

Prof. (Dr.) Avanish Kumar Srivastava

Affiliation

The Director (additional charge)
National Metallurgical Laboratory
(CSIR, DSIR, Ministry of Science and Technology, Govt. of India)
P.O. Jamshedpur-831007, Jharkhand, India
Phone: +91 (0)657-2345209
Email: director@nmlindia.org



- *Director* - Advanced Materials and Processes Research Institute (CSIR, DSIR, Ministry of Science and Technology, Govt. of India), Bhopal.
- *Outstanding Professor* – Academy of Scientific and Innovative Research.
- *President* – Electron Microscope Society of India.
- *Chief Editor* – Applied Innovative Research.

Education and research areas

Dr. Avanish Kumar Srivastava received his M.Sc. (Hons.) in physics from IIT Roorkee, UOR (1986), M. Tech. in materials science from IIT Kanpur (1988), and Ph.D. in metallurgy from IISc Bangalore (1996), in the faculty of engineering. His prolific research as applied to understanding the nucleation-growth mechanisms, phase transformations, microstructures & defects of a variety of materials in the form of bulk and fascinating nano-scaled is outstanding and known by his peers worldwide. He has contributed significantly to various projects in the area of advanced materials pertaining to (i) Rapidly solidified metallic systems, (ii) Nanostructures, (iii) Composites, (iv) Solar energy, (v) Thermoelectrics, (vi) Magnetic, (vii) Waste to wealth, and (viii) Safety, Health & Environment.

Contribution in research and academics

Dr. Srivastava has more than 350 publications in high-impact international reputed journals with more than 11000 citations an h-index of 48 an i10 index of 217, and several invited talks at different scientific meetings in India and abroad. He has filed/granted 15 patents in his credits and an almost identical number of technology/know-how to various private partners. He has guided 13 Ph.D. (09 completed & 04 pursuing) students and more than 20 M.Sc. & M.Tech. dissertations. Some of his outstanding publications in the field of material science & engineering and nanomaterials are in (i) Nano Letters, also highlighted in SCIENCE (ii) NATURE Communication, (iii) Small, (iv) Chem Sus Chem, (v) NanoScale, (vi) J. Mater. Chem., (vii) Nano Energy, (viii) Acta Materialia, (ix) Metallurg. Mater. Trans., (x) Materials Today Chemistry and (xi) Mater. Sci. Engg.. A publication in Small, on Graphene – Silver Nanocomposites, has been cited about 550 times since its publication in 2009. He has published a book entitled, Oxide Nanostructures: Growth, Microstructures, and Properties. He is instrumental in the development of standard documents under the ISO Nanotechnology program (ISO TC 229).

Dr. Srivastava was instrumental in establishing Analytical High-Resolution Transmission Electron Microscopes facilities which became an important part of the Centre for Nanoscale Science at CSIR-NPL New Delhi. In addition, the facility of FE-SEM with EDS and EBSD was added to the laboratory with the efforts of Dr. Srivastava. A similar facility of Analytical TEM and Electron Dispersive Spectroscopy (EDS) has been established at CSIR-AMPRI. Especially, the Indigenous high-end commercial grade Raman Spectrometer with two versions- IndiRam CTR-300 & CTR-150 are developed at AMPRI for the first time in the country under the PPP model of CSIR-NMITLI. He has played a key role in organizing various conferences/meetings of international repute in India and abroad. He

has also served as Head (designate) of the Centre for Calibration and Testing at CSIR– NPL, New Delhi. As a coordinator of the Young Scientists’ Conclave under India International Science Festival, IISF – 2016, he was able to organize a large number of plenary lectures, oral & poster presentations, and demonstrations/presentations by Start-ups, etc., and in the Year 2020 & 2021 CSIR-AMPRI hosted the IISF with the Theme Traditional Craft and Artisan meets and exhibition under his leadership in all offline, online, and hybrid modes with several international participants. He was instrumental in the design and development of various courses of the Academy of Scientific and Innovative Research (AcSIR) program of CSIR and was the coordinator of the courses on Nanostructured Materials and Advance Materials Characterization Techniques at CSIR-NPL. He educates young researchers and students in the field of materials growth, characterization, and evaluation of various properties. In brief, several national and international conferences/workshops/ seminars have been organized under his dynamic leadership.

He has served as Coordinator of the National Mirror Working Group on Measurement and Characterization of the Bureau of Indian Standards (BIS-MTD33, ISO/TC-229). His work on advanced materials pertaining to growth and characterization employing electron & ion microscopy techniques has been cited on the world-leading scientific websites of MRS, USA, and IOP, Asia & UK.

Under his leadership, the Centre for Advanced Radiation Shielding and Geopolymeric Materials has been established and inaugurated by Dr. Harsh Vardhan, Hon. Minister of Health & family welfare, Science & Technology, Earth Sciences, Govt. of India, and Chair, Executive Board, WHO and Vice President, CSIR, at CSIR-AMPRI Bhopal, on March 13, 2021. He is also instrumental in setting up of Graphene Centre of Excellence (ongoing) and the “Technology Development and Innovation Centre”, five–star rated green building (ongoing) at CSIR-AMPRI, Bhopal. Significant products like x-rays radiation shielding concrete, tiles, panels, etc. from Red Mud and Brine sludge, Bamboo composite, Parali composite, etc., have been developed over the last few years and related technology was transferred for commercializing the products. Thus, Prof. Srivastava is continuously and immensely working to achieve Sustainable Development Goals by contributing to Atma Nirbhar Bharat, Swasth Bharat Abhiyaan, Swachh Bharat Abhiyaan, and many more.

National and International collaborations

Dr. Srivastava has traveled to about fifteen countries under different scientific & technical capabilities and also conducted research as visiting faculty/scientist in various institutes like; the University of Paris & University of Reims France, Technical University Darmstadt Germany; the Okayama University of Science Japan, University of Arkansas USA, Pohang University of Science and Technology South Korea, Department of Energy, Italy, Hungarian Academy of Sciences Hungary, Argonne and Brookhaven National Laboratories of USA. In India, he has carried out innovative research in collaborations with IISc Bangalore, BHU Varanasi, IITs Delhi, Kanpur & Hyderabad.

Awards and fellowships

1. President, Electron Microscope Society of India (EMSI)
 2. Metallurgist of the Year, Ministry of Steel, Government of India, Award – 2011.
 3. Member, Governing Council, Technology Information Forecasting and Assessment Council (TIFAC), Department of Science Technology, Ministry of Science and Technology, Government of India.
 4. NRDC National Meritorious Invention Award – 2020, Societal Innovation, DSIR, Ministry of Science and Technology, Govt. of India.
 5. Ranked among the top 2% scientists of in the world, by Stanford University USA, 2020.
 6. Member of Task Force Committee, CSIR Integrated Skill Initiative, and Jigyasa.
 7. Member, Standing Scientific Advisory Group (SSAG), Ministry of Mines, Govt. of India.
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8. Chairman, Selection Committee for Raman Research Fellows of CSIR (2020-2021).
9. Fellow, Electron Microscope Society of India – 2016.
10. Fellow, The Indian Institute of Metals – 2014.
11. Materials Research Society of India (MRSI) Medal – 2011.
12. Member, Board of Studies, School of Nanoscience and Technology, NIT Kurukshetra.
13. Guest of Honor – Received By the Director, National Institute of Technology, Kurukshetra, June 01, 2013
14. INSA – KOSEF fellowship (2009-2010): International bilateral exchange program
15. Co-Chairman, Session: Carbon Nanotubes, post-treatment, International Conference on Materials for Advanced Technologies, Singapore, June 26-July 01, 2011
16. Outstanding publications in the field of Metallurgy and Nanomaterials are in (i) NANO LETTERS, IF 12.9. Highlighted in SCIENCE IF 41.84 (ii) NATURE Communication IF 14.91 (iii) SMALL, IF 13.28 (iv) Nano Energy, IF 17.88 (v) Chem Sus Chem IF 8.92 (vi) NanoScale, IF 7.79 (vii) J. Mater. Chem. IF 6.62, (viii) Materials Today Chemistry IF 8.3, and (ix) 4 papers in Acta Materialia, IF 8.2. A publication in SMALL, on Graphene – Silver Nanocomposites, has been cited about 550 times since its publication in 2009.
17. BOYSCAST fellow (2000-2001) awarded by DST at Universite Paris-Sud France.
18. Kwan Im Thong Hood Fellowship Award, Singapore (2000).
19. Completed CSIR Scientific Leadership Development Program initiated by DG-CSIR.
20. Establishment of Analytical High-Resolution Transmission Electron Microscope facility which became an important part of the Centre for Nanoscale Science at NPL, New Delhi, and AMPRI, Bhopal. Two additional facilities: FE-SEM and FE-TEM with EELS are also installed.
21. Convenors of Electron Microscopy Conferences Years: 2004 and 2014. MRS Website USA: Electron Microscopy work on nanomaterials was briefed along with Dr. Srivastava's photograph (2^{8th} October 2007).
22. Coordinator – National Mirror Working Group on Measurement and Characterization (BIS-MTD33, ISO/TC-229). Represents India in ISO-Nanotechnologies meetings. Visited NIST, USA (Year – 2009 & 2015) as a member of the Indian delegation and invited speaker.
23. Involved in different National and International Projects in the area of (i) Nanomaterials, (ii) Metal/metal oxide composites, (iii) Energy-related materials, including Thermoelectric, (iv) Magnetic Materials, and (v) Safety, Health & Environment of Nanomaterials.
24. Member, International Advisory Board, Asia-Pacific Electron Microscopy Conference, Kanazawa, Japan, June 7 to 11, 2004
25. Member, Executive Committee, IIM – Delhi Chapter (2010-12)

Membership in Organizational/National/International Committees:

1. Indian Institute of Metals, IIM, India. (Life Member)
2. Materials Research Society of India, MRSI, India. (Life Member)
3. The Minerals, Metals and Materials Society, TMS, USA. (1992-1997)
4. American Nano Society (Life Member)
5. Indian Science Congress Association, ISCA, India. (Life Member)
6. Electron Microscopy Society of India, EMSI, India (Life Member)
7. Indo-French Technical Association, IFTA (Life Member)
8. Laser and Spectroscopy Society of India, LASSI (Life Member)
9. Indian Association of Analytical Scientists (Life Member)
10. Metrology Society of India (Life Member)

Other Scientific and Professional Activities

1. Secretary, Materials Science Society, IIT Kanpur (1987)
 2. Co-convenor, Symposium on Metallurgical Research, IISc Bangalore (1991)
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3. Convenor, Symposium on Metallurgical Research, IISc Bangalore (1992)
 4. Member, Organizing Committee, Indo – Russian Workshop on Micromechanical Systems, NPL New Delhi (1999)
 5. Member of the Research Council of CSIR – National Aerospace Laboratory (NAL) Bengaluru (2020-2022)
 6. Member of Management Council of CSIR – National Institute of Science, Communication, and Policy Research (NIScPR) Delhi (2021-2023)
 7. Member of Management Council of CSIR – Central Road Research Institute (CRRI) Delhi (2020-2022).
 8. Member of the Management Council of CSIR – Institute of Minerals and Materials Technology (IMMT) Bhubaneswar (2018-2021).
 9. Member of the Management Council of CSIR – National Physical Laboratory (NPL) New Delhi (1998-99).
 10. Member of the Academic Council of National Institute of Technical Teachers Training and Research (NITTTR) Bhopal (2022).
 11. Joint Secretary, Electron Microscope Society of India (2006-2008)
 12. Member, Organizing Committee, Thirteenth International Workshop on the Physics of Semiconductor Devices, New Delhi, India, (2005)
 13. Member, Organizing Committee, 35th National Seminar on Crystallography, New Delhi, India, February 22-24, 2006
 14. Member, Advisory Board, Nanomaterials: Engineering and Technology, Allahabad, February 18-19, 2011
 15. Member, Advisory Board, International Conference on Electron Nanoscopy, Hyderabad, July 6-8, 2011.
 16. Refereed research articles for different international journals
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