

Dr Ajay Kumar Singh

M.Sc., M.Phil and Ph.D

Professor of Physics, Department of Applied Science, MSIT

Administration and Executive Responsibilities -

Officiating Director, MSIT from December 28, 2020 – September 06, 2021 and Deputy Director 2nd Shift, MSIT (August 20, 2020 till date)

21+ Years of Teaching Experience

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Hailing from the world renowned heritage city, Agra, I am a physics professor and teaching B.Tech students from the last two decades in the capital of India. With first division in MSc and MPhil, my Phd in the year 1999 focused on Uranium concentration in rock, soil and fly ash samples. I have also investigated radon levels in low and high background areas.

I have published more than 30+ research papers and several articles in national & International Journals and conferences. I have edited and co-authored several books on Engineering Physics, Engineering Physics Practical, Engineering Physics Tutorial, Nuclear Physics, Sustainability, Environment, Water resources.

My book on Engineering Physics by McGraw Hill is a highly referred book by the engineering students across the country.

Area of Interest: Applied Nuclear Physics and Atomic Structure Calculations

My Professional Journey

I am the Deputy Director of the second shift at MSIT and recently also served as officiating director of Maharaja Surajmal Institute of Technology (MSIT), Janakpuri, New Delhi. I joined MSIT as professor and the Head of Department of the Department of Applied Physics. I have been the teacher's representative in the governing board of MSIT. Earlier, I have been the Professor at the Department of Applied Science and Humanities, Dronacharya College of Engineering, Gurgaon, Haryana.

Maharaja Surajmal Institute of Technology (MSIT), New Delhi <ul style="list-style-type: none">• Deputy Director, 20 Aug, 2020 till date• Officiating Director, 28 Dec 2020 - 06 Sep 2021• Professor, 29 July, 2016 - 19 Aug, 2020• Professor and HOD of the Department of Applied Sciences, 19 Dec, 2012 - 28 July, 2016	Dronacharya College of Engineering, Gurgaon <ul style="list-style-type: none">• Professor, 1 Jan, 2012 - 18 Dec, 2012• Associate Professor, 1 July, 2009 - 31 Dec, 2011• Assistant Professor, 1 Dec., 2003 - 30 Jun, 2009• Lecturer, 3 Feb, 2003 - 30 Nov, 2003
B.S.A. College, Mathura <ul style="list-style-type: none">• Lecturer, 10 Aug, 2002 - 1 Feb, 2003	B.M.A.S Engineering College, Agra <ul style="list-style-type: none">• Lecturer, 1 Sep, 1999 - 9 Aug, 2002

Education

- **Ph.D**, A.M.U., Aligarh, 1999
- **M. Phil. in Applied N**, A.M.U., Aligarh, 1993
- **M.Sc. in Physics (Specialization in Electronics)**, Agra University, Agra, 1990
- **B. Sc.**, Agra University, Agra, 1988

Invited Expert and Resource Person

1. Guest of Honour Speech in the Five days FDP by CSIR-AMPRI, Bhopal, July 9, 2021
2. Co-chaired Technical Session in the Two days NAAC sponsored National Conference on 'Quality Assurance in Higher Education: Practices and Issues', May 16 – 17, 2021
3. Speaker on Creating Employability Curriculum to Fulfil Aspirations of all Learners IDA Roundtable Discussion by India Didactics Association, April 27, 2021

4. Keynote speaker on Entrepreneurship: Innovations and Business Transformation in the National Conference on Digital Entrepreneurship, MSI, January 29 – 30, 2021

Trainings and FDPs

1. Certificate Course on Class room Communication from May 28, 2019 – June 1, 2019. Organised by National Institute of Technical Teachers Training and Research, Chandigarh
2. FDP on Contemporary Issues and Challenges in Management, Education & Information Technology from Feb 5 – 9, 2019. Organised by Maharaja Surajmal Institute of Technology, New Delhi
3. Certificate course on AICTE recognized Nanotechnology: Developments & Applications from May 22 – 26, 2017. Organised by National Institute of Technical Teachers Training and Research, Chandigarh
4. FDP on Research Methodology and Data Analysis from Dec 16 – 23, 2016. Organised by Maharaja Surajmal Institute, New Delhi
5. Training on 7QC Tools on Nov 10, 2014 by QGS Training Institute Private Limited at Maharaja Surajmal Institute of Technology, New Delhi
6. FDP on Human Values and Professional Ethics. **Attended and Co-convened from July 25 – 31, 2013. Organised by USET, Guru Gobind Singh, Indraprastha University, New Delhi**
7. AICTE Sponsored Short Term Course on “Science Technology and Society” from Dec 13 – 17, 2010. Organised by Department of Humanities and Social Sciences, IIT Guwahati.
8. Summer Faculty Research Fellow Programme from May 14 – June 13, 2010. Organised by Continuing Education Programme, Indian Institute of Technology, New Delhi
9. UNESCO Regional Training Course in Fibre Optics for College/ University Teachers from Feb 12 – 24, 2001. Organised by Indian Institute of Technology, Kharagpur

Key Research Papers and Publications

Recent Research Papers

1. Revised and extended calculations with relativistic and QED corrections of selected He-like 3d-elemental ions having astrophysical significance". 172–108866 in Radiation Physics and Chemistry **Elsevier**
2. Structural, Photoluminescence and dielectric investigations of phosphatic shale Pages 212-221 Vol. 34 Issue 2 in Journal of Biological and Chemical **Wiley Luminescence**
3. Structural and luminescent characterisation of uraniferous fluorapatite and haematite associated with phosphatic rocks of the Bijawar group in Sagar District, Madhya Pradesh (India) 127:110 (1-16) in Journal of Earth System Science **Springer**
4. Calculations of Atomic Parameters of highly charged Fe ions for Interpreting Astrophysical Spectra Volume 5, Issue 1, 67-69, ISSN 2347-3258 in International Journal of Advance Research and Innovation
5. Atomic structure calculations of He and Li-like Ti ions for interpreting astrophysical spectra. 092008. DOI: 10.1088/17426596/875/10/092008 in IOP Conf. Series: Journal of Physics: Conf. 875
6. Normal mode analysis of pair plasma with drifting species. 208 P012038 in Journal of Physics: Conference Series in Journal of Physics: Conference Series
7. Study on modes in a plasma having electrons, positrons and cold drifting ions. 208 P012042 in Asian Journal of Chemistry
8. Radon Levels in Dwellings of Some Indian Cities. 18, No. 5, 3371 – 3375
9. Study of Radon Exhalation rate and Uranium concentration from fly ash produced in the combustion of coal using SSNTD's. 25 (7) P-609 – 611 in Indian Journal of Environmental Protection
10. Radon Exhalation and Radiometric Prospecting on Rocks associated with Cu-U Mineralization in the Singhbhum shear zone, Bihar. 55, 889-894 in Applied Radiation and Isotopes **Pergamon**

11. Study of Radon Concentration in Oil Refinery Premises and City Dwellings 21, 163-170 in Journal of Radiological Protection
12. Study of ^{222}Rn concentrations in some dwellings of Rajasthan Vol. 76,p 306-309 in Health Physics
13. Radon Exhalation Rate and Uranium Estimation in Rock Samples from Bihar Uranium and Copper Mines using the SSNTD Technique. Vol. 51, P. 107-113 in Applied Radiation and Isotopes **Pergamon**
14. Microanalyses of Uranium in Indian Soil Samples using solid state nuclear track detection techniques Vol. 238, Nos. 1-2 pp. 21-24 in Journal of Radioanalytical and Nuclear Chemistry **Elsevier Science**
15. Study of Radon Exhalation Rate in some Soil, Coal and Fly Ash samples using SSNTD Techniques. Vol. 36. pp. 307-309 in Indian Journal of Pure & Applied Physics
16. Calibration of Track Detectors and Measurement of Radon Exhalation Rate from Solid Samples. Vol. 20. No. 3 P. 129-133 in Radiation Protection and Environment
17. Distribution of ^{222}Rn Levels in Indian Dwellings. Vol. 74. No. 3 P. 189-192 in Radiation Protection Dosimeter

Papers presented in National and International Conferences

1. Identification and characterization of minerals from Bijawar region, Sagar Distt. Madhya Pradesh, India in the 7th National Conference on “Advances in Metrology” ADMET-2021. Organised by Maharaja Surajmal Institute of Technology in association with CSIR-National Physical Laboratory, Metrology Society of India and NABL, 2021
2. Petro mineralogical and radioactivity study on uranium mineralization in deformed lithounits of Ajabgarh Group- a case study from Gorir, JhunjhunuDistt. Rajasthan in the 7th National Conference on “Advances in Metrology” ADMET-2021. Organised by Maharaja Surajmal Institute of Technology in association with CSIR-National Physical Laboratory, Metrology Society of India and NABL, 2021
3. Critical atomic data of He-like and Li-like Tungsten ions for aiding line identification studies useful to plasma diagnostics of future fusion reactors in the 7th National Conference on “Advances in Metrology” ADMET-2021. Organised by Maharaja Surajmal Institute of

Technology in association with CSIR-National Physical Laboratory, Metrology Society of India and NABL, 2021

4. Nanocrystals and Thin Films in the 3rd National Conference on Nanoscience and Instrumentation Technology (NCNIT). Organised by the Department of Physics, National Institute of Technology, Kurukshetra, 2015
5. Head-on Collision of Two Solitary Waves in a Plasma, 65th Annual Gaseous Electronics International Conference, Austin, TX, USA, 2012
6. Fast and slow modes in a magnetised plasma with dust grains at the national conference by Dronacharya College of Engineering, Gurgaon, 2011
7. Investigations on Characteristics of TE₁₁ Mode encountering Plasma in a Circular Waveguide in the 36th International Conference on Plasma Science and 23rd Symposium on Fusion Engineering, San Diego, California, USA, 2009
8. Effect of Magnetic Field on Stable and Unstable Modes in a Plasma having Weakly Relativistic Ions and Electrons, International Congress on Plasma Physics (ICPP), Fukuoka, Japan, 2008
9. Study of Modes in a Plasma having Electrons, Positron and Cold Drifting Ions, 23rd National Symposium on Plasma Science and Technology, BARC, Mumbai, India, 2008
10. Normal Mode Analysis of Pair Plasma with Drifting Species, 23rd National Symposium on Plasma Science and Technology, BARC, Mumbai, India, 2008
11. An Investigation of Radon Exhalation from Fly Ash produced in the Combustion of Coal in the 13th National symposium on Solid State Nuclear Track Detectors (SSNTD's), Department of Physics, Osmania University, Hyderabad, 2003
12. Study of Radon Exhalation from Fly Ash produced from Coal Combustion, National Conference on Environmental Pollution, Prevention and Control, University Polytechnic, A. M.U., Aligarh, 2003
13. Measurement of Uranium concentration and radon exhalation in Bihar and Cu-mine rocks in the International Seminar on Analytical Techniques in Monitoring the Environment, Department of Chemistry Sri Venkateswara University, Triputi, 2000

- 14.** Radon Levels in some Indian Dwellings of Hilly Regions in the Xth National Symposium on Solid State Nuclear Track Detectors. Organised by Kurukshetra University, Kurukshetra, 1996
- 15.** Estimation of Radon Exhalation Rate in Soil, Coal and Fly Ash samples using SSNTD techniques in the Xth National Symposium on Solid State Nuclear Track Detectors. Organised by Kurukshetra University. Kurukshetra, 1996
- 16.** The distribution of radon levels in some Indian dwellings in the IIIrd International Colloquium on Rare Gas Geochemistry. Organised by G.N.D. Univ. Amritsar, 1995
- 17.** Radon Exhalation from Solids in the IIIrd International Colloquium on Rare Gas Geochemistry. Organised by G.N.D. Univ. Amritsar, 1995
- 18.** Measurement of Exhalation of Radon in Solids in the IX Nat. Symposium on Solid State Nuclear Track Detectors. Organised by BARC, Bombay, 1994
- 19.** Radon and its progeny measurements in Indian Dwellings in the National Symposium on Emerging Technologies in Environmental Conservation. Organised by Hamdrad University, New Delhi, 1994
- 20.** Measurement of Radon Levels in Dehradun in the IIIrd National Symposium on Environment in Thiruvananthapuram, 1994
- 21.** Track characteristics of ^{136}Xe ions in Makrofol – N Polycarbonate in the Nuclear Physics Symposium. Organised University of Calicut, 1993
- 22.** Radon Levels in Kohima, Nagaland in the VIIIth National Symposium on Solid State Nuclear Track Detectors. Organised by Department of Applied Physics, AMU, Aligarh, 1993
- 23.** Study of Radon and its Progeny concentration in Nagaland in the Second National Symposium on Environment. Organised by Defence Laboratory, Jodhpur and S.B.K. college Jaisalmer, 1993

