

Two Page Summary
CV of Prof. Avinash Kumar Agarwal

FAAAS, FCI, FASME, FSAE, FNAE, FNASE, FRSC, FISEES, FWSSET

Sir J C Bose National Fellow and SBI Endowed Chair Professor

Department of Mechanical Engineering

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Contributions to Science and Technology

- **Technology Development and Technology Transfer to Industry:** Developed an Electronic Fuel Injection (EFI) system for ALCO-DLW locomotives, giving >4% fuel saving and >70% lower particulate emissions. Annual fuel savings for Indian Railways to be ~USD 100 M upon implementation.
- **New Engine Technology Development:** Hydrogen Engine, HCCI engine, Laser Ignited Engines, Methanol engine and vehicle prototypes, DME tractor prototype.
- **Biofuels Research:** Biodiesel, SVO, Methanol, DME, Hythane (HCNG), CNG, Ethanol, Butanol.
- **Particulate/ Emission Control Research:** Non-noble metal-based DOC development.
- **Established State-of-the-Art Engine Research Laboratory at IITK:** 2 Optical Research Engines for Tomographic PIV investigations, Phase Doppler Interferometry applied to Dense Sprays and in-cylinder engine conditions, Chassis Dynamometer for 2W Testing.
- Four papers in **Progress in Energy and Combustion Science** (**Impact Factor: 35.339**). One single-authored paper in PECS was published in 2007 (Scopus Citations > 2600+).

Fellowship/ Awards and Recognitions

- **Fellow of CI** (Combustion Institute, USA), March 2022
- **Fellow of AAAS** (American Association for the Advancement of Science), February 2020
- **Fellow of WSSET** (World Society for Sustainable Energy Technologies), UK, October 2020
- **Sir J C Bose National Fellow** (Science and Engineering Research Board, GoI), August 2019
- **Fellow of RSC** (Royal Society of Chemistry, UK) October 2018.
- **Fellow of NASI** (National Academy of Sciences India), October 2018.
- **Fellow of INAE** (Indian National Academy of Engineering), December 2015.
- **Fellow of ISEES** (International Society of Energy, Environment, and Sustainability), December 2015.
- **Fellow of ASME** (American Society of Mechanical Engineers), October 2013.
- **Fellow of SAE International** (Society of Automotive Engineers International, USA), October 2012.
- **SAE India Foundation Guru Award-2022.**
- SBI Endowed Chair Professor @ IIT Kanpur (2022-25).
- **CSIR's Shanti Swarup Bhatnagar Prize**-2016 was awarded by the Prime Minister of India.
- **Distinguished Alumnus Award-2022** from **Indian Institute of Technology Delhi.**
- **Distinguished Alumnus Award-2021** from **Malviya National Institute of Technology, Jaipur.**
- **WSSET Innovation Award-2022** in the "Renewable Energy Systems" category in Istanbul, Turkey.
- **India Research Excellence - Clarivate Analytics Citation Award-2017.**
- **Rajib Goyal Prize-2017** by Kurukshetra University.
- **Highly Cited Researcher-2018** from India by Clarivate Analytics, among the top 10 HCRs from India.
- **Er. M P Baya National Award** in Mechanical Engineering-**2017.**
- **NASI-Reliance Industries Platinum Jubilee Award -2012** for Application Oriented Innovations in Physical Sciences.
- **INAE Silver Jubilee Young Engineer Award-2012.**
- **Dr C. V. Raman Young Teachers Award-2011** for Excellence in Engineering Education.
- SAE International's **Ralph R. Teetor Educational Award-2008.**
- **INSA Young Scientist Award-2007.**
- **UICT Alkyl Amine Young Scientist Award-2007.**
- **INAE Young Engineer Award-2005.**
- **AICTE Career Award for Young Teachers-2004.**
- **DST Young Scientist Award-2002.**
- **DST BOYSCAST Fellowship-2002.**

- **Editor of FUEL** (2019 onwards).
- Associate Editor of **ASME Journal of Energy Resources Technology**, Transactions of ASME (2013-16, 2016-19).
- Associate Editor of **ASME Open Journal of Engineering**, Transactions of ASME (2023-26).
- Series Editor of the Book Series Entitled “**Energy Environment and Sustainability**,” published by Springer, Singapore (2016 onwards).
- Member of the editorial board of the **Journal of Automobile Engineering**, Proceedings of IMechE (2003-2021).
- Member of Editorial Board of **International Journal of Engine Research**, SAE International and IMechE, London (2016 Onwards).
- Associate Editor of **Journal of the Institution of Engineers (India): Series C** (2016 onwards).
- Editor-in-Chief of the **Journal of Energy and Environmental Sustainability** (2015 onwards).
- Review Editor of **Frontier of Mechanical Engineering** (2015 onwards).
- Member of the editorial board of the “**International Journal of Oil, Gas and Coal Technology**” (2012-15).
- Associate Editor of **International Journal of Vehicle Systems Modeling and Testing**” (2007-15).
- Member of the editorial board of the **Recent Patents on Mechanical Engineering**, published by Bentham Science Publishers (2007-15).
- SBI Endowed Chair Professor @ IIT Kanpur (2018-21).
- Poonam and Prabhu Goyal Endowed Chair Professor @ IIT Kanpur (2013-16).
- Devendra Shukla Research Fellowship @ IIT Kanpur.

Summary of Publications and Academic impact (As of 1st march 2023)

International Peer-Reviewed Papers	H Index		Citations		I-10 Index		International Conference Papers	Number of Patents
	Google Scholar	Scopus	Google Scholar	Scopus	Google Scholar	Scopus		
517 (Scopus)	65	55	23564	15670	266	207	127	3

No. of Books	Book Chapters	PhD Thesis Guidance	MTech Guidance	Sponsored / Consultancy Projects	Extra Mural Funding	Outreach (QIP Course)	Int. Events Organised
65	135	14 Graduated, 9 Ongoing	60 Graduated	33 Completed, 8 Ongoing	60.00 Crores	17 (1 week) + 2 (2 weeks)	7 Workshops, 7 conferences

Other Achievements:

- Seven students are faculty in the IIT system (IIT Kharagpur, Ropar, Bhilai, BHU, Patna, and 2 in Mandi, respectively), few more are likely to join soon. 55 MTech students in R&D of Automotive Industries in India.
- Edited “**Handbook of combustion**” (3200 pages), the most updated reference in Combustion globally. Springer Book Series Editor on **Energy, Environment, and Sustainability**.
- Among the top 10 Indian Authors in the ‘Energy’ domain (2009-14) from India, based on publication count in 2002-2014, from India (Source: National Science and Technology Management Information Systems (NSTMIS), DST, Govt of India).
- One single-authored paper among the top ten most highly cited papers (2600+ Scopus citations) published from India in the Engineering domain. NSTMIS, DST, Thomson Reuters Report-2015.
- In the top 2% list of Scientists Prepared by Stanford University, 2021. First in Energy Domain out of 136 Indian Researchers in 2019, 2020, 2021 and 2022.
- Featured in DST Golden Jubilee Coffee Table Book “75 under 50 Scientists Shaping Today’s INDIA,” released by Vigyan Prasar, Government of India, on National Science Day, February 28th, 2022.

Top 10 Publications of Prof. Avinash K Agarwal

1. Amir F.N. Abdul-Manan*, Victor Gordillo Zavaleta, **Avinash Kumar Agarwal**, Gautam Kalghatgi, Amer A. Amer, "Electrifying passenger road transport in India requires near-term electricity grid decarbonization" **NATURE Communications**, 13, 2095 (2022). (Impact Factor₂₀₂₂: 17.694; DOI: doi.org/10.1038/s41467-022-29620-x; ISSN # 2041-1723).
2. Nikhil Sharma, William Bachalo, **Avinash Kumar Agarwal***, "Spray Droplet Size Distribution and Droplet Velocity Measurements in a Firing Optical Engine," **Physics of Fluids**, 32, pp. 023304, 2020. (Impact Factor₂₀₂₂: 4.980; DOI:10.1063/1.5126498; ISSN # 1070-6631).
3. **Avinash Kumar Agarwal***, Akhilendra P. Singh, Tarun Gupta, Rashmi A. Agarwal, Nikhil Sharma, Prashant Rajput, Swaroop K. Pandey, Bushra Ateeq, "Mutagenicity and Cytotoxicity of Particulate Matter Emitted from Biodiesel-Fueled Engines" **Environmental Science and Technology**, 2018, 52 (24), pp 14496–14507. (Impact Factor₂₀₂₂: 11.357; DOI: 10.1021/acs.est.8b03345; ISSN # 0013-936X).
4. Akhilendra P. Singh, Nikhil Bajpai, **Avinash Kumar Agarwal***, "Combustion Mode Switching Characteristics of a Medium-Duty Engine Operated in Compression Ignition/PCCI Combustion Modes," **ASME Journal of Energy Resources Technology**, Vol. 140(9), September 2018; Pages 092201-092201-11. (Impact Factor₂₀₂₂: 3.070; DOI: 10.1115/1.4039741; ISSN # 0195-0738).
5. **Avinash Kumar Agarwal***, Suresh Gadekar, Akhilendra Pratap Singh, "In-Cylinder Air Flow Characteristics of different Intake Port Geometries using Tomographic PIV," **Physics of Fluids**, 29(9), pp. 095104(1-16), 2017. (Impact Factor₂₀₂₂: 4.980; DOI: 10.1063/1.5000725; ISSN # 1070-6631).
6. **Avinash Kumar Agarwal***, Sibendu Som, Pravesh Chandra Shukla, Harsh Goyal, Douglas Longman, "In-Nozzle Flow and Spray Characteristics for Mineral Diesel, Karanja, and Jatropa Biodiesels" **Applied Energy**, Volume 156(15), pp.138–148, October 2015. (Impact Factor₂₀₂₂: 11.446; DOI: 10.1016/j.apenergy.2015.07.003; ISSN # 0306-2619).
7. **Avinash Kumar Agarwal***, Akhilendra Pratap Singh, Vikram Kumar, "Particulate Characteristics of Low-Temperature Combustion (PCCI and RCCI) Strategies in Single Cylinder Research Engine for Developing Sustainable and Cleaner Transportation Solution", **Environmental Pollution**, Volume 284, September 2021, 117375. (Impact Factor₂₀₂₂: 9.988; DOI: doi.org/10.1016/j.envpol.2021.117375; ISSN # 0269-7491).
8. Dhananjay Kumar, Hardikk Valera, Anirudh Gautam, **Avinash Kumar Agarwal***, "Simulations of methanol fueled locomotive engine using high pressure co-axial direct injection system," **FUEL**, Volume 295, July 2021, 120231(1-14), (Impact Factor₂₀₂₂: 8.035; DOI: 10.1016/j.fuel.2021.120231; ISSN # 0016-2361).
9. Kewal Dharamshi, Anuj Pal, **Avinash Kumar Agarwal***, "Comparative Investigations of Flame Kernel Development in a Laser Ignited Hydrogen–Air Mixture and Methane–Air Mixture," **International Journal of Hydrogen Energy**, Vol. 38(25), pp. 10648-10653, August 2013. (Impact Factor₂₀₂₂: 7.139; DOI: 10.1016/j.ijhydene.2013.06.044; ISSN # 0360-3199).
10. **Avinash Kumar Agarwal***, "Biofuels (Alcohols and Biodiesel) Applications as fuels for Internal Combustion Engines," **Progress in Energy and Combustion Science**, Vol. 33(3), pp 233-271, 2007. (Impact Factor₂₀₂₂: **35.339**; DOI: 10.1016/j.pecs.2006.08.003; ISSN # 0360-1285).

Detailed CV of Prof Avinash Kumar Agarwal

Areas of Interest: Internal Combustion Engines; Regulated/ Unregulated Emissions; Particulate Characterization and Control; Exhaust Gas After-Treatment using DOC/ DPF; Emission Toxicology; Gasoline Direct Injection (GDI) Engines; Gasoline Compression Ignition (GCI) Engines; Low-Temperature Combustion (HCCI/PCCI/RCI) Engines; CNG/ Hydrogen/ HCNG; Biodiesel, Biofuels, Methanol, Ethanol, and Butanol; Dimethyl Ether (DME) and Diethyl Ether (DEE); Laser Ignition of Combustible Mixtures; Combustion Visualization Using Schlieren/ Shadowgraphy; Optical Diagnostics of Engine Combustion; Particle Image Velocimetry (PIV) for In-Cylinder Flow Visualization; Phase Doppler Interferometry (PDI) for Dense Spray Characterization; Lubricating Oil Characterization and Tribology; Engine Simulation (1-D and 3-D); Life Cycle Assessment; Total Cost of Ownership Analysis.

Date of Birth: August 22nd, 1972

Nationality: Indian

Academic Qualifications:

Degree/ Examination	Year	Institution/ University	CGPA/ % marks
Post Doctorate Fellowship	99-01	Engine Research Center, University of Wisconsin, Madison, USA	---
PhD (Mech. Engg.)	1999	Centre for Energy Studies, Indian Institute of Technology, Delhi, India	—
MTech (Energy)	1996	Centre for Energy Studies, Indian Institute of Technology, Delhi, India	9.2 CGPA
BE (Mech. Engg.)	1994	Malviya Regional Engg. College, Jaipur University of Rajasthan, India	69.98%

Scholastic Achievements:

Fellowships

1. **Fellow of CI** (Combustion Institute, USA), March 2022
2. **Fellow of AAAS** (American Association for the Advancement of Science), February 2020.
3. **Fellow of WSSET** (World Society for Sustainable Energy Technologies), UK, October 2020
4. **Sir J C Bose National Fellow** (Science and Engineering Research Board, GoI), August 2019
5. **Fellow of RSC** (Royal Society of Chemistry, UK) October 2018.
6. **Fellow of NASI** (National Academy of Sciences India), October 2018.
7. **Fellow of INAE** (Indian National Academy of Engineering), December 2015.
8. **Fellow of ISEES** (International Society of Energy, Environment, and Sustainability), December 2015.
9. **Fellow of ASME** (American Society of Mechanical Engineers), October 2013.
10. **Fellow of SAE International** (Society of Automotive Engineers International, USA), October 2012.

Awards

11. **WSSET Innovation Award-2022** in the “Renewable Energy Systems” category by WSSET (World Society for Sustainability Energy Technology, UK) in SET-22 held in Istanbul, Turkey, from August 16-18, 2022.
12. **SAE India Foundation Guru Award-2022.**
13. **State Bank of India Endowed Chair Professor, IIT Kanpur (2022-25).**

14. Prestigious “**Shanti Swarup Bhatnagar Prize for Science and Technology - 2016**” in **Engineering Sciences**, by CSIR, Government of India. Handed over by the **Prime Minister of India, Sh Narendra Modi**, on 28th February 2019, in Vigyan Bhawan, New Delhi.
15. **Distinguished Alumnus Award-2022** from **Indian Institute of Technology Delhi**.
16. **Distinguished Alumnus Award-2021** from **Malviya National Institute of Technology, Jaipur**. In the first batch of DAA recipients from MNIT Jaipur in 58 years of their existence.
17. **India Citation Award-2018** from India by **Clarivate Analytics, Web of Science**. Among the top ten highly cited researchers (HCR) from India, among 4000 HCR researchers globally in 22 fields of inquiry.
18. MHRD’s Academic Leadership Program (**LEAP-2019**), organized by IIT Bombay [India Leg: 24th February to 8th March 2019, Hotel Taj Lands End, Mumbai; Singapore Leg: 17th March to 23rd March 2019, Nanyang Technological University (NTU), Singapore].
19. **State Bank of India Endowed Chair Professor**, IIT Kanpur (2018-21).
20. **Clarivate Analytics India Research Excellence - Citation Award - 2017 in Engineering Sciences**, 6th Edition by Web of Science.
21. **Er. M P Baya National Award in Mechanical Engineering-2017**, by Institution of Engineers, Udaipur Local Chapter.
22. **Rajib Goyal Prize** in Physical Sciences-2015 by Kurukshetra University.
23. **Poonam and Prabhu Goyal Endowed Chair Professor**, IIT Kanpur (2013-16).
24. **NASI-Reliance Industries Platinum Jubilee Award for Application Oriented Innovations in Physical Sciences** by National Academy of Sciences, Allahabad, India, August 2012.
25. **INAE Silver Jubilee Young Engineer Award – 2012**, by Indian National Academy of Engineering, India, April 2012. This award was given to only four INAE Young Engineer Awardees of the last 25 years, during INAE Silver jubilee celebrations, for continued excellence in Engineering and Research.
26. **Dr C. V. Raman Young Teachers Award: 2011 for Excellence in Engineering Education**, by IES, Bhopal, December 2011.
27. **Ralph R. Teetor Educational Award-2008**, by SAE International, USA, April 2008.
28. **Devendra Shukla Research Fellowship**, Young Chair Professorship in Energy, IIT Kanpur (09-12).
29. **INSA Young Scientist Award-2007**, by Indian National Science Academy, India, December 2007.
30. **UICT Alkyl Amine Young Scientist Award-2007**, by University Institute of Chemical Technology, Mumbai, August 2007. First Mechanical Engineer to get this Chemical Engineering Award.
31. **INAE Young Engineer Award-2005**, by Indian National Academy of Engineers, India, December 2005.
32. **AICTE Career Award for Young Teachers-2004** by All India Council for Technical Education.
33. **Young Scientist Award-2002** by Department of Science and Technology, GOI.
34. **BOYSCAST Fellowship-2002**, by Department of Science and Technology, GOI.
35. **Jawahar Lal Nehru Memorial Fund Scholarship Award**, Institute Fellowship (IITD), and CSIR’s **Senior Research Fellowship** for pursuing doctoral research at IIT, Delhi, 1996-99.
36. **National Merit Scholarship** by Board for Secondary Education, Rajasthan, 1987.

Professional Service to Journals

1. **Associate Editor** of **ASME Open Journal of Engineering** from March 2023 Onward.
2. **Editor** of **FUEL**, an Elsevier Journal, since May 2019.
3. **Associate Editor** of **ASME Journal of Energy Resource Technology** from (2013-16, 2016-19).

4. Series Editor of the Book Series Entitled "**Energy Environment and Sustainability,**" published by **Springer**, Singapore, since 2016. Series editor for 70 Springer books. Ten books are in the pipeline on various topics related to Energy, Environment, Sustainability, and Combustion.
5. **Member of the Editorial Board** of the **International Journal of Engine Research**, published by SAE International and IMechE, London, UK, since April 2016.
6. **Associate Editor** of **Journal of the Institution of Engineers (India): Series C**, since January 2016.
7. **Editor-in-Chief** of the **Journal of Energy and Environmental Sustainability** (ISSN: 2455-2259), Published by the International Society of Energy, Environment, and Sustainability, Since July 2015.
8. **Associate Editor** of **ASME Journal of Energy Resource Technology** from September 2013-2022.
9. **Review Editor** of **Frontier of Mechanical Engineering**, from 2015 onwards.
10. **Member of the editorial board** of "**International Journal of Oil, Gas and Coal Technology**" (IJOGCT), Published by Inderscience Publishers, Switzerland (2012-2015).
11. **Associate Editor** of **International Journal of Vehicle Systems Modeling and Testing**, Published by Inderscience Publishers, 2010-13.
12. **Member of the editorial board** of **Journal of Automobile Engineering**, Proceedings of IMechE, Part-D, Published by Institution of Mechanical Engineers, London, UK (2003-21).
13. **Member of the editorial board** of the **Recent Patents on Mechanical Engineering**, published by Bentham Science Publishers (2007-15).
14. **Guest Editor** for a Special Issue on **Alternative Fuels**, for the **Journal of Automobile Engineering**, Published by Institution of Mechanical Engineers, London, UK, Published as Vol. 221, issue 8, August 2007.

Professional Service to the Scientific Community and Policy Making

1. Member (President of India Nominee in Individual Capacity) of **IIT Council**, the highest policy-making body of IITs. May 2022-May 2025.
2. Member of the Board of Management of **Defence Institute of Advance Technology (DIAT)**, Pune, October 2022 Onwards).
3. Member of the Board of Governors (BOG) of **Kamala Nehru Institute of Technology (KNIT)**, **Sultanpur**, May 2022-May 2025.
4. Member of Research Council of **Central Mechanical Engineering Research Institute (CMERI)**, Durgapur (CSIR-CMERI) from July 2021-July 2024.
5. Chairman of the **Engineering Sciences Committee** of **CSIR Senior Research Associate (SRA)** selection, December 2021-December 2024.
6. AICTE Nominee Member of Selection Committee for **Bihar Public Service Commission**, Patna, February 2022-February 2025.
7. Member of the **AICTE Technical Book Writing Committee** for UG (Engineering) and Diploma, following AICTE Model Curriculum and Indian Languages, December 2021-December 2022,
8. Member of Program Management Review Committee (PMRC) for **SERB's POWER Mobility Grant** under the POWER Scheme (From May 2023- May 2026).
9. Member of the Program Advisory Committee (PAC) for the **Technology Development Programme (TDP) under the Technology Development & Transfer (TDT) Division of the Department of Science & Technology (DST)**. (From June 2022- June 2025).

10. Member of Program Management Review Committee (PMRC) for **SERB's Industry Relevant R&D (IRRD) Program 'Fund for Industrial Research Engagement (FIRE)'**– SERB-GE India FIRE PPMC (From September 2021- September 2022).
11. Member of DST **Subject Expert Committee (SEC) for the Evaluation of Project Proposals Received under "Women Scientist Scheme–B (WOS-B)** (From October 2020- October 23).
12. Member of SERB's **ABHYAAS Expert Committee (AEC) for inter-ministerial Accelerate Vigyan (AV) Scheme**– 2020 (From October 2020- October 23).
13. Member of SERB's **Core Research Grant (CRG) Project Advisory Committee Mechanical Engineering** – 2020 (2020-23).
14. Chair of CPCB Sub-committee Responsible for Making **Locomotive Emission Norms** for India, 2019.
15. Member of **Standing Committee on Emissions for Off-Road Applications**, 2018 onwards.
16. Member, Board of Studies, Department of Mechanical Engineering, **Chatrapati Shahuji Maharaj University (USJM), Kanpur** (2022-23).
17. Member, Board of Studies, Department of Mechanical Engineering, **Harcourt Butler Technological University (HBTU), Kanpur** (2020-21).
18. Member of SERB's **EMEQ Task Force Committee** – 2018, 2019, 2020 and 2021 for Project Evaluations.
19. Member of **NITI Ayog's Task Force for Conversion / Design of Methanol/ DME-based engines**, GOI (2017-2019).
20. Member of the **Electric and Hybrid Vehicles Sectional Committee of BIS (TED 27)**, Government of India (2018-2022)
21. Member of **the Taskforce on Methanol / DME**, Department of Science and Technology, GOI (2017-19).
22. Member of **Expert Group on R&D issues related to Production and Utilization of Methanol / DME**, Department of Science and Technology, GOI's **Expert Group** (2016-19).
23. Member of National Committee **Institution of Engineers (India)** of Mechanical Engineering for Certification of **Professional Competence (PE) Certification** of Engineers (2016 – onwards).
24. Member of **Technology Systems Group**, Department of Science and Technology, GOI's **Expert Group on Biofuels and Retrofitting of Engines** (2002-07).
25. **Member, Board of Associates**, American Society of Mechanical Engineering, **Internal Combustion Engine Division** (Since April 2005).
26. Reviewer for ASME Transactions, Journal of Engineering for Gas Turbine and Power, Journal of Energy Resources Technologies, SAE Transactions 2002, 2004, 2005, ASTM Lubrication manual 2001, Energy, Fuel, Applied Energy, International Journal of Hydrogen Energy, Journal of Automobile Engineering, Journal of Biomaterial and Artificial Organs, CIGR E-journal, Indian Journal of Applied Mathematics, Journal of Solar Energy, Talanta, ASME-ICED Spring and Fall Conferences 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 SAE World Congress 2003, 2004, 2005, 2006, 2007, 2008, 2016, 2017, Applied Thermal Engineering, International Journal of Engine Research, Progress in Energy and Combustion Science, Renewable Energy, Energy Conversion and Management, Fuel Processing Technology, Energy and Fuels, International Journal of Sustainable Energy, International Energy Journal, etc.
27. SAE International awarded appreciation certificates for significant contributions to the Thermal Management Activities of SAE World Congress 2005.
28. Listed in Marquis Who's who is Science and Engineering (7th edition, 2003-2004; 9th edition 2006, 10th Edition, 2007), Who's who of Emerging Leaders (1st Edition, 2006, 2nd Edition, 2007), Who's Who Asia (1st Edition, 2006, 2nd Edition, 2007), Who's Who in the World (2008 edition) is.

29. Member of **SAE Transaction Review Committees for Lubricants; Fuels; Diesel Combustion; Spark Ignition**. Member of **SAE Diesel Engine Activity Committee, Thermal Management Committee** (2005-15).

Professional Experience:

- September 2018-Present: HAG Scale-Professor of Mechanical Engineering at **Indian Institute of Technology, Kanpur**.
- October 2015: Visiting Professor, **KAIST, Daejeon, South Korea**.
- July 2014: Visiting Professor, **Hanyang University, Seoul, South Korea**.
- June 2013: Visiting Professor, **Hanyang University, Seoul, South Korea**.
- July 2013: Visiting Professor, Photonics Institute, **Technical University of Vienna, Austria**.
- June 2012: Visiting Professor, **Hanyang University, Seoul, South Korea**.
- March 2012- August 2018: Professor of Mechanical Engineering at **Indian Institute of Technology, Kanpur**.
- May-June 2010: Visiting Professor, the **Tshwane University of Technology, Pretoria, South Africa**.
- December 2007-March 2012: Associate Professor of Mechanical Engineering at **Indian Institute of Technology, Kanpur**.
- March 2001- December 2007: Assistant Professor of Mechanical Engineering at **Indian Institute of Technology, Kanpur**.
- June 2004: (One Month) Visiting Professor, Photonics Institute, **Technical University of Vienna, Austria**.
- May 2002- July 2002: (Three Months) Visiting Professor to Wolfson School of Mechanical and Manufacturing Engineering, **University of Loughborough, UK**.
- August 1999- February 2001: Post-Doctoral Research Fellow at **Engine Research Center, University of Wisconsin, Madison, USA**. The project involved developing an experimental test rig and microsensors, such as capacitance probes, fibre optic probes, miniaturized pressure transducers, etc. These sensors are employed inside the diesel engine combustion chamber to study lubricating oil consumption. US Army, Cummins Engines, and Lubrizol Corporation funded the project.
- July 1995- August 1999: Research Assistant, **Center for Energy Studies, IIT Delhi**.
- May 1995- July 1995: Graduate Engineer Trainee at **Mahindra & Mahindra Ltd, Bombay**.
- May 1993- July 1993: Vocational training at **BHEL, Hardwar**, on various turbines, thermal power station, design and manufacturing of ‘SWATT’ aircraft.
- July 1992- July 1992: Vocational training at **Jaipur Dairy** on process plant, air-conditioning plant, and boiler.
- May 1992- June 1992: Vocational training at **BHEL, Hardwar**, on manufacturing turbines and turbine blades.

Administrative Responsibilities

Period	Organization	Nature of Responsibility	Designation
2023	Coordinator of LEADS (Leadership in Science) Program of the Indian National Science Academy (INSA) and National Center for Good Governance (NCGG)	Coordinator Responsible for Organizing the Program in India (12-18 July 2023)	Chairman, Organizing Committee
2023-24	Departmental Faculty Advisory Committee (DFAC)	Recruitment and Promotions of ME Faculty	Member

2020-2022	Coordinator of LEAP (Leadership in Academics) Program of Ministry of Education (MoE) under Pandit Madan Mohan Malviya National Mission on Teachers and Teaching (PMMMNTT)	Coordinator Responsible for Organizing the Program in India (Feb-March 2021) and Foreign (June 2022) Legs	Chairman, Organizing Committee
6.2018-11.2020	IITK Research and Technology Park	Founder Director & Coordinator	Professor-in Charge
2017	Project Vishwajeet at IIT Kanpur	Energy Theme Coordinator	Coordinator
2015-16	Departmental Faculty Advisory Committee (DFAC)	Recruitment and Promotions of ME Faculty	Member
2014-16	IIT Kanpur Global Ranking Committee	Suggest strategies to improve IITK's global ranking.	Member
2013-15	Fluid and Thermal Sciences	Coordination of FTS Stream	Stream Convener
2012-13	Senate Election Committee	Conducting various Senate elections	Chairman
2011-15	SAE, IIT Kanpur	Advising SAE Club	Faculty Advisor
2010-11	IITK Golden Jubilee Celebration Committee	Member	Member
2008-10	Institute R&D Committee (IRDC)	Representing Mech. Engg. Department in IRDC	Member
17-18, 07-09, 05-06	Departmental Post Graduate Committee, Mech. Engg.	Member	Member
2006-07	Institute Security Advisory Board, IIT Kanpur	Advising IITK on security-related matters	Member
2007-08	Institute Energy Conservation Committee, IIT Kanpur	Advising IITK on energy conservation	Member
2005-08	Hall of Residence 2, IIT Kanpur	Warden	Warden
2005-07	Institute Works Department, IIT Kanpur	Member, IWD Advisory Board	Member
2002-06, 2007-08	Program Post-Graduate Committee, Environmental Engineering Program, Civil Engineering Department, IIT Kanpur	External Member	Member
2006-07	Program Post-Graduate Committee, Environmental Engineering Program, Civil Engineering Department, IIT Kanpur	Coordinating the Master's Program of Environmental Engineering and Management	Chairman
2002-04	Energy Conversion Laboratory, Mechanical Engineering Department, IIT Kanpur	Coordinating Various Laboratory Development & Routine Activities	Coordinator
2005 onwards	Engine Research Laboratory, Mechanical Engineering Department, IIT Kanpur	Developing the Lab and Research Activities related to engines	Laboratory Incharge
2002-04	Transport Users Committee, IIT Kanpur	The interface between Transport Users & the Administration	Chairman
2001-02	Association of Mechanical Engineers, Dept. of Mechanical Engineering, IIT Kanpur	Coordinating Departmental Cultural and Professional Association	Faculty Advisor

Publications

Doctoral Dissertation:

Performance Evaluation and Tribological Studies on A Biodiesel Fuelled Compression Ignition Engine,
 Doctoral thesis, Center for Energy Studies, IIT Delhi (December 1996 – August 1999) (Thesis advisor: Prof. L M Das)

Master's Dissertation:

Performance Evaluation and Emission Characteristics of A Compression Ignition Engine Using Esterified Biodiesel, Master's thesis, Center for Energy Studies, IIT Delhi (July 1995 – December 1996) (Thesis advisor: Prof. L M Das)

Books (Sixty-Five):

1. **Metal Nanocomposites for Energy and Environmental Applications**, 525 pages, Published by **Springer, Singapore (2022)**, (Eds.) Swatantra P. Singh, **Avinash Kumar Agarwal**, Kamlesh Kumar, Simant Kumar Srivastav (DOI: 10.1007/978-981-16-8599-6; ISBN # 978-981-16-8598-9).
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118. Shrawan Kumar Singh, Dhananjay Kumar Srivastava, **Avinash Kumar Agarwal**, Mukesh Sharma, “Experimental Investigation of the Effect of EGR on Wear Performance of a Compression Ignition Engine,” ASME-ICES 2005-1104, **ASME Internal Combustion Engine Division, Spring Technical Conference** (ASME-ICED STC-2005), April 2005, Chicago, USA. (DOI: 10.1115/ICES2005-1104; ISBN # 0-7918-3753-X)

119. Sumit Pramanik, **Avinash Kumar Agarwal**, K. N. Rai, "Development Of High Strength Hydroxyapatite For Hard Tissue Replacement," Paper No. P13, **Indo-Australian Conference on Biomaterials Implantable Devices and Tissue Engineering**, January 2005, Thiruvananthapuram, India.
120. Mani Bijoy Varghese, Sandeep Kumar Goyal, **Avinash Kumar Agarwal**, "Numerical and Experimental Investigation of Oil Jet Cooled Piston," SAE 2005-01-1382, **SAE World Congress-2005**. April 2005, Detroit, USA. (Impact Factor₂₀₁₉: 0.51; DOI: 10.4271/2005-01-1382; ISSN # 0148-7191).
121. Anirudh Gautam, **Avinash Kumar Agarwal**, "Evaluation of Steel Cap Piston for Up-gradation of Diesel Electric Locomotives for Indian Railways," SAE 2005-01-1645, **SAE World Congress-2005**. April 2005, Detroit, USA. (Impact Factor₂₀₁₉: 0.51; DOI: 10.4271/2005-01-1645; ISSN # 0148-7191).
122. Shailendra Sinha, **Avinash Kumar Agarwal**, "Performance Evaluation of a Biodiesel (Rice Bran Oil Methyl Ester) Fuelled Transport Diesel Engine," SAE 2005-01-1730, **SAE World Congress-2005**. April 2005, Detroit, USA. (Impact Factor₂₀₁₉: 0.51; DOI: 10.4271/2005-01-1730; ISSN # 0148-7191).

2004

123. Shrawan Kumar Singh, **Avinash Kumar Agarwal**, Mukesh Sharma, "Heavy Metal And Soot Addition In Lubricating Oil Of EGR Operated Diesel Engine," **IASTA Meeting and International Conference on Aerosols, Clouds and Indian Monsoon**, November 2004, IIT Kanpur, Published in IASTA Bulletin, Vol. 16(1&2), pp. 341-345, November 2004. (ISSN # 0971-4510)
124. K V L Bharathi, Dipankar Dwivedi, **Avinash Kumar Agarwal**, Mukesh Sharma, "Diesel Exhaust Particulates Characterization for Heavy Metals," **IASTA Meeting and International Conference on Aerosols, Clouds and Indian Monsoon**, November 2004, IIT Kanpur, Published in IASTA Bulletin, Vol. 16(1&2), pp 92-96, November 2004. (ISSN # 0971-4510)
125. Jayashree Bijwe, **Avinash Kumar Agarwal**, Atul Sharma, "Assessment of Lubricity of Biodiesel Blends in Reciprocating Wear Mode," SAE 2004-01-3068, **SAE Powertrain & Fluid Systems Conference & Exhibition -2004**, October 2004, Tampa, FL, USA. (Impact Factor₂₀₁₉: 0.51; DOI: 10.4271/2004-01-3068; ISSN # 0148-7191).
126. Dhananjay Kumar Srivastava, **Avinash Kumar Agarwal**, "Experimental Investigations on the Effect of Liner Surface Properties on Wear in Non-Firing Engine Simulator" SAE 2004-01-0605, **SAE World Congress**, April 2004, Detroit, USA. (Impact Factor₂₀₁₉: 0.51; DOI: 10.4271/2004-01-0605; ISSN # 0148-7191).
127. Mani Bijoy Varghese, **Avinash Kumar Agarwal**, "Numerical Investigations of Piston Cooling Using Oil Jet," SAE 2004-28-0061, **SAE India International Mobility Conference - 2004**, New Delhi, India and published in "**Proceedings of Third International Conference on Synergy of Fuel and Automotive Technology for a Cleaner Environment**" Allied Publishers, India, pp 397-403, January 2004. (Impact Factor₂₀₁₉: 0.51; DOI: 10.4271/2004-28-0061; ISBN # 0-7680-1441-7; ISSN # 0148-7191).
128. Shailendra Sinha, **Avinash Kumar Agarwal**, "Development and Characterization of Biodiesel from Non-edible Vegetable Oils of Indian Origin," SAE 2004-28-0079, **SAE India International Mobility Conference-2004**, New Delhi, India and published in "**Proceedings of Third International Conference on Synergy of Fuel and Automotive Technology for a Cleaner Environment**" Allied Publishers, India, pp 513-518, January 2004. (Impact Factor₂₀₁₉: 0.51; DOI: 10.4271/2004-28-0079; ISBN # 0-7680-1441-7).

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129. **Avinash Kumar Agarwal**, "Lubricating Oil Tribology Of A Biodiesel-Fuelled Compression Ignition Engine," **ASME Internal Combustion Engine Division Fall Technical Conference**, (ASME-ICED FTC-2003), Salzburg, Austria, Paper No. ICES 2003-609, ICE-Vol. 40 entitled "Design and Control of Diesel and Natural Gas Engines for Industrial and Rail Transportation Applications," Eds. N X Blythe, pp 427-442, September 2004. (DOI: 10.1115/ICES2003-0609; ISBN # 0-7918-4161-8).
130. Sakyasingh Tripathy, **Avinash Kumar Agarwal**, Shailendra Sinha, Mritunjay Kumar Shukla, "Effect of EGR on the Exhaust Gas Temperature and Exhaust Opacity in an Experimental Diesel Engine," Poster No. L090, pp. 225, **5th International Petroleum Conference and Exhibition (PETROTECH 2003)**, January 2003, New Delhi, India.

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131. Vivek Kumar Varshney, Kumar Gaurav, Sakyasingh Tripathy, **Avinash Kumar Agarwal**, "Design of an Experimental EGR System for a Two Cylinder Diesel Engine," Paper No. ISRTHMT 02-152, **International Symposium on Recent Trends in Heat and Mass Transfer**, January 2002, IIT Guwahati.

2001

132. **Avinash Kumar Agarwal**, Jayashree Bijwe, Lalit Mohan Das, "Wear Assessment in Biodiesel Fueled Compression Ignition Engine," **ASME Internal Combustion Engine Division Spring Technical Conference**, (ASME-ICED STC-2001, April 2001, Philadelphia, PA, and published in the Proceedings Vol. 1 (Ed. Victor W Wong), April 2001. (DOI: 10.1115/1.1501079; ISBN # 0-7918-1669-9).

2000

133. **Avinash Kumar Agarwal**, Jayashree Bijwe, Lalit Mohan Das, "Effect of Biodiesel Utilisation on Wear of Vital Parts in Compression Ignition Engine," **ASME Internal Combustion Engine Division Fall Technical Conference**, (ASME-ICED FTC-2000) September 2000, Peoria, Illinois and published in Proceedings entitled "Large Bore Engine Design, Natural Gas Engines, and Alternative Fuels- Vol. 2" (Ed. S R Bell), pp 45-54, September 2000. (DOI: 10.1115/1.1454114; ISBN # 0-7918-1896-9).
134. **Avinash Kumar Agarwal**, Lalit Mohan Das, "Biodiesel Development and Characterisation for Use as a Fuel in Compression Ignition Engine," **ASME Internal Combustion Engine Division Spring Technical Conference**, (ASME-ICED STC-2000), April 2000, San Antonio, TX and published in Proceedings "Alternative fuels, dimethyl ether, and natural gas engines" (Ed. V W Wong, MIT), pp 17-25, April 2000. (DOI: 10.1115/1.1364522; ISBN # 0-7918-1664-8).

1999

135. **Avinash Kumar Agarwal**, S N Naik, Lalit Mohan Das, "Biodiesel Production from Non-Edible Oils and Performance Evaluation in CI Engine," Paper No. 801, **American Oil Chemists Society-Oil Technologists Association of India's International Conference & Exhibition on Oilseeds & Vegetable Oil Processing**, February 1999, New Delhi.
136. **Avinash Kumar Agarwal**, Y V Raghvendra Reddy, S N Naik, "Biodiesels for C I Engines: An Obvious Choice for Next Millennium," **XII International Congress & Exhibition: R & D Vision - 21st century**, New Delhi, pp 161 – 173, January 1999.
137. Y V Raghvendra Reddy, **Avinash Kumar Agarwal**, Lalit Mohan Das, "Compressed Natural Gas - A Future Perspective," **XII International Congress & Exhibition: R & D Vision - 21st century**, New Delhi, pp 151 – 160, January 1999.

1997

138. **Avinash Kumar Agarwal**, Lalit Mohan Das, "Smoke Emission Characteristics of a Diesel Engine Using Linseed Oil Esters," **The 3rd International Conference on New Energy Systems and Conversions**, Kazan, Russia, pp 239 – 242, September 1997.
139. Lalit Mohan Das, **Avinash Kumar Agarwal**, "Performance and Emission Characteristics of a Diesel Engine Using Linseed Oil Esters," **World Car Conference'97**, January 1997, pp 15, University of California, Riverside, USA.

Refereed National Conferences/ Published in Proceedings (Eleven):

2008

140. Dhananjay Kumar Srivastava, **Avinash Kumar Agarwal**, "Particulate Matter Emissions from Single Cylinder Diesel Engine: Effect of Engine Load on Size and Number Distribution," Presented and Published in the proceedings of **Technex 2008, 2nd Global Automotive Technology Conference**, April 28-30, 2008, New Delhi, India.

2006

141. **Avinash Kumar Agarwal**, "Alternative Fuels: Economics of Biodiesel as a Transport Fuel for Urban India," SIAM Technex-2006 Conference "Next Paradigms in Automotive Technology; Safety, Emissions and Beyond," February 2006, Jaipur, India.

2004

142. Deepak Agarwal, **Avinash Kumar Agarwal**, "Experimental Study of Linseed Oil as Alternative Fuel for Diesel Engine," Presented and Published in the Proceedings of **National Conference on Biodiesel**, held at CIAE, Bhopal, December 2004.
143. Shailendra Sinha, **Avinash Kumar Agarwal**, "Transesterification of vegetable oils and Utilization as a Fuel for Diesel Engine," Presented and Published in the Proceedings of **National Conference on Biodiesel**, held at CIAE, Bhopal, December 2004.

2003

144. **Avinash Kumar Agarwal**, Sanjeev Garg, Nitin Kaistha, Shailendra Sinha, "Transesterification of Vegetable Oils for Biodiesel Production: Engine Testing for Performance and Emissions," presented and published in the proceedings of **XVIII National Conference on I C Engines and Combustion** (Eds. P S Mehta, T Sundararajan), organized by Combustion Institute (India Section), PP 571-580, December 2003, Thiruvananthapuram, pp 571-580., December 2003.
145. **Avinash Kumar Agarwal**, Sanjeev Garg, "Characterisation and Utilisation of Biodiesel as an Alternative Fuels for Diesel Engines," presented and published in the proceedings of "A National Consultative Workshop On Scientific Strategies For Production Of Non-Edible Vegetable Oils For Use As Biofuels" **Policy document preparation meeting on Biodiesel Fuels** by DST, Government of India, August 30-31, 2003, IISc Bangalore.
146. Sanjeev Garg, **Avinash Kumar Agarwal**, "Transesterification of Vegetable oils for Biodiesel Production: Process considerations, Present Status and Future Challenges," presented and published in the proceedings of "A National Consultative Workshop On Scientific Strategies For Production Of Non-Edible Vegetable Oils For Use As Biofuels" **Policy document preparation meeting on Biodiesel Fuels** by DST, Government of India, August 30-31, 2003, IISc Bangalore.

1998

147. **Avinash Kumar Agarwal**, “Vegetable Oil vs Diesel Fuel: Development And Use Of Biodiesels In A Compression Ignition Engine”, presented and published in the proceedings of **National Solar Energy Convention-98**, Nov. 30-Dec. 2, 1998, Roorkee.

1996

148. **Avinash Kumar Agarwal**, Dharmendra Kumawat, GD Agarwal, Yogesh Jain “Design, Fabrication & Experimentation Of Single Basin, Single Slope Solar Still” presented at ‘Seminar and Exhibition’ on Student’s project, Department of Science & Technology, Government of Rajasthan, September 1996, Jaipur.

1994

149. **Avinash Kumar Agarwal**, Bharat Maheshwari “Biomass: A Renewable Source Of Energy And Fuels” Presented at National Seminar on ‘In defence of Natural Resources’ Institution of Engineers (India), September 1994, Jaipur.

150. **Avinash Kumar Agarwal** “Cogeneration: A DSM Option For India” Presented and published in National Seminar on ‘In defence of Natural Resources’ Institution of Engineers (India), September 1994, Jaipur.

Posters in International Refereed Conferences (Eighteen):

2020

1. Vishnu Singh Solanki and Avinash Kumar Agarwal, 2020. Experimental Evaluation of Light-Duty Gasoline Compression Ignition (GCI) Engine, Poster Presented in KAUST, February 2020.

2019

2. Anshul Soni, **Avinash Kumar Agarwal**, “Reactivity Controlled Compression Ignition Engine,” Poster No, 139, Presented in the Fourth International Conference on Sustainable Energy and Environmental Challenges (IV-SEEC), 27th -29th November 2019, NEERI Nagpur, India.

3. Sagar Srivastava, **Avinash Kumar Agarwal**, “Methanol (M85) Fuelled Two-Wheeler EFI Prototype Development,” Poster No, 143, Presented in the Fourth International Conference on Sustainable Energy and Environmental Challenges (IV-SEEC), 27th -29th November 2019, NEERI Nagpur, India.

4. Tushar Kakkar, Vishnu Singh Solanki, **Avinash Kumar Agarwal**, “Prospects of the Gasoline Compression Ignition (GCI) Engine-Fuel System,” Poster No, 144, Presented in the Fourth International Conference on Sustainable Energy and Environmental Challenges (IV-SEEC), 27th -29th November 2019, NEERI Nagpur, India.

2018

5. Akhilendra Pratap Singh, Deepak Mishra, **Avinash Kumar Agarwal**, “Biodiesel Spray Characteristics and its Correlation with Engine Performance, Combustion and Emission Characteristics,” Poster No. 29, Presented in the Second International Conference on Sustainable Energy and Environmental Challenges (SEEC-2017), 31st December 2017- 3rd January 2018, IISC Bangalore, India.

6. Akhilendra Pratap Singh, Tushar Agarwal, **Avinash Kumar Agarwal**, “Methanol Utilization in Reactivity Controlled Compression Ignition Combustion Engine,” Poster No. 30, Presented in the Second International Conference on Sustainable Energy and Environmental Challenges (SEEC-2017), 31st December 2017- 3rd January 2018, IISC Bangalore, India.

7. Nikhil Sharma, Manish Trivedi, **Avinash Kumar Agarwal**, “Air Pollution in Delhi A Major Environmental and Public Health Challenge,” Poster No. 31, Presented in the Second International

Conference on Sustainable Energy and Environmental Challenges (SEEC-2017), 31st December 2017- 3rd January 2018, IISC Bangalore, India.

8. Rajesh Kumar Prasad, Dhnanjay Kumar, **Avinash Kumar Agarwal**, "H₂ Enriched CNG as Alternative Fuel for Internal Combustion Engine," Poster No. 34, Presented in the Second International Conference on Sustainable Energy and Environmental Challenges (SEEC-2017), 31st December 2017- 3rd January 2018, IISC Bangalore, India.
9. Chetankumar Patel, Joonsik Hwang, Choongsik Bae, Tarun Gupta, **Avinash Kumar Agarwal**, "Spray Atomization Characteristics for Biodiesel at Varying Injection Pressure and at Different Locations After Breakup Length," Poster No. 37, Presented in the Second International Conference on Sustainable Energy and Environmental Challenges (SEEC-2017), 31st December 2017- 3rd January 2018, IISC Bangalore, India.
10. Vikram Kumar, Sujeet Kumar Sinha, Vishnu Singh Solanki, **Avinash Kumar Agarwal**, "Tribological Investigation of Hard Coating on Steel," Poster No. 38, Presented in the Second International Conference on Sustainable Energy and Environmental Challenges (SEEC-2017), 31st December 2017- 3rd January 2018, IISC Bangalore, India.
11. Shivashish Kumar Gupta, Prashumn Wrekonge, Tushar Agarwal, Vishal Kumar, **Avinash Kumar Agarwal**, "Development of 4-Stroke Single Cylinder Methanol Fuelled Direct Injection Spark Ignition Engine," Poster No, 109, Presented in the Second International Conference on Sustainable Energy and Environmental Challenges (SEEC-2017), 31st December 2017- 3rd January 2018, IISC Bangalore, India.
12. Vikram Kumar, Sujeet Kumar Sinha, **Avinash Kumar Agarwal**, "An Alternative Lubrication for Automotive Engines," Poster No, 115, Presented in the Third International Conference on Sustainable Energy and Environmental Challenges (III-SEEC), 18th - 21st December 2018, IIT Roorkee, India.

2017

13. Akhilendra Pratap Singh, **Avinash Kumar Agarwal**, "Effect of Fuel Injection Pressure and EGR on Diesohol Fuelled PCCI Engine," Poster Presented in the First International Conference on Sustainable Energy and Environmental Challenges, 26-28 February 2017 at Center of Innovative and Applied Bioprocessing Mohali, India.
14. Akhilendra Pratap Singh, **Avinash Kumar Agarwal**, "Biodiesel Spray Characteristics at Different Fuel Injection Pressures," Poster Presented in the First International Conference on Sustainable Energy and Environmental Challenges, 26-28 February 2017 at Center of Innovative and Applied Bioprocessing Mohali, India.
15. Chetankumar Patel, Nikhil Sharma, Nachiketa Tiwari, **Avinash Kumar Agarwal**, "Droplet Size and Velocity Measurement of Karanja Biodiesel Sprays," Poster Presented in the First International Conference on Sustainable Energy and Environmental Challenges, 26-28 February 2017 at Center of Innovative and Applied Bioprocessing Mohali, India.
16. Dev Prakash Satsangi, Nachiketa Tiwari, **Avinash Kumar Agarwal**, "Effect of Oxygen Content of Diesohol on Engine Noise and Vibrations," Poster Presented in the First International Conference on Sustainable Energy and Environmental Challenges, 26-28 February 2017 at Center of Innovative and Applied Bioprocessing Mohali, India.
17. Joonsik Hwang, Choongsik Bae, Chetankumar Patel, **Avinash Kumar Agarwal**, Tarun Gupta, "Comparison of Macroscopic Spray Characteristics of Waste Cooking Oil, Jatropha, Karanja Biodiesels," Poster Presented in the First International Conference on Sustainable Energy and Environmental Challenges, 26-28 February 2017 at Center of Innovative and Applied Bioprocessing Mohali, India.

18. Nikhil Sharma, **Avinash Kumar Agarwal**, “Emissions from a Gasohol Fuelled Homogeneous Charge GDI Engine,” Poster Presented in the First International Conference on Sustainable Energy and Environmental Challenges, 26-28 February 2017 at Center of Innovative and Applied Bioprocessing Mohali, India.
19. Vikram Kumar, Sujeet K. Sinha, **Avinash Kumar Agarwal**, “Epoxy composite coatings for extreme condition application,” Poster Presented in the First International Conference on Sustainable Energy and Environmental Challenges, 26-28 February 2017 at Center of Innovative and Applied Bioprocessing Mohali, India.

Non-Technical/Policy-Based Publications (Nine):

1. **Avinash Kumar Agarwal***, Indian Railways Electrification: Short-Sighted and Dangerous, **Rail Business**, pp 32-33, Vol. 9, Issue 44, May 2018. (ISSN # 0976-254X)
2. **Avinash Kumar Agarwal***, Mishrit Yatayat wale Mahanagron ke liye CNG aik swatch Urja Samadhan, **Antas** (IIT Kanpur Hindi Magazine) Vol. 14, pp 46-48, August 2018.
3. **Avinash Kumar Agarwal***, Atul Dhar, Experimental Investigations on Effect of Karanja Biodiesel on Engine Performance, Combustion and Durability in Collaboration with Shell Technology India Private Limited, **Directions**, Vol. 13(1), pp 93-99, November 2013.
4. **Avinash Kumar Agarwal***, and Anirudh Gautam, Development of an Electronic Fuel Injection System for a 4-stroke Locomotive Diesel Engine of Indian Railways, **Directions**, Vol.13 (1), pp 110-120, November 2013.
5. **Avinash Kumar Agarwal***, Biofuels Research at Engine Research Laboratory, **Directions**, Vol.9 (1), pp 49-55, December 2013.
6. Dhananjay Kumar Srivastava, **Avinash Kumar Agarwal***, Laser Fired Low Emission Futuristic Internal Combustion Engine, **Directions**, Vol.9 (1), pp 75-78, November 2008.
7. **Avinash Kumar Agarwal**, “Electrification and Bio-energy Options in Rural India: Part II: Bio-energy options and Rural India,” **India Infrastructure Report 2007** (Rural Infrastructure), 3i network, Oxford University Press, pp 165-177, 2007. (ISBN-10: 0-19-568550-4)
8. **Avinash Kumar Agarwal**, “Sustainable Transport Fuels for Urban Transport,” **India Infrastructure Report 2006** (Urban Infrastructure), 3i network, Oxford University Press, pp 120, 2006. (ISBN-10: 0-19-567874-5)
9. **Avinash Kumar Agarwal**, “Vehicular Pollution Issues in India,” **India Infrastructure Report 2006** (Urban Infrastructure), 3i network, Oxford University Press, pp 121, 2006. (ISBN-10: 0-19-567874-5)

Patents (Three):

1. Design of an integrated system for Using Straight Vegetable Oils as Fuels for Diesel Engines, Inventors: Dr Avinash Kumar Agarwal, Deepak Agarwal. Patent No. 269719, Patent Application No. 587/Del/2006, dated: 07-03-2006. A patent was granted on 03.11.2015 by The Patent Office, Government of India.
2. Biodiesel Plant for Conversion of Vegetable Oil to Biodiesel and a Process Thereof, Inventor: Dr Avinash Kumar Agarwal, Patent No. 267538, Patent Application No. 2114/DEL/2006 dated: 26-09-2006. A patent was granted on 22.07.2015 by The Patent Office, Government of India.

3. Fuel Vaporizer, Patent Application No. 3196/DEL/2013, dated October 28, 2013, Inventors: Dr Avinash Kumar Agarwal, Akhilendra Pratap Singh.

Teaching at IIT Kanpur:

Course No. & Title	UG/PG	Number of Times	Developed by me?
ME341A: Heat Transfer	UG	2 (2016-17, II Sem, 2018-19 II Sem)	No
ME 301: Energy Systems I	UG	6 (06-07 II Sem, 07-08 II Sem, 11-12 I Sem, 12-13 II Sem, 13-14 I Sem, 21-22 I Sem)	No
ME304: Energy Conversion	UG	1 (01-02 II Sem)	No
ME359: Internal Combustion Engines	UG	7 (03-04 I Sem, 04-05 I Sem, 05-06 I Sem, 15-16 I Sem, 18-19 I Sem, 20-21 II Sem, 22-23 I Sem)	No
ESO 201: Thermodynamics (Tutorial)	UG	18 (01-02 I Sem, 02-03 I Sem, 04-05 I Sem, 06-07 I Sem, 07-08 I Sem, 07-08 II Sem, 09-10 I Sem, 10-11 I Sem, 10-11 II Sem, 11-12 I Sem, 12-13 I Sem, 14-15 I Sem, 16-17 I Sem, 17-18 I Sem, 17-18 II sem, 18-19 I Sem, 19-20 I Sem, 20-21 I Sem)	No
ESO 201: Thermodynamics (Instructor)	UG	2 (14-15 II Sem, 2023-24 I Sem)	No
ME100: Introduction to Profession	UG	2 (06-07 II Sem, 08-09 II Sem)	No
ME372: Energy Conversion (Laboratory)	UG	3 (01-02 II Sem, 02-03 II Sem, 05-06 I Sem)	No
TA201N: Introduction to Manufacturing Processes (Tutorial)	UG	3 (03-04 II Sem, 05-06 II Sem, 09-10 II Sem)	No
ME641: Conduction and Radiation	PG	2 (01-02 I Sem, 02-03 I Sem)	No
ME690: Alternate Fuels and Advances in IC Engines	PG	19 (02-03 II Sem, 03-04 II Sem, 04-05 II Sem, 05-06 II Sem, 06-07 I Sem, 07-08 I Sem, 08-09 II Sem, 09-10 II Sem, 10-11 II Sem, 11-12 I Sem, 12-13 I sem, 13-14 I sem, 14-15 I Sem, 15-16 I Sem, 16-17 I Sem, 17-18 I Sem, 19-20 I Sem, 20-21 I Sem, 21-22 II Sem, 22-23 II Sem)	Yes
ME691: Engine Management	PG	5 (08-09 I Sem, 09-10 I Sem, 10-11 I Sem, 13-14 II Sem, 19-20 II Sem)	Yes
ME741: Combustion Engines and Pollution	PG	3 (05-06 II Sem, 15-16 II Sem, 17-18 II Sem)	No

Teaching Citations (Teaching appreciation by Senate and Director, IITK)

1. 2001-02 (I Sem: ESO 202 Tut);
2. 2002-03 (I Sem: ME641);
3. 2005-06 (I sem: ME 690);
4. 2006-07 (I Sem: ME690);
5. 2009-10 (I Sem: ME 691);
6. 2010-11 (I Sem: ESO 202 Tut);
7. 2010-11 (I Sem: ME691);
8. 2010-11 (II Sem: ME690);
9. 2011-12 (I Sem: ESO 202 Tut);
10. 2012-13 (I Sem: ME 690A);
11. 2014-15 (I Sem: ME690A);
12. 2015-16 (I Sem: ME 690A).

13. 2016-17 (I Sem: ME 690A);
14. 2017-18 (I Sem: ME 690A);
15. 2019-20 (I Sem: ME 690A).
16. 2022-23 (I Sem: ME359A).

Short-Term Training Programs (Nineteen):

1. A one-week short course sponsored by Quality Improvement Program for engineering college teachers and industry professionals entitled "Alternative fuels, emissions and latest advances in Diesel engines" from 23-28th December 2002. (Coordinator: Dr Avinash Kumar Agarwal).
2. A one-week short course sponsored by Quality Improvement Program for engineering college teachers and industry professionals entitled "Renewable Energies and Alternative Fuels" from 1st to 5th December 2003. (Coordinator: Dr Avinash Kumar Agarwal).
3. A one-week short course sponsored by Chattisgarh Government for engineering college teachers entitled "Alternative Fuels and advances in Engines" at Government Engineering College, Raipur from 16-20th October 2004. (Coordinator: Dr Avinash Kumar Agarwal).
4. A one-week short course sponsored by Quality Improvement Program for engineering college teachers and industry professionals entitled "Alternative Fuels and Emission Control" from 24th-28th November 2004. (Coordinator: Dr Avinash Kumar Agarwal).
5. A one-week short course sponsored by Quality Improvement Program for engineering college teachers and industry professionals entitled "Advances in Materials & Fuel Technologies for Automotive Applications" from 8th-12th June 2006. (Coordinator: Dr Avinash Kumar Agarwal, Dr Ashish Garg)
6. A one-week short course sponsored by Research Designs and Standards Organization, Indian Railway for engineers from Engine Development Directorate "Fundamentals of Internal Combustion Engines" from 23rd – 27th March 2007. (Coordinator: Dr Avinash Kumar Agarwal)
7. A one-week short course sponsored by Research Designs and Standards Organization, Indian Railway for engineers from Engine Development Directorate "Advanced Internal Combustion Engine Technology" from 13th – 17th September 2007. (Coordinator: Dr Avinash Kumar Agarwal)
8. A one-week short course sponsored by Quality Improvement Program for engineering college teachers and industry professionals entitled "Diesel Engine Management" from 18th-22nd March 2009. (Coordinator: Dr Avinash Kumar Agarwal)
9. A one-week short course sponsored by Quality Improvement Program for engineering college teachers and industry professionals entitled "Diesel Particulate and NOx Emissions" February 14 - 18, 2010. (Coordinator: Dr Avinash Kumar Agarwal, Dr Tarun Gupta)
10. A one-week short course sponsored by Quality Improvement Program for engineering college teachers and industry professionals entitled "Diesel Particulate and NOx Emissions: Formation and Control," September 10-14, 2010. (Coordinator: Dr Avinash Kumar Agarwal, Dr Tarun Gupta)
11. A one-week short course sponsored by Quality Improvement Program for engineering college teachers and industry professionals entitled "Advanced Engine Combustion and Diagnostics," June 23- 28, 2011. (Coordinator: Dr Avinash Kumar Agarwal, Dr Tarun Gupta)
12. A one-week short course sponsored by Quality Improvement Program for engineering college teachers and industry professionals entitled "Engine Emission Formation and Control," June 28- July 3, 2011. (Coordinator: Dr Tarun Gupta, Dr Avinash Kumar Agarwal)

13. A one-week short course sponsored by Quality Improvement Program for engineering college teachers and industry professionals entitled “Advanced Engine Combustion and Emission Control” from July 17-22, 2012. (Coordinator: Dr Avinash Kumar Agarwal)
14. A one-week short course sponsored by Quality Improvement Program for engineering college teachers and industry professionals entitled "Advanced Engine Technologies for Combustion and Emission Control" May 1-5, 2013 (Coordinator: Dr Avinash Kumar Agarwal).
15. A one-week short course sponsored by Quality Improvement Program for engineering college teachers and industry professionals entitled "Advanced Combustion, Emissions, and Modeling Aspects," May 7-11, 2014 (Coordinator: Dr Avinash Kumar Agarwal).
16. A two-week TEQIP short course for the UG students of Govt. College of Engineering and Textile Technology, Berhampore, West Bengal, entitled “Combustion: Theory and Industrial Applications” from March 10-19, 2017 (Co-Coordinator: Dr Avinash Kumar Agarwal).
17. A two-week TEQIP short course for the UG students of Govt. Women Engineering College Ajmer, Rajasthan, entitled “IC Engines, Combustion: Theory and Industrial Applications” from March 20-30, 2017 (Coordinator: Dr Avinash Kumar Agarwal).
18. A one-week short course sponsored by the Quality Improvement Program for engineering college teachers and industry professionals entitled “Advanced Course on Engine Combustion, Diagnostics, Emissions Control, and Emerging Fuels” from August 3 to 7, 2018. (Coordinator: Dr Avinash Kumar Agarwal).
19. A one-week short course sponsored by the Quality Improvement Program for engineering college teachers and industry professionals entitled “Design of Engines for Emission Compliance” from April 17-21, 2019. (Coordinator: Dr Avinash Kumar Agarwal).

Conferences/ Symposium Organized (Thirteen):

1. Organizing Secretary for the “**International Workshop on Advances in Combustion Science and Technology**” from December 31st, 2007, to January 2nd, 2008, at IIT Kanpur. (Co-organizer: Prof. Abhijit Kushari, AE)
2. Organizing Chairman, Finance for the “**Energy Conclave**” attended by more than 500 delegates, Eight days mega energy event from January 8th – 15th, 2010, at IIT Kanpur.
3. Organizing Secretary for the “**International Workshop on Advances in Combustion Science and Technology**” from January 10th to January 12th, 2010, at IIT Kanpur. (Co-organizer: Prof. Abhijit Kushari, AE)
4. Organizing Secretary for the 1st **ISEES International Workshop on “Novel Combustion Concepts for Sustainable Energy Development**” from 2nd January 2014 - 4th January 2014 at IIT Kanpur. (Co-organizer: Prof. Abhijit Kushari, AE)
5. Organizing Secretary for the 2nd **ISEES International Workshop on “Sustainable Energy, Power, and Propulsion**” January 5th -7th, 2015, at Jadavpur University, Kolkata, India. (Co-organizer: Prof. Achintya Mukhopadhyay, JU; Prof. Swarnendu Sen, JU, Prof. Abhijit Kushari, AE, IITK)
6. Organizing Secretary for the 3rd **ISEES International Workshop on Sustainable Energy, Environment & Safety with Railway Centric Theme,**” December 21st -23rd. 2015, at Hotel Clarks Awadh, Lucknow, India. (Co-organizer: Sh. R N Misra, RDSO, Lucknow, Sh. Pradeep Gupta, RITES, Gurgaon)
7. Conference Chair for the 1st **ISEES International Conference on “Sustainable Energy and Environmental Challenges (SEEC-2017),**” 26th-28th February 2017 at Center of Innovative and

- Applied Bioprocessing (CIAB), Mohali, India. (General Chair: Prof. Ashok Pandey, CIAB, Mohali, Organizing Secretaries: Prof. Santanu De, Prof. Atul Dhar, Prof. D K Srivastava).
8. Conference Co-Chair for the **2nd ISEES International Conference on “Sustainable Energy and Environmental Challenges (SEEC-2018),”** 31st December 2017-3rd January 2018 at J N Tata Auditorium, Indian Institute of Science, Bangalore, India. (General Chair: Prof. Pradip Dutta, Prof. Ashok Pandey; Conference Co-Chair: Prof. Saptarshi Basu; Organizing Secretaries: Dr Swetaprovo Chaudhuri, IISc Bangalore, Dr Santanu De, IIT Kanpur, Dr Atul Dhar, IIT Mandi, and Dr Venkata Mohan, ICT Hyderabad).
 9. Conference Co-Chair for the **3rd ISEES International Conference on “Sustainable Energy and Environmental Challenges (3rd SEEC),”** 18th -21st December 2018 at Indian Institute of Technology, Roorkee, India. (General Chair: Prof. Ashok Pandey; Conference Co-Chair: Prof. BR Gurjar and Prof. S L Soni).
 10. Conference Co-Chair for the **4th ISEES International Conference on “Sustainable Energy and Environmental Challenges (4th SEEC),”** 27-29th November 2019, at National Environmental Engineering Research Institute, Nagpur, India. (General Chair: Prof. Ashok Pandey; Conference Co-Chair: Prof. P Padole, Organizing Secretary: Dr Nitin Labhsetwar, NEERI).
 11. Conference Chair for the **5th ISEES International Conference on “Sustainable Energy and Environmental Challenges (5th SEEC),”** in Virtual Mode from 19-21st December 2020 via Zoom. (General Chair: Prof. Ashok Pandey; Conference Conveners: Dr Pravesh Chandra Shukla, IIT Bhilai, Dr Swatantra Pratap Singh, IIT Bombay, Dr Anil K Patel, CEES, Lucknow, Organising Secretary: Dr Akhilendra Pratap Singh, Sh. Dhananjay Kumar, Utkarsha Sonawane, IIT Kanpur)
 12. Conference Chair for the **6th ISEES International Conference on “Sustainable Energy and Environmental Challenges (6th SEEC),”** in Hybrid Mode from 27-29th December 2021 at Hotel Ramada, Lucknow. (General Chair: Dr Ashok Pandey, IITR, Lucknow; Conveners: Dr Akhilendra Pratap Singh, IIT BHU, Varanasi, Dr Sunita Varjani, GPCB, Gandhinagar, Mr Dhananjay Kumar, IIT Kanpur, Ms Utkarsha Sonawane, IIT Kanpur)
 13. Conference Chair for the **7th ISEES International Conference on “Sustainable Energy and Environmental Challenges (7th SEEC),”** from 16-18th December 2022 at IIT BHU, Varanasi. (General Chair: Dr Ashok Pandey, IITR, Lucknow, Conference Secretary: Dr Akhilendra Pratap Singh, IIT BHU, Varanasi).

Session Organiser

- I. Session organizer and Panel discussion Moderator on Theme 9, “Challenges and Opportunities for Electric Vehicle Adoption,” on 21st December 2020 at Vth International Conference on “Sustainable Energy and Environmental Challenges” (V SEEC) in Virtual Mode from December 19-21, 2020, Organized by International Society for Energy, Environment and Sustainability (ISEES).
- II. Session Organizer for International Conference on New Horizons in Biotechnology (NHBT-2015), Session IVB: Biomass Biorefineries: Fuels and Chemicals from Renewable Sources, November 22-25, 2015, Hotel Residency Tower, Trivandrum, Kerala, India.
- III. Session Organizer for SAE World Congress 2009, 09PFL201: CI Engine Performance for Use with Alternative Fuels, Session held in Detroit, USA, April 2009
- IV. Session Organizer for SAE World Congress 2008, 08PFL201: *CI Engine Performance for Use with Alternative Fuels*, Session held in Detroit, USA, April 2008.

- V. Session Organizer for SAE World Congress 2007, PFL20: CI Engine Performance for Use with Alternative Fuels, Session held in Detroit, USA, April 2007.
- VI. Session Organizer for SAE World Congress 2006, P-19: *CI Engine Performance for Use with Alternative Fuels*, Session held in Detroit, USA, April 2006.
- VII. Session Chair and Organizer for SAE World Congress 2005, P-27: *CI Engine Performance for Use with Alternative Fuels* Session, held in Detroit, USA, April 2005.
- VIII. Session Chair and Organizer for ASME- IC Engine Division Spring Technical Conference 2006, Track 1: Session 4.1 on Alternative Fuels, held in Aachen, Germany, May 2006.
- IX. Session Chair and Organizer for ASME- IC Engine Division Spring Technical Conference 2005, Track 1: Advanced Technology Session, held in Chicago, USA, April 2005.
- X. Conference Session Chair at NTPC *National Vision Conference on Energy*, Held in Delhi, January 2005, SAE's Third International Conference on Automotive and Fuel Technology, Held in Delhi, January 2004, XVIII National Conference on IC Engines and Combustion organized by Combustion Institute (India Section), held in Thiruvananthapuram, December 2004.

Research Guidance:

PhDs (Completed: Fourteen)

1. **Shailendra Sinha**, "Biodiesel Development, Characterization, Performance, Emission & Wear Investigations on a Medium-Duty Transportation CI Engine," IIT Kanpur, February 2008. (Presently: Professor, Institute of Engineering and Technology, Lucknow)
2. **Rakesh Kumar Maurya**, "Performance, Emission, Combustion Characterization and Close-Loop Control of HCCI Engine Employing Gasoline Like Fuels," IIT Kanpur, December 2012. (Presently: Associate Professor, Department of Mechanical Engineering, Indian Institute of Technology, Ropar, Punjab)
3. **Anirudh Gautam**, "Experimental Investigations of Comparative Performance, Emission, and Combustion Characteristics of Biodiesel-Fueled Four-Cycle and Two-Cycle Locomotive Diesel Engines," IIT Kanpur, June 2013. (Presently: Principal Executive Director, Urban Transport and High-Speed Directorate, Research Designs & Standards Organisation, Ministry of Railways, Lucknow)
4. **Dhananjay Kumar Shrivastava**, "Experimental Investigations of Laser Ignition of Natural Gas-Air Mixtures for Engine Applications," IIT Kanpur, June 2013. (Presently: Assistant Professor, Department of Mechanical Engineering, Indian Institute of Technology Kharagpur, Kharagpur, W.B.)
5. **Atul Dhar**, "Combustion, Performance, Emissions, Durability and Lubricating Oil Tribology Investigations of Biodiesel (Karanja) Fuelled Compression Ignition Engine," IIT Kanpur, June 2013. (Presently: Chairperson and Associate Professor, School of Engineering, Indian Institute of Technology Mandi, Mandi, Himachal Pradesh-175075)
6. **Pravesh Chandra Shukla**, "Diesel Emissions Characterization and Control Using Non-Noble Metal-based Diesel Oxidation Catalysts (DOCs)," IIT Kanpur, February 2016 (Co-Supervisor: Dr Tarun Gupta). (Presently: Assistant Professor, Department of Mechanical Engineering, Indian Institute of Technology Bhilai)
7. **Jaigopal Gupta**, "Combustion, Material Compatibility, and Engine Tribology Investigations in a Karanja Biodiesel Fuelled Turbocharged Diesel Engine," IIT Kanpur, July 2016. (Presently: Assistant

Professor and Head, Department of Mechanical Engineering, Government Women Engineering College Ajmer, Ajmer-305001, Rajasthan)

8. **Chetan Patel**, “Spray, Engine Combustion, Performance, Emissions, Vibrations and Acoustics Studies of Biodiesel and SVO Blends,” IIT Kanpur, December 2016. (Co-Supervisor: Dr Nachiketa Tiwari) (Post-Doctoral Fellow, University of Orleans. France: Presently: Associate Professor, Department of Mechanical Engineering, Sitarambhai Naranji Patel Institute of Technology and Research Center, Umrah, Vidyabharti Campus, Bardoli-394601, Gujarat)
9. **Akhilendra Pratap Singh**, “Mode Switching Prototype Engine Development for Low-Temperature Combustion,” IIT Kanpur, January 2017. (Presently: Assistant Professor, Department of Mechanical Engineering, Indian Institute of Technology (BHU), Varanasi)
10. **Nikhil Sharma**, “Spray, Combustion, Emissions and Particulate Investigations of a Gasohol Fuelled Gasoline Direct Injection Engine,” IIT Kanpur, November 2017. (Post-Doctoral Fellow, Chalmers University, Sweden Presently: Assistant Professor, Department of Mechanical Engineering, Malviya National Institute of Technology, Jaipur, Rajasthan)
11. **Dev Prakash Satsangi**, “Acoustics, Vibrations, Performance, Combustion & Emissions Characterization of Diesohol Fuelled Single Cylinder Compression Ignition Engine,” IIT Kanpur, May 2018. (Co-Supervisor: Dr Nachiketa Tiwari) (Presently: Assistant Professor, Engg. College, Dwarhat, UK)
12. **Vikram Kumar**, “Enhancement of Tribological Properties of Epoxy Composite Coatings for Engine Applications,” IIT Kanpur, April 2018. (Co-Supervisor: Dr Sujeet Sinha, IIT Delhi). (Presently: Senior Research Engineer, IIT Kanpur)
13. **Rajesh Kumar Prasad**, “Laser-Plasma Ignited Hydrogen Enriched Compressed Natural Gas Engine Development and Experimental Evaluation,” IIT Kanpur, July 2019. (Presently: Assistant Professor, Faculty of Science and Technology, ICFAI University, Jharkhand, Ranchi)
14. **Krishn Chandra**, “Prototype Development of Spark Ignited Genset Engine Fuelled with Methanol-Gasoline Blends,” Università degli Studi della Campania "Luigi Vanvitelli,” Aversa (CE) 81031, Italy, June 2022 (Co-Supervisors: Prof. Oronzio Manca, Prof. Andrea Unich, Department of Engineering, University of Campania Luigi Vanvitelli, Italy). (Presently: Post-Doctoral Fellow, University of Campania Luigi Vanvitelli, Italy)

PhDs (Ongoing: Nine)

1. **Dhananjay Kumar**, “Development of a Laser Ignited Vehicle Prototype with Multi-Cylinder CNG Fuelled Engine and Modelling Aspects,” (July 2017 Onwards).
2. **Hardikk Valera**, “Development of Methanol Fuelled Carburetted Two Wheeler Engine development, including spray and combustion studies,” (July 2018 onwards).
3. **Utkarsha Sonawane**, “Development of Gasoline Compression Ignition Engine and Its Optimisation,” (July 2018 Onwards)
4. **Ashutosh Jena**, “Optical Diagnostics for Engine Studies for Particulate Reduction,” (July 2018 Onwards)
5. **Ankur Kalwar**, “GDI Engine Particulate Reduction,” ((July 2018 Onwards)
6. **Rahul Kumar Singh**, “Fundamental Studies of High Pressures Sprays in Evaporating Environment,” (July 2020 Onwards)
7. **Shanti Mehra**, “DME Fuelled Tractor Engine Development,” (July 2020 Onwards)

8. **Sam Joe Chintagutti**, "Spray Investigations Under High Temperature and Pressure Environment," (March 2021 Onwards).
9. **Saurabh Singh Chauhan**, "Methanol Engine Development", (July 2022 onwards).

MTech/ BT-MT Dual Degree (Completed: Fifty-Eight)

1. **Lokesh Kumar**, "Performance Evaluation of a Vegetable Oil Fuelled Compression Ignition Engine," IIT Kanpur, November 2002. (Presently: Senior Research Manager, IOCL R&D Centre, Faridabad)
2. **Dharmendra Singh**, "Performance of Metal Monolith Catalytic Converter on Kerosene Fuelled Spark Ignition Engine Genset, Using Secondary Air Injection," IIT Kanpur, December 2002. (Co-Supervisor: Prof. B P Pundir)
3. **Dhananjay Srivastava**, "Experimental investigation of The Effect of Liner Surface Properties on Wear, Friction and Surface Morphology in Non-Firing Engine Simulator," IIT Kanpur, December 2003. (Co-Supervisor: Prof. Jitendra Kumar) (Presently: Assistant Professor, Department of Mechanical Engineering, Indian Institute of Technology Kharagpur, Kharagpur, W.B.)
4. **Shrawan Kumar Singh**, "Effect of EGR on Emissions, Lubricating Oil and Wear in Diesel Engine," IIT Kanpur, July 2004. (Co-Supervisor: Prof. M Sharma) (Presently: Senior Project Professional at SCS Engineers, Gainesville, Florida, United States)
5. **Mani Bijoy Varghese**, "Numerical and Experimental Investigations of Oil Jet Cooling of Pistons," IIT Kanpur, July 2004. (Presently: TCS)
6. **Sumit Pramanik**, "Development of Bioceramic Materials for Hip Joint Replacement," IIT Kanpur, July 2004. (Co-Supervisor: Prof. K N Rai) (Presently: Research Associate Professor, Department of Mechanical Engineering, SRM Institute of Science and Technology, Kattankulathur, Chennai)
7. **KVL Bharti**, "Characterization of Particulates Emissions from Diesel Engines," IIT Kanpur, July 2004. (Co-Supervisor: Prof. M Sharma)
8. **Deepak Agarwal**, "Emissions and Performance of Straight Vegetable Oils (Jatropha and Neem) Fuelled Direct Injection Compression Ignition Engine," IIT Kanpur, May 2005. (Presently: Director, Shanti Asiatic School, Jaipur)
9. **Dipankar Dwivedi**, "A Comparative Study of Particulates & Emission Characterization from Diesel and Biodiesel Exhausts," IIT Kanpur, August 2005. (Co-Supervisor: Prof. M Sharma) (Presently: Research Scientist, Earth, and Environmental Sciences Area, Lawrence Berkley National Laboratory, Berkley, California, USA)
10. **Sandeep Kumar Goyal**, "Experimental and Numerical Investigations of Jet Impingement Cooling of Piston for Controlling the Non-Tail Pipe Emissions," IIT Kanpur, January 2006. (Presently: TCS)
11. **Rakesh Kumar Maurya**, "Combustion and Emission Behavior of Ethanol Fuelled HCCI Engine: An Experimental Investigation," IIT Kanpur, August 2006. (Presently: Associate Professor, Department of Mechanical Engineering, Indian Institute of Technology, Ropar, Punjab)
12. **Atul Dhar**, "Development of Capacitance Based Micro-Sensors for Measurement of Lubricating Oil Film Thickness between Piston Ring-Liner Interface in an Engine Simulator," IIT Kanpur, September 2006. (Presently: Associate Professor, School of Engineering, Indian Institute of Technology Mandi, Mandi, Himachal Pradesh-175075)
13. **Abhay Kumar Srivastava**, "Comparative Analysis of Particulate Emission from Diesel Engine Using Diesel and Biodiesel Blends," IIT Kanpur, September 2006. (Presently: Owner, JEE Coaching Institute, Kanpur)

14. **Vikas Katiyar**, “Experimental Investigations of Bio-Origin Emulsified Fuels: Performance and Emission Analysis in a Single Cylinder Diesel Engine,” IIT Kanpur, August 2006. (Presently: Assistant Professor, Institute of Engineering and Technology, Kanpur University, Kanpur)
15. **Harish Kumar Gangwar**, “Performance, Emission and Combustion Characteristics of Jatropha oil, Biodiesel, and Blends in an In-Direct Injection Compression Ignition Transportation Engine,” IIT Kanpur, July 2007. (Presently: DGM (Vehicle Engineering), Engineering Research Center, Tata Motors Ltd. Lucknow).
16. **Rajveer Singh Rathore**, “Development of Activated Carbon Fiber (ACF) for the Control of NO_x and Particulate Matter,” IIT Kanpur, May 2008. (Co-Supervisor: Prof. Nishith Verma)
17. **Shaswat Swami Jaiswal**, “Numerical Simulation of Dilute Gas-Droplet Flow with Evaporation,” IIT Kanpur, June 2008. (Co-Supervisor: Prof. V Eswaran)
18. **Rajesh Singh**, “Experimental Investigation of Performance and Combustion of vegetable Oils and Blends as Fuel in a Single Cylinder DICI Engine,” IIT Kanpur, January 2009. (Presently: PhD student, Civil Engineering Department, IIT Kanpur)
19. **Abhishek Kothari**, “A Comparative Study of Particulate Matter Characterization for Biodiesel, Straight Vegetable Oil and Gasoline Fuelled Engine Exhaust,” IIT Kanpur, August 2009. (Presently: Manager, Engine Development Department, Engineering Research Division, MSIL)
20. **M. Sarveshwar Reddy**, “Effect of Straight Vegetable Oils, Biodiesel and Its Blends on Fuel Injection Equipment (FIE) Components,” IIT Kanpur, July 2009.
21. **Akhilendra Pratap Singh**, “Development of diesel HCCI engine: Experimental investigation of performance, emission and combustion characteristics,” IIT Kanpur, July 2010. (Presently: Assistant Professor, Department of Mechanical Engineering, Indian Institute of Technology (BHU), Varanasi)
22. **Vipul Chaudhary**, “Experimental Spray Characterization of Biofuels in a Constant Volume Chamber,” IIT Kanpur, July 2010. (Presently: Assistant Professor, Department of Mechanical Engineering, Birla Vishvakarma Mahavidyalaya (Engineering College), Vallabha Vidyanagar, Anand-388120 Gujarat).
23. **Deepak Khurana**, “Experimental Investigations of Oxidation Stability of Biofuels and Effect of Various Antioxidants on Stability, Engine Performance, and Emissions,” IIT Kanpur, July 2010. (Presently: PhD student, IIT Roorkee)
24. **Jitendra N. Gangwar**, “Comparative Chemical Characterization of Particulates Emitted from Diesel and Biodiesel Fuelled CRDI Engine,” IIT Kanpur, November 2010. (Presently: Assistant Professor, MNNIT Allahabad).
25. **Himanshu Karare**, “Performance, Emissions and Combustion Characteristics and Particulate Size Measurement in Gasohol Fuelled Medium Duty Spark Ignition Engine,” IIT Kanpur, August 2011.
26. **Jithin Lukose**, “Characterization of Particulate Matter Emitted from Diesel and Gasoline Fueled HCCI Engine,” IIT Kanpur, September 2011. (Presently: Lead Engineer- Virtual Design & Verification, Product Validation, and Verification, John Deere Technology Centre, Pune)
27. **Paras Gupta**, “Development of CRDI System for Genset Engine and Its Performance, Emission and Combustion Characteristics,” IIT Kanpur, July 2011. (Presently: Design R&D, Hero Moto Corp Ltd, Manesar)
28. **Tanmay Kar**, “Development of Direct Injection Technology for CNG Induction and Its Engine Performance, Emission and Combustion Characteristics,” IIT Kanpur, July 2011. (Presently: Postdoctoral Researcher, Engine and Energy Conversion Lab, Colorado State University, Colorado, USA)

29. **Major Suraj Bhan Singh**, “Performance, Emission and Combustion Characteristics of Butanol-Gasoline Blends in a Mid-Size Transportation Spark Ignition Engine,” IIT Kanpur, June 2012. (Presently: Colonel, Project Manager, CCE (Projects), Indian Army HQ, Delhi)
30. **Gajendra Singh**, “Biodiesel HCCI Engine Development and its Performance, Emission and Combustion Investigations,” IIT Kanpur, July 2012. (Presently: Post-doctoral Research Associate, The University of Sydney, Australia)
31. **Prakhar Bothra**, “Particulate and Emission Inventory for Different Vehicles,” IIT Kanpur, July 2012. (Presently: Tata Motors, Pune)
32. **Anuj Agarwal**, “Endoscopic Combustion Diagnostics of Biodiesel Fuelled Compression Ignition Engine,” IIT Kanpur, July 2012. (Presently: Bosch, Stuttgart, Germany)
33. **Kewal Dharamshi**, “Laser Ignition of Hydrogen – Air Mixture in a Constant Volume Combustion Chamber,” June 2013. (Presently: Deputy Manager, Product Strategy, Mitsubishi Heavy Industries, Japan)
34. **Tadveer Singh Hora**, “Development and Experimental Evaluation of Port Fuel Injected HCNG Engine”, August 2014. (Presently: Calibration Engineer, AVL Powertrain Ltd., UK)
35. **Anuj Pal**, “Prototype Development and Experimental Evaluation of Laser Ignited Hydrogen Fueled Engine,” IIT Kanpur, September 2014. (Presently: PhD. Student, Energy and Automotive Research Lab, Michigan State University, East Lansing, USA)
36. **Harsh Goyal**, “Microscopic and Macroscopic Spray Characterization of Biodiesel in a Constant Volume Spray Chamber,” IIT Kanpur, October 2014. (Presently: Post-doctoral Fellow, Clean Combustion Research Center (CCRC), King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia)
37. **Suresh Jagannath Gadekar**, “Tomographic PIV Investigations for In-Cylinder Flow Characterization in a Single Cylinder Optical Research Engine,” IIT Kanpur, August 2015. (Presently: IIM Calcutta)
38. **Sadaraboina Moses Vidya Sagar**, “Technical Feasibility Study of Varying Composition HCNG Fuelled SI Engine Using Dynamic Gaseous Mixing System,” IIT Kanpur, October 2015. (Presently: Senior Engineer, System Modeling team, Eaton Technologies Pvt. Ltd., Pune)
39. **Yeshudas S Jiotode**, “Endoscopic Combustion Investigations of Diesel Engine Fuelled with Biodiesel, Diesohol, Diesoline and Diesosene,” IIT Kanpur, November 2015. (Presently: Senior Manager, AI & Data Analytics Team, Tata Motors, Pune).
40. **Krishna Kumar Yadav**, “Microscopic Characterization of Diesel and Biodiesel Spray Using Phase Doppler Interferometry,” IIT Kanpur, May 2016. (Presently: Ramswaroop Memorial College, Lucknow)
41. **Ayush Jain**, “Fuel Injection Strategy Evaluation for Ultra-Low Emission Premixed Charge Compression Ignition Engine Development,” IIT Kanpur, June 2016. (Presently: Co-Founder, QuantaVid LLC, USA).
42. **Nikhil Bajpai**, “Fuel Injection Strategy and EGR Optimization for PCCI Engine,” IIT Kanpur, October 2016.
43. **Krishn Chandra**, “Combustion Visualization and Particulate Characterization of Waste Cooking Oil and Karanja Biodiesel Fuelled Engine,” IIT Kanpur, October 2016. (Presently: PhD student, Università degli Studi della Campania "Luigi Vanvitelli," Aversa (CE) 81031, Italy)
44. **Hemant Sharma**, “Feasibility of Using Methanol-Diesel blends in an Unmodified Compression Ignition Genset Engine with Mechanical Fuel Injection Equipment,” IIT Kanpur, September 2017.
45. **Tushar Agarwal**, “Development of Port Fuel Injected Methanol (M85) Fuelled Two–Wheeler Prototype,” IIT Kanpur, June 2019. (Presently: Head - New Products and Innovation, Noccarc Robotics Pvt Ltd. Pune)

46. **Prashumn**, “Development and Experimental Evaluation of Diethyl Ether (DEE)-Diesel Blend Fueled Tractor Engine Prototype,” IIT Kanpur, July 2019. (Presently: Scientist/Engineer 'SC', Liquid Propulsion Systems Centre, ISRO)
47. **Vishnu Singh Solanki**, “Development and Experimental Evaluation of Gasoline Compression Ignition (GCI) Prototype Engine,” IIT Kanpur, January 2020.
48. **Sagar Shrivastava**, “Development of Port Fuel Injected Methanol Fuelled Two – Wheeler Engine,” IIT Kanpur, June 2020 (Presently: Associate Engineer, Gas Performance & Controls, Large Power Systems Division, Caterpillar Inc., Pune).
49. **Sulav Kafle**, “Development and Experimental Evaluation of Methanol-Gasoline Blend (M15) Fuelled Medium Duty Spark Ignition Engine,” July 2020.
50. **Dhananjay Kumar**, “Simulation of High-Pressure Co-Axial Injection system for Methanol Adaptation in a Locomotive Engine,” February 2021. (Presently: PhD student, Engine Research Laboratory, Indian Institute of Technology Kanpur, Kanpur-208016, India).
51. **Monojit Pal**, “Development of Fuel Injection System for Di-Methyl Ether Applications in Compression Ignition Engines,” July 2021. (Presently: BYJUs, India).
52. **Omkar Yadav**, “ECU Calibration for Methanol Adaptation in Motorcycle Engine”. July 2021. (Presently: Management Trainee, Mahindra and Mahindra Limited, MRV, Chennai, India).
53. **Akash Rai**, “Evolution of Dimethyl Ether as an Alternate Fuel for Diesel”, October 2021.
54. **Harsimran Singh**, “Combustion Control in Gasoline Compression Ignition Engine,” November 2021. (Presently: Project Associate, Engine Research Laboratory, Indian Institute of Technology Kanpur, Kanpur-208016, India).
55. **Deepak Kumar**, Comparative Total Cost of Ownership Analysis of Two- and Four-Wheeler Battery Electric and Internal Combustion Engine Powertrain Vehicles”, August 2022. (Presently: Business Analyst, Accenture, Bangalore). (Co-Supervisor: Dr Amir F Abdul Manan, Saudi Aramco).
56. **Aishi Ashirbad**, “Laser-Plasma Assisted Combustion of Gasoline Direct Injection Sprays in a Constant Volume Combustion Chamber”, August 2022 (Presently: Eaton, Pune)
57. **Ayush Tripathi**, “Dimethyl Ether Fueled Single Cylinder Compression Ignition Engine Prototype Development and Experimental Evaluation’, November 2022 (Presently: TMTL, Alwar)
58. **Shanti Mehra**, “Development and Experimental Evaluation of Mechanical Fuel Injection System for Dimethyl Ether Induction for a Tractor Engine”, March 2023 (Presently; PhD Student, IIT Kanpur).
59. **Rahul Kumar Singh**, “Life Cycle Assessment of BEVs, HEVs, and ICEVs for India”, June 2023 (Presently; PhD Student, IIT Kanpur)
60. **Shashank Shekhar**, “Development of High Compression Ratio Compression Ignition Engine for Direct Injection of Methanol”, June 2023. (Presently: BorgWarner, Bangalore).

MTech/ M.S. (Ongoing: None)

Post-Doctoral Fellows (Thirteen)

1. **Dr Dhananjay Kumar Shrivastava** Worked as a Post-Doctoral Fellow from 18th July 2013 to 30th December 2013.
2. **Dr Atul Dhar** Worked as a Post-Doctoral Fellow from 25th July 2013 to 15th November 2013.
3. **Dr Neeraj Kumar Gupta**, Worked as Post-Doctoral Fellow from 01 March 2016 to 30 August 2017.

4. **Dr Chetan Patel**, Worked as a Post-Doctoral Fellow from 1st December 2016 to 21 July 2018.
5. **Dr Nikhil Sharma** Worked as a Post-Doctoral Fellow from 1st December 2017 to 31st July 2018.
6. **Dr Dev Prakash Satsangi** Worked as a Post-Doctoral Fellow from 7th May 2018 to 28th September 2018.
7. **Dr Vikram Kumar**, CSIR Pool Scientist, Worked as a Post-Doctoral Fellow from 7th April 2018 to June 30th 2023.
8. **Dr Nirendra Mustafi**, Professor at Rajshahi University, Bangladesh, worked as Institute Post-Doctoral Fellow from 15 November 2018 to 18 September 2019.
9. **Dr Akhilendra Pratap Singh**, Worked as a Post-Doctoral Fellow from 1st March 2017 to 7th December 2017 and from 1st January 2019 to 23rd December 2020.
10. **Dr M Krishnamoorthy**, Working as a National Post-Doctoral Fellow (NPDF) from 15 December 2020 onwards.
11. **Dr Vasudev Chaudhari**, Working as a Post-Doctoral Fellow from 23 September 2022 onwards.
12. **Dr Srijit Biswas**, Working as a Post-Doctoral Fellow (CSIR Pool Scientist) from 7th October 2022 onwards.
13. **Dr P Pradeep**, Working as a Post-Doctoral Fellow from March 2023 onwards.

Research/ Consultancy Projects (Ongoing: Eight):

1. Prototype Development of Ultra-Efficient Green Gasoline Fueled Compression Ignition (GCI) Engine for Decarbonization of Transport Sector, (Co-PI: M K Shukla, IIP Dehradun), **Centre For High Technology (CHT), Ministry of Petroleum & Natural Gas**, Three Years (July 2023-June 2026), Rs 1083 Lakhs.
2. Methanol (M85) Fuelled Car Prototype Development and Field-Trials, (Co-PI: M K Shukla, IIP Dehradun), **Centre For High Technology (CHT), Ministry of Petroleum & Natural Gas**, Three Years (July 2023-June 2026), Rs 1487 Lakhs.
3. Low-Temperature Combustion (LTC) and Conventional Diesel Combustion (CDC) Engine Development Using Modified Piston And Variable Swirl Control Strategies, (Co-PI: Dr Ashish Dutta) **Science & Engineering Research Board (SUPRA)**, Three Year (March 2022-March 2025), Rs. 79.88 Lakhs.
4. Comparative Life Cycle Assessment (LCA) and Total Cost of Ownership (TCO) Assessment for Compressed Natural Gas (CNG), Compressed Biogas (CBG) and Gasoline Fuelled Internal Combustion Engine Vehicles (ICEV) vis-a-vis Battery Electric Vehicles (BEV), **New Energy and Industrial Technology Development Organization (NEDO)** (Under the Ministry of Economy, Trade & Industry), Government of Japan, (December 2022-February 2023), (Rs 129 Lakhs).
5. Highly Efficient, Low Emission Gasoline Compression Ignition Engine Prototype Development (Co-PI: Dr Tarun Gupta), **Science & Engineering Research Board**, Three Year (February 2020-June 2023), Rs. 59.2 Lakhs.
6. Development of Primary Alcohols Fueled Engine Prototype (Co-PI: Dr Ashish Dutta), Indo-Czech Cooperative Scientific Research, **Department of Science and Technology, New Delhi**, Three Years (2020-2023), Rs 43.26 Lakhs.
7. Prototype Development and Experimental Investigations of CNG Fueled Direct Injection Spark Ignition Engine (Co-PI: Dr Ashish Dutta), Indo-Korea International Cooperation Scientific Research, **Department of Science and Technology, New Delhi**, Three Years (2020-2023).

8. J C Bose Fellowship, **Science & Engineering Research Board**, Five Year (December 2019-December 2024), Rs. 95.00 Lakhs.

Completed Research Projects (Twenty Six):

1. Ultra-Clean Emissions DME Fuelled Tractor Engine Prototype Development for Agricultural Applications, (Co-PI: Dr Tarun Gupta), **Science & Engineering Research Board (IMPRINT)**, Two Year (January 2020-January 2023), **Rs. 159.72 Lakhs.**
2. Design & Retrofitment for Development Methanol Fuelled Large Bore Engine (EMD 710: 4500hp) For Locomotive Marine & Power Generation Application, (Co-PI: Dr Tarun Gupta, IITK), **Department Of Science And Technology, New Delhi**, Two Year (Dec. 2017- Mar. 2020), **Rs. 372.35 Lakhs.**
3. Investigation of Combustion and Soot Process in a Compression Ignition Engine Fueled with Biodiesel, Joint Programme of Cooperation in Science and Technology, (India- South Korea), (PI: Dr Tarun Gupta, IITK), **Department of Science and Technology, New Delhi**, Three Years (2015-2018), **Rs 43.44 Lakhs.**
4. Experimental Investigations of HCCI/ PCCI Combustion in a Single Cylinder Research Engine Using Biodiesel, (Co-PI: Dr Tarun Gupta, IITK), **Department Of Science And Technology, New Delhi**, Three Years, 2013-16, **Rs 157.48 Lakhs.**
5. Experimental Investigations on Combustion Characteristics and Emission Reductions of a Laser Fired Hydrogen Engine (Co-PI: Dr Abhijit Kushari, IITK), **Ministry of New and Renewable Energy (MNRE), New Delhi**, Four Years 2012-2016, **Rs. 115.44 Lakhs.**
6. Development of A Common Rail Injection System for A Constant Speed Compression Ignition Engine (Co-PI: Dr Tarun Gupta, IITK), **Council for Scientific and Industrial Research (CSIR), New Delhi**, Two Years, 2012-15, **Rs.14.68 Lakhs.**
7. Laser Ignition of Natural Gas Fuelled Single Cylinder Engine, (Co-PI: Dr Tarun Gupta, IITK), **Science and Engineering Research Board, Department of Science and Technology, New Delhi**, Two Years, 2012-14, **Rs 38.00 Lakhs.**
8. Experimental Investigations of Fuel Sprays of Biodiesel, Straight Vegetable Oils and Their Blends with Mineral Diesel for Optimizing Fuel Injection Equipment to Lower Engine Exhaust Emissions, Joint Programme of Cooperation in Science And Technology, (India- South Korea), (Co-PI: Dr Tarun Gupta, IITK), **Department of Science And Technology, New Delhi**, Three Years (2011-2014), **Rs 28.00 Lakhs.**
9. Fuel Spray and Combustion Visualization Using Endoscope in Biodiesel Fuelled Direct Injection Engine for Optimal Fuel Injection Strategy and Emission Reduction (Co-PI: Dr Ashish Dutta, IITK), **Department of Science and Technology, New Delhi**, Two Years Six months (2012-2014), **Rs 53.05 Lakhs.**
10. Physico-Chemical Characterization of Nano-Particle Emanating from Diesel Engines (Mineral Diesel and B20 Fuelled) and Their Control Using Diesel Oxidation Catalysts, (PI: Dr Tarun Gupta, IITK), **Science and Engineering Research Board, Department of Science and Technology, New Delhi**, Two Years (2012-14), **Rs 41.00 Lakhs.**
11. Combustion, Material Compatibility and Engine Tribology Investigation in a Biodiesel Fuelled Turbo-charged Transportation Engine, (Co-PI: Dr Tarun Gupta, IITK), **Department of Science and Technology, New Delhi**, Three Years (2010-2013), **Rs. 64.86 Lakhs.**

12. Development of Bi-Functional Solid Catalyst for Transesterification of Jatropha Oil and Effect of Jatropha Oil Biodiesel on the Lubricating Oil Performance and Life in a Medium-Duty Compression Ignition Transportation Engine, **Shell India Pvt. Ltd., Bangalore**, Four Years, August 2007- November 2011, **Rs. 59.00 Lakhs**.
13. Comparative Chemical Characterization and Evaluation of Toxic Potential of Metals and PAH's Present in Both Primary and Secondary Particulates Emitted from Combustion in Diesel Vs. Biodiesel Engines, (PI: Dr Tarun Gupta, IITK), **Department of Science and Technology, New Delhi**, Three Years, November 2008- November 2011, **Rs 89.81 Lakhs**.
14. Effects of Biodiesel Oxidation Stability on the Engine Combustion and Emission Characteristics (Co-PI: Dr Tarun Gupta, CE), **Department of Science and Technology, New Delhi**, Indo-South Africa Cooperation Project, Three Years project, October 2009- March 2012, **Rs. 7.62 Lakhs**.
15. Fundamental Investigations on Laser Ignition of Combustible Gas-Air Mixtures in a Constant Volume Combustion Chamber for Engine Applications, **Department of Science and Technology, New Delhi**, (2009-2011), **Rs. 32.70 Lakhs**.
16. Career Award for Young Teachers (CAYT), **All India Council for Technical Education (AICTE), New Delhi**, Government of India, 2005-2009, **Rs. 10.50 Lakhs**.
17. Experimental and Numerical Investigations of Piston Cooling by Oil Jet Impingement, (Co-PI: Prof. P S Ghoshdastidar, IITK), **Council for Scientific and Industrial Research (CSIR), New Delhi**, 2005-2008, **Rs. 7.00 Lakhs**.
18. Biodiesel: Process and Pilot Plant Development, (Co-PI: Dr Sanjeev Garg, IITK) **Khadi and Village Industries Commission (KVIC), Mumbai**, 2003-08, **Rs. 17.00 Lakhs**.
19. Particulate Matter Emission and Lubricity Studies on Biodiesel Fuelled Transportation Engine, **Ministry of Human Resources Development (MHRD), Government of India**, 2005 – 07, **Rs. 25.00 Lakhs**.
20. Scope and Limitations of Non-Edible Vegetable Oil as a Substitute Fuel for Diesel Engines-An Experimental Study, **Department of Science and Technology, New Delhi**, 2005-08, **Rs. 56.15 Lakhs**.
21. Development of Capacitance Based Micro-Sensor for Oil Film Thickness Measurements, **Ministry of Human Resources Development (MHRD), Government of India**, 2004–2006, **Rs. 16 Lakhs**.
22. Exhaust Emission Reduction from Internal Combustion Engines, **Ministry of Human Resources Development (MHRD), Government of India**, 2003- 2005, **Rs. 8.00 Lakhs**.
23. Production and Investigation of Biodiesel produced from different vegetable oils, **Department of Science and Technology, New Delhi, Government of India**, 2002-2005, **Rs. 6.60 Lakhs**.
24. Alternative Fuels for IC Engines for Emission Reduction and Energy Conservation, **Ministry of Human Resources Development (MHRD), Government of India**, 2002-2004, **Rs. 15.00 Lakhs**. (PI: Prof. B P Pundir)
25. Improvement of Energy Conversion Laboratory at IIT, Kanpur, **Ministry of Human Resources Development (MHRD), Government of India**, 2004-2005, **Rs. 4.00 Lakhs**.
26. Improvement of Energy Conversion Laboratory at IIT, Kanpur, **Ministry of Human Resources Development (MHRD), Government of India**, 2003-2004, **Rs. 6.50 Lakhs**.

Completed Consultancy Projects (Seven)

1. Ultra-Clean Emission DME Fuelled Tractor Engine Prototype Development For Agricultural Applications, **TAFE Ltd, Alwar**, (August 2020-July 2022).
2. Lubrication Oil Quality Assessment on Royal Enfield Engine, **Royal Enfield**, (February-August 2015).
3. Interfacing Of ECU of EFI with Test Commander, **Research Designs and Standards Organisations (RDSO), Lucknow, Indian Railways** (May-September 2011).
4. Field Trial of Biodiesel (B100) Fuelled Scorpio CRDE Vehicle, **Mahindra and Mahindra Limited, Nashik**, (July 2006-March 2007).
5. Design Improvements in the furnace of Khandsari Industry for air pollution prevention and control (Co-PI: Prof. Mukesh Sharma), **Central Pollution Control Board (CPCB)** (July-September 2003).
6. LCA & TCO Analysis of 4W ICEV, BEV & HEVs, **New Energy and Industrial Technology Development Organization (NEDO)** (Under the Ministry of Economy, Trade & Industry), Government of Japan, (December 2022-February 2023).
7. Methanol as a Sustainability Solution in Railway Applications, **Wabtec India Industrial Private Limited, Bangalore**, (December 2022-May 2023).

Membership in Professional Bodies/ Societies

1. Fellow, Combustion Institute (CI), USA, 2022.
2. Fellow, World Society for Sustainable Energy Technologies (WSSET), UK, 2020
3. Fellow, Americal Association for Advancement of Sciences (AAAS), 2020
4. Fellow, Royal Society of Chemistry (RSC), 2018.
5. Fellow, National Academy of Sciences, Prayagraj (NASI), 2018.
6. Fellow, International Society for Energy, Environment and Sustainability (ISEES), 2016.
7. Fellow, Indian National Academy of Engineering (INAE), 2015
8. Fellow, American Society of Mechanical Engineers (ASME), 2013
9. Fellow, Society of Automotive Engineers International (SAE Int.), 2012
10. Life Member, Solar Energy Society of India (SESI)
11. Life Member, Combustion Institute (India Section)
12. Member, Institution of Engineers (India)
13. Life Member, Tribology Society of India (TSI)
14. Life Member, International Society for Energy, Environment and Sustainability (ISEES)
15. Member, International Association of Hydrogen Energy (IAHE)
16. Member, American Association for the Advancement of Science (AAAS)

Keynote Speeches at International Conferences

1. Future Prospects of Green and Environmental-Friendly Fuels for UAV Applications, **Keynote Speech** in the **10th Conference on Propulsion Technologies for Unmanned Aerial Vehicles** organized by the Faculty of Mechanical Engineering, **Technion Israel Institute of Technology, Haifa, Israel**, on 16th February 2023.

2. Future Prospects of Internal Combustion Engines in a Green and Environment-Friendly Methanol Economy, Keynote Talk in the **Indo-French workshop on Clean And Sustainable Energy Technologies**, organized by CIMFR Dhanbad at CSIR- National Physical Laboratory, New Delhi, on 21-23rd February 2023.
3. Energy Transition to Methanol Economy for Transport Sector, **Keynote Speech in Workshop Entitled “Change Management for the Energy Transition”, organized by Indian Oil Corporation Limited** on 26th November 2022.
4. “Future Prospects of Green and environmental Friendly Methanol Economy” **Keynote Talk at 27th National Conference on IC Engines and Combustion (NCICEC 2022)**, organized by Automotive Research Centre (ARC) and the School of Mechanical Engineering (SMEC), VIT Vellore in association with the Combustion Institute Indian Section (CIIS) on 7th November 2022.
5. Future of the Internal Combustion Engines and Existential Threat from Battery Electric Vehicles? **Sixth Lecture Workshop (Online) on Trans-disciplinary Areas of Research and Teaching by Shanti Swarup Bhatnagar Awardees**, organized by Deen Dayal Upadhyaya College, University of Delhi, on January 28th, 2022.
6. Directions in Engine and Fuel Research at IIT Kanpur: Role of Lasers and Optics and Methanol Economy, Keynote Speech in **1st India Converge User’s Conference**, organized by Convergent Science, the USA on 16th May 2019, at Hotel Holiday Inn, Hinjewadi, Pune.
7. Future Prospects of Internal Combustion Engines in a Green and Environment-Friendly Economy, **Institute Lecture at Indian Institute of Technology Roorkee** on 12th October 2018.
8. Future Prospects of Green and Environment-Friendly Methanol Economy, Keynote Speech in **3rd International Conference on Powertrain Technology** on 11th October 2018, held at India Habitat Center, New Delhi, organized by **ICAT Manesar**.
9. Engine Exhaust Particulates: Characterization, Control Technologies, and Toxic Effects, Keynote speech on 6th April 2018 in “**Pursuing Clean Air and Water for All: Environmental Science & Technology Symposium in India**,” held at Shiv Nader University, Delhi.
10. Technology Roadmap for DME/ Methanol Fuelled Vehicles in Indian Mega-Cities, Keynote Speech in **1st International Conference on Mechanical Engineering (INCOM 2018)**, from 4th - 6th January 2018, Organised by Department of Mechanical Engineering, **Jadavpur University, Kolkata**.
11. Technology Roadmap for DME/ Methanol Fuelled Vehicles in Indian Mega-Cities, Keynote Speech in **24th National and 2nd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTTC-2017)**, at **BITS Pilani, Hyderabad Campus** from 27-30 December 2017.
12. Global Transportation Systems and Fuels: Past, Present and Future, Keynote Speech on 17th November 2017 **NSHM Knowledge Campus Durgapur, West Bengal**, in a one-day seminar on "Advancements in Alternative Fuels."
13. Indian Energy Scenario and Role of Engineers in Energy Sector, Keynote Speech on Engineer’s Day 15th September 2017, at **Institution of Engineers, Udaipur Local Chapter**, Udaipur, Rajasthan.
14. Technology Roadmap for DME/ Methanol Fuelled Vehicles in Indian Mega-Cities, Keynote Speech at the **Eleventh National Frontiers of Engineering Symposium (NatFOE11)** on 30 June & 1 July 2017, organized by IIT Bombay.
15. Global Transportation Systems and Fuels: Past, Present, and Future, Keynote Speech on 16th January 2017, at **Amity University, Gwalior**.

16. DME/ Methanol Roadmap for Indian Automotive Sector, Keynote Speech 30th September 2016 in **2nd Conference on Powertrain Technology**, 29th – 30th September 2016, ICAT, Manesar.
17. Engine Technology Roadmap for DME Fuelled Vehicles in Indian Mega-Cities, Keynote Speech in **International Seminar on “Methanol Economy,”** 6-7 September 2016, Sam Maneksha Center, New Delhi, organized by NITI Aayog.
18. Biofuels Production and Utilization Research in IITK: Path forward, Keynote Speech at **IITs-Finnish Universities Joint Workshop on Bioenergy** at IIT Delhi from May 23-24th, 2016.
19. Optical Diagnostics: Possibilities for Next Generation IC Engine Powertrain Development and Emission, Keynote Speech on 24th September 2015 in **1st Conference on Powertrain Technology**, 23-24th September 2015, ICAT, Manesar.
20. Future Fuels for Transportation Sector, Keynote Speech on 8th August 2015 at **Institution of Engineers, Rajasthan State Chapter**, Jaipur.
21. Status and Way Forward for Hybrid Technologies in Indian Automotive Sector, Keynote Speech on 7th August 2015 at **Mechanical Engineering Symposium** at MNIT Jaipur.
22. Status and Way Forward for Hybrid Technologies in Indian Automotive Sector, Keynote Speech on 6th June 2015 at **Ninth National Frontiers in Engineering Symposium** (9th NatFOE-2015) held at IIT Jodhpur from 5-7 June 2015.
23. Tomographic Particle Image Velocimetry for Flow Analysis in a Single Cylinder Optical Engine, Invited Seminar on March 1st, 2015, at **Clean Combustion Research Center (CCRC), King Abdullah University of Science and Technology (KAUST)**, Saudi Arabia.
24. Technical Feasibility and Challenges in Sustainable Fuels in Indian Context, Keynote Speech in **International Conference on Sustainable Fuels for IC engines in Emerging Nations**, organized by TERI & Tata Motors from 2-3 February 2015 at the Taj Palace Hotel, New Delhi.
25. Sustainable Energy and Transportation Technologies for 21st Century, Plenary Speech on the Occasion of **National Education Day** on 11th November 2014, at **University Institute of Engineering and Technology**, CSJM University Kanpur.
26. Engine Studies with Jatropa (SVO and Biodiesel) @ ERL, IIT Kanpur, Keynote Speech on October 13th, 2014 at “**Jatropa Updates 2014**” symposium, Organized by TERI and Kasetsart University, Bangkok in New Delhi.
27. Future Fuels for Transportation Sector, Keynote Speech on 27th July 2014 at **Institution of Engineers, Kanpur Local Chapter**, Kanpur.
28. Role of Engine Technologies and Alternative Fuels in Energy and Environmental Preservation, Keynote Speech on the Occasion of Energy Conservation Day, December 14th, 2013, at **Institution of Engineers, Roorkee Local Centre**, Roorkee.
29. Future Sustainable Transport Fuels, Plenary Speech in Student Festival **Mecharnival-13**, on 9th March 2013 at HBTI Kanpur.
30. Role of Engine Technologies and Alternative Fuels in Environmental Preservation, Plenary Talk on **National Conference on Advancement in Automobile Engineering**, on 16th February 2013 at Kautilya Engineering College, Jaipur.
31. Some Innovations in Engine Research Using Lasers, Keynote Speech at **Indian Physics Association’s** theme meeting entitled “**Synergy in Physics and Industry**,” from January 21-22nd, 2013, at Bhabha Atomic Research Centre, Mumbai.

32. Some Innovations in Engine Research, Keynote Speech at **Seventh National Frontiers of Engineering Symposium (7NatFOE)** from 12-14th October 2012, organized at IIT Guwahati.
33. Homogeneous Charge Compression Ignition Engine: Developmental Challenges and Way Ahead, Keynote Speech in **8th G-COE Symposium on “Eco-friendly Materials and Processes for Low-Carbon & Sustainable Society”** at NEERI, Nagpur from December 15-16, 2011.
34. Laser Ignition: Challenges and Opportunities, Keynote Speech on 20th September 2011 in **2nd International Clean Vehicle Conference**, Deakin University, Waurn Ponds, Geelong Campus, Australia.
35. Engine Research at ERL IITK: Some Studies on Biodiesel, and Particulates, Invited Seminar at **Argonne National Laboratory, Chicago, USA** on April 20th, 2011.
36. Biodiesel: Engine Performance: A Critical Analysis as a Future Fuel, Invited Seminar in Department of Aerospace Engineering, IIT Kanpur on 22nd February 2011.
37. Biofuels Research: Challenges and Opportunities, Keynote Speech in **5th International Conference on Innovations in Food and Bio-Process Technology**, December 2010, AIT, Bangkok, Thailand.
38. Contribution of Engine Research Laboratory to Internal Combustion Engine Science and Technology: Journey from 2001-10, Keynote Speech at **International Workshop on the Advances in Automotive Technology**, from 10-11th November 2010 in Bengal Engineering and Science University Shibpur, Kolkata.
39. Role of Engine Technologies and Alternative Fuels in Environmental Preservation, Keynote Speech on 4th April 2010 at **National Conference on “Advances in Management of Energy Efficiency and Clean Environment (AMEECE),”** April 3-4, 2010, Harcourt Butler Technological Institute, Kanpur.
40. Biofuels and HCCI Research at Engine Research Laboratory (ERL), IIT Kanpur: 2001-2008, Keynote Speech on 20th November 2008 at **Mobility Engineering Conference Bangalore-2008 (MECB-2008)**, organized by IISc, Bangalore.
41. Future of Energy, Keynote Speech in **REACH Symposium**, IIT Kanpur, held at Hotel Taj Chandela, Khajuraho from 16-17th March 2008.
42. Research Activities @ Engine Research Laboratory, IIT Kanpur, Invited Speech at the **Second Indo-US Frontiers of Engineering Symposium**, 27th February - 01st March 2008 at Beckman Center, Irvine, US.
43. UICT- Alkyl Amine Foundation Day Young Scientist Award Lecture, 4th August 2007, **University Institute of Chemical Technology**, Mumbai.
44. Energy Scenario for Transportation of Future: Advances in IC Engines and Alternate Fuels, Invited Seminar at **Department of Mechanical and Aerospace Engineering, University of Michigan, Dearborn, USA** on 4th April 2006.
45. Recent Advances in Internal Combustion Engine Technology, Invited Seminar on 9th May 2005 at **EME School, Vadodara**.
46. Engine Diagnostics, Invited Seminar at Department of Chemical Engineering, **Technical University of Vienna**, 22nd June 2004.
47. Application of Various Optical Techniques for Engines, Invited Seminar at Photonics Institute, **Technical University of Vienna**, 17th June 2004.
48. Biodiesel Development, Characterization, and Utilization in a DI Compression Ignition Engine and Investigation of Effect of Fuel Chemistry on Oil Tribology, Invited Seminar on 10th

June 2002 at Wolfson School of Mechanical and Manufacturing Engineering, **University of Loughborough**, UK.

Significant International visits:

S.N.	Period of visit		Institute/ country visited	Purpose of visit
	From	To		
1.	29-08-99	03-03-01	Engine Research Center, University of Wisconsin, USA	Post-Doctoral Fellow
2.	10-05-2002	25-07-2002	Wolfson School of Mechanical and Manufacturing Engineering, University of Loughborough, UK	Visiting Faculty on DST BOYSCAST Scheme
3.	10-05-2003	19-05-2003	Salzburg, Austria	Intl. Conference (ASME-ICED Conference-2003)
4.	05-03-2004	15-03-2004	Detroit, USA	Intl. Conference (SAE World Congress-2004)
5.	06-06-2004	27-06-2004	Technical Univ. of Vienna, Austria	Visiting Professor
6.	04-04-2005	16-04-2005	Detroit, USA	Intl. Conference (SAE World Congress-2005)
7.	31-03-2006	07-04-2006	Detroit, USA	Intl. Conference (SAE World Congress-2006)
8.	07-05-2006	12-05-2006	Aachen, Germany	Intl. Conference (ASME ICED Conference-2006)
9.	13-10-2007	18-10-2007	Charleston, USA	Intl. Conference (ASME ICED Conference-2007)
10.	27-02-2008	09-08-2008	Indo-US Frontiers of Engineering, Irvine, California, USA	International Workshop (Indo-US Science and Technology Forum)
11.	11-04-2008	19-04-2008	Detroit, USA	Intl. Conference (SAE World Conference-2008)
12.	05-08-2008	09-08-2008	AIT Bangkok, Thailand	Intl. Conference: Energy Security and Climate Change: Issues, Strategies, and Options (ESCC 2008)
13.	19-04-2009	25-04-2009	Detroit, USA	Intl. Conference (SAE World Congress-2009)
14.	26-09-2009	02-10-2009	Lucerne, Switzerland	Intl. Conference (ASME ICED Conference-2010)
15.	23-05-2010	06-06-2010	Tshwane University of Technology, Pretoria, South Africa	Indo-South Africa Inter-governmental S&T Cooperation Program
16.	16-09-2010	23-09-2010	University of Mauritius, Mauritius	Intl. Conference

17.	05-12-2010	10-10-2010	AIT Bangkok	Intl. Conference (Innovations in Food and Bioprocess Technology)
18.	10-04-2011	16-04-2011	Detroit, USA	Intl. Conference (SAE World Congress-2011)
19.	17-09-2011	26-09-2011	Deakin University, Australia	Intl. Conference (International Clean Vehicle Conference)
20.	01-06-2012	13-06-2012	Hanyang University, Seoul, South Korea	Indo-South Korea Intergovernmental S&T Cooperation Program
21.	22-09-2012	28-09-2012	Vancouver, BC, Canada	Intl. Conference (ASME ICED Conference-2012)
22.	04-11-2012	10-11-2012	University of Manchester, UK	Intl. Workshop (EPSRC Global Engