas Commission), Goa project on Trace metal determination in sea water samples by ICP-MS. • Indian Ocean Experiment (INDOEX), a multinational and multidisciplinary programme. • CAAP (Composition of Atmospheric Aerosols and Precipitation in India and Nepal) programme under IGAC (IGBP) and CSC (UK) Coordinated by NPL, New Delhi and IMI, Stoc
Instruments developed	<ul style="list-style-type: none"> • Designed and developed semi-automatic rain collector. • Designed and developed fine aerosol sampler.
Membership of Scientific Societies	<ul style="list-style-type: none"> • Member, American Meteorological Society • Life Member, Indian Meteorological Society • Life member of Andhra Pradesh Academy of Sciences • Life Member of Indian Geophysical Union (IGU)

	<ul style="list-style-type: none"> • Life Member o Vijnan Bharati (Vibha • Life member of Indian Aerosol Science and Technology Association (IASTA) • Life member of Indian Society for Analytical Scientists (ISAS, Hyderabad Chapter) • Life member of Metrological Society of India (MSI) • Life member of Society for Conservation of Nature (SCON)
PhD students (awarded/submitted) :	<ol style="list-style-type: none"> 1. Dr Sudha Singh 2. Dr Gyan Prakash Gupta 3. Dr Saumya Singh 4. Dr Prasenjit Acharya 5. Dr Bablu Kumar 6. Dr Disha Sharma 7. Dr Anita Kumari 8. Dr Saurab Sonwani 9. Dr Shabana Manzoor 10. Dr Manisha Mishra
Number of Publications:	Total Journal papers: 102 Books: 05 Book Chapters: 12 Technical reports: 02 General Science articles: 23 Hindi Science articles: 06
Citations:	3798
h-index	30
i10 index	62

Research Contributions:

I started my research training from Dayalbagh Educational Institute, Agra, initially working on the chemistry and meteorology of air pollution near Taj Mahal and other sites in Agra. Subsequently, with the growing domain, I pursued inter-disciplinary and trans-disciplinary research including climate change, reactive nitrogen from agriculture, plants & air pollution etc. I was the first scientist who reported the occurrence of acid rain as a common phenomenon over Indian Ocean during winters due to lack of calcium and excess of non-sea salt sulphate which is opposite to the situation over Indian continental sites. Our work has demonstrated the significance of atmospheric dust and its role in controlling acid rain over continental sites, due to buffering action of calcium carbonate of dust producing calcium sulphate. Our studies have linked the poor air quality with the emissions of atmospheric aerosols and reactive nitrogen species from LULCC, trans-boundary and long range transport of pollution. Our group has explained that the urban dust significantly affects biochemical properties of the plants. Recently, the high levels of ozone at the urban sites have been attributed to the ban on plastic burning by the Environmental Pollution Control Authority (EPCA) and the closure of illegal tire oil (pyrolysis) factories due to which emissions of chlorine species are reduced. This has resulted in the lower destruction of ozone in air which is seen as a spike in ozone levels. I have published an idea of creation of artificial lakes which is a unique suggestion to control dust pollution in Delhi region. I have also highlighted that the topographical and 'Camel-ride push' of winds in the Indo-Gangetic valley helps in flushing out air pollution during winters from the NCR during to the Bay of Bengal within around 8-10 days. I believe that our group research contributions are of immense socio-economic and geo-political importance in Indian region.

Extensional Activities:

1. JNU ENVIS RP:

After taking charge of Coordinator of JNU ENVIS funded by the MoEFCC on Geodiversity and Impact on Environment, SES, the ENVIS RP has gained huge visibility of the activity of the School of Environmental Sciences among students and other stakeholders. The website visitor number has increased drastically from 7000 in 2019 to 17976 in 2020 during my tenure. Website has been re-designed with a separate page created for Covid-19 activities reports. A number of International and national events have been conducted by the JNU ENVIS RP. The list of celebration of events includes- Science Day, (28th February, 2020, JNU Inter School Extempore Expression Competition), International Biodiversity Day (2nd May, 2020), World Metrology Day was celebrated (20th May, 2020), International Yoga Day was celebrated (21st June, 2020), World Nature Conservation Day (28th July, 2020), Global Tiger Day (29th July, 2020), Panel Discussion on New Education Policy (27th August, 2020), International Day of Clean Air for Blue Sky (7th September, 2020), Ozone Day (16th September, 2020), World Wildlife Week (2nd to 8th October, 2020). The outreach of these events has been tremendous where more than 2500 participants attended the webinars. Various online competitions organized include Poetry, Summary writing competition, Quiz Competition, Poster, Painting & Photography competition on World Environment Day, World Ozone Day and the World Wildlife Week. Various Seminars have been conducted- i).How to write a successful Research Paper (6th March 2020), ii).Surveillance and Diagnosis of Environmental Pollution-Health Climate Interactions: Challenges and Way Forward. (4th March 2020), iii).Environmental Toxicology and Sustainable Development (3rd March 2020), iv). Indian Nitrogen Assessment and Improving Nitrogen Use Efficiency for Sustainable Development. (2nd March 2020). During my tenure of ten months, three Newsletters of ENVIS RP on theme Covid-19 Volume-25(1), 2020, NCR Air Pollution Volume-24(4), 2020, Swachh Bharat Volume-24(3), 2020 with total of 23 research papers have been published. Various e-posters were released on theme Environmental and Social changes Covid-19, Poster on Global Tiger Day and National Conservation Day.

2. Open Day of the university: “Jan-Jan JNU (जन-जन जेएनयू)”:

I was the convener of JNU Open Day events in 2016 and 2017. JNU organized its the 1st Open Day of the university “Jan-Jan JNU (जन-जन जेएनयू)” on November 21st, 2016 and 2nd Open Day on October 27th, 2017. The Open Day events showed up JNU contributions to the school children of Delhi. These events provided an opportunity to the young students to have personal interactions with JNU faculty members and research students to discuss about career prospects through higher education.

3. Pollution ka Solution- Diyewali Diwali (दियेवाली दिवाली) Campaign in Delhi:

A field campaign, “Pollution ka Solution- Diyewali Diwali Campaign”, was conducted in Delhi from October 14 to 21, 2017. Students of my research group had spread awareness and urged the people of Delhi to say ‘**NO**’ to Crackers and celebrate Diyewali Diwali, which is free from air pollution and noise pollution. This campaign not only made the citizens of Delhi aware, but also provided leadership opportunities to my students, wherein they could meet, interact and share their views on Diwali related pollution and its control measures.

4. Motivating students of Military College of Electrical and Mechanical Engineering (MCEME) students for development of clean energy technology:

I had a privilege to be a member of Academic Committee of MCEME, Secunderabad. During several meetings, interactions and project displays, I suggested the students to develop new models/prototypes of various instruments. Consequently, the students were highly motivated, and they showed me the modified working models, as per my suggestions during my subsequent visit at MCEME. During my tenure, the students and faculty members of MCEME developed solar and wind power driven energy system, that can serve as a clean energy option as per my suggestions. The system is fully operational, environment friendly and cost effective. The lights, fans and computers installed in a big hall are run with this energy source. Similarly, my motivation has led to the development of a solar power driven trolley, which is used for in-campus movement at MCEME. These are some of the examples, wherein I could motivate the youth for ‘**development to implementation**’ of technology.

5. Community work during my early age:

Since, I am native to a village, I got several opportunities to contribute to the upliftment of life of the villagers by solving their problems. During the several years of my life at the village, I participated in a number of community work initiated by the village youth. Subsequently, a ‘Young Club’ was established

by the village youth for the progressive development of the village and the villagers. We all used to volunteer ourselves for street and pond cleaning, to control cattle grazing, to address drinking water availability issue, to organize festival get together, annual fair events, social parties, religious and festive celebrations, etc. We also used to organize several competitions, including sports and literary events, etc., wherein the youngsters not only from our village, but also from several nearby villages used to participate on the occasion of national celebrations, such as Independence Day, Gandhi Jayanti and Republic Day etc. The club also started a library in the village, which later proved to be a very useful facility for the readers. Daily Hindi newspaper was also made available in the library. The hawker used to come on bicycle early in the morning from ten kilometers to deliver the news paper. These initiatives improved educational and behavioral aspects of the youth of our village. Our activities made all the villagers more aware about hygiene and general cleanliness. The children were motivated for attending school and participating in various activities of the primary and secondary school classes. It is important to mention, that the villagers recognized our efforts for the upliftment of the village and the society as a whole. People of all age groups from the village completely supported us. I feel content and blissful for that I could do something for the improvement of my village.

6. Unique rural problem solving

A lot of social work was carried out by our youth team. The most memorable task includes 'Shramdan' for a road patch connecting from the highway to our village which has been a boon for all the people. Prior to this road, there was a 'Kachcha', deep marshy trench where only bullock and horse carts could move. It was very difficult to drive a car, bicycle or a scooter through the mud. One night, all members of the club decided to fill that road gap by 'Shramdan'. Subsequently, that road was made 'damar' road with the help of the government funding. Whenever I pass through this road, it reminds me our joint efforts and working together for a common cause. There have been several other instances which solved the problems of the villagers. With all my experience as a villager, I believe that involving the local youth in designing, planning and implementation for any rural problem brings development, education and real happiness in villages.

7. Popular science article writing:

I have contributed a number of popular science articles for common readers. In these articles, I have covered general science topics, such as climate change, bio-refinery, extreme events, sustainable development, air pollution etc.

8. Science communication in Hindi

I have written numerous articles in Hindi, including those on air pollution, water pollution, greenhouse gases, black carbon and Diwali pollution etc. Moreover, I have translated a number of documents to Hindi for the government departments. I was the member of book review panel for screening the award winning book by the Central Hindi Directorate. Additionally, I was the member of the Editorial Board of Hindi magazine 'Spandan', published by the Indian Institute of Chemical Technology, Hyderabad. I have been Senior Columnist and managed one column 'विज्ञान स्तंभ जे.एन.यू से' in the स्वदेशी विज्ञान magazine <http://swadeshivigyan.com/scicoljnu/>.

9. News Paper Editorial, Hindi Poetry and Stories:

One of my hobbies is reading and writing Hindi literature. I have written a number of Hindi essays, editorials, stories and poems. I have covered a number of social issues through his writing.

10. New Initiatives:

i. Deposition Research through Student Network (DRSNet) India:

I have started this network for atmospheric deposition research, which primarily involves his PhD students. It is a very unique network which has dynamic number of sites across India depending upon the number of PhD students and their objectives. It is managed by the students with their fellowships and contingency support. DRSNet-India is a very important network, which covers measurements pertaining to snow chemistry in Kashmir, Himachal Pradesh and Uttarakhand ranges of Himalayas. Moreover, it includes several sites for analysis of rain chemistry and dustfall measurements, including storm dust at a number of rural and urban sites in north India. This is because northern India has higher dust loadings than southern India. Additionally, atmospheric mercury is being studied at three sites in Delhi as a start-

up case. Reactive nitrogen species are also being studied in seven states, i.e., Uttar Pradesh, Rajasthan, Haryana, Delhi, Jammu & Kashmir, Kerala and Manipur.

ii. **Holistic Environment** programme: I have recently launched a global programme called 'Holistic Environment'. The programme is aimed to avoid component base decision making and to go for an integrated approach for suggesting or providing solutions for different environmental problems.

iii. **Yo Ho Young Holistic Programme**: As part of the outreach activity of the school, a new initiative is taken entitled 'Holistic Environment' programme which aims at providing holistic solutions for environmental conservation through an integrated approach. The programme will help in developing skills and entrepreneurship of the students by conducting activities, which are named as 'Young Holistic (YoHo)' activities. There are around 30 activities in the list. The programme will encourage students to develop life skills through such integrated initiatives. It has a further scope of grants and networking for students and research scholars.