Book Chapter/Books Published

Chapters

1. Noise Pollution: A Public Health Hazard. (Ch 6, pp 183-202), Manmade Disasters, A P H Publishing Corporation
2. Disasters: An Introduction (Ch 1, pp 1-25) Co-authored, Natural and Manmade Disasters, Vol I.
3. Alternate Energy Sources for Clear Environment (Ch 8, pp 181-206), Natural and Manmade Disasters, Vol 1, M. D. Publications
4. Tracers Techniques for Measurement of Radionuclides in Soils and Environment (Ch 17, pp 343-369), Natural and Manmade Disasters, Vol 1, M. D. Publications
5. Acid Rains and Its Harmful Effects. (Ch.2. pp 38-77), Co-authored, Environmental Degradation and Protection (Vol-II), M D Publications Pvt. Ltd.
6. Radioactive Wastes and their Impact on Human Health and Environment, (Ch. 13. pp 122-140), Co-authored, Air, Water and Soil Pollution, Kalyani Publishers
7. Monsoon Variability, EL Nino and the Droughts. (Ch.4. Pg. 68-85) Co-authored, Water Resources Management and Development, Kalyani Publishers
8. Movement of Water and Techniques for its Measurements”, Ch. 32. pp 493-506 Co-authored, Water Resources Management and Development, Kalyani Publishers
9. Ozone Layer Depletion and Its Effects on Environment and Human Health. (Ch 11, pp 179-2000 Co-authored, Environment and Sustainable Development, Vol I Serials Publications
10. Air Pollution and Its Impact ON Human Health and Environment. PP 133-182, Manmade Disasters, A P H Publishing Corporation)

Books

1. Engineering Physics for Aryabhatta University and other Technical Universities of Bihar and Jharkhand States Syllabus, McGraw Hill, 1st Edition (International Publisher), July, 2014
2. Engineering Physics, McGraw Hill, 2nd Edition (International Publisher), August, 2018

3. Engineering Physics, McGraw Hill, 1st Edition (International Publisher), July 2009
4. Natural and Manmade Disasters, M. D. Publications Pvt. Ltd., Vol I and II (Edited), 2009
5. Environmental Degradation and Protection, M. D. Publication Pvt. Ltd., Vol I and II (Edited), 2007
6. Air, Water and Soil Pollution, Kalyani Publishers, (Edited), 2007
7. Engineering Physics Tutorial, Ram Prasad & Sons, 2002
8. Engineering Physics Practical with Laboratory Report, Ram Prasad & Sons, 2001

Conferences and Seminars Attended

1. E-International Symposium on Synthesis and Characterization of Smart Materials and their Potential Applications (ISSCSMPA – 2020), University School of Basic and Applied Sciences, GGSIPU, New Delhi, June 14 – 17, 2020
2. International Conference on Artificial Intelligence and Applications, Maharaja Surajmal Institute of Technology, New Delhi, Feb 6 – 7, 2020
3. India International Education Conclave on Counseling Skills for Student Recruitment Professionals - MDP for Head Admissions and Outreach, Institute of Counsellor Training Research and Consultancy, Dec 20, 2019
4. NAAC sponsored National Conference Quality Assurance in Higher Education: Practices and Issues (Attended and Co-chair a technical session), Maharaja Surajmal Institute, New Delhi, May 16 – 17, 2019
5. National Conference on Paradigm Shift from Developing to Developed India through Digitalization (NCPSSDDID – 2017), Maharaja Surajmal Institute, New Delhi, July 28 – 29, 2017
6. National Seminar on Advancements in Fluid Mechanics (AFSM-2011), Dronacharya College of Engineering, August 20, 2011
7. National Seminar on Waste Water Management (WWM-2011), Dronacharya College of Engineering, June 15, 2011
8. Seminar on Value Engineering, Dronacharya College of Engineering, July 7 – 8, 2009

9. National Seminar on Advances in Mechanical Engineering, Dronacharya College of Engineering, July 22, 2009
10. National Seminar on Energy and Environment, Anand Engineering College, Agra, Dec 21 – 22, 2001
11. XIth National Symposium on SSNTD, G.N.D. Univ. Amritsar, Oct 12 – 14, 1998

Ph.D Supervision

1. **Ph. D Supervised** - Gajendra Singh
2. **Ph. D under Supervision** – Pragya Pandey
3. **M. Phil Supervised** - Poonam Chaudhary
4. **M.Sc. (Theses) Supervised** – Belasingh Dabas

Memberships of Professional bodies

1. Life Member of Plasma Science Society of India
2. Life Member of Nuclear Track Society of India

Other Contributions

1. Conducted one week Faculty Development Programme (Train the Trainer) during July 25-31, 2013 on the theme “Human Values and Professional Ethics” at USET, GGSIPU
2. Recognised Supervisor for Ph.D. Programme in Physics in University School of Engineering & Technology, GGSIP University, w.e.f. December 31, 2013
3. Taught a special course of Nanotechnology for USICT Ph.D. students
4. Subject expert and coordinator for development of the scheme & syllabus for B. Tech. Programmes in the affiliated institutes under University School of Engineering & Technology, GGSIP University, 2012-2013
5. Member in MSI & MSIT and coordinator/convener in MSIT for API score for faculty promotion and the calculation of score of the candidates for Best Faculty award.
6. Member of Governing body of MSIT
7. Convener, Grievance Redressal Committee, MSIT, January 05, 2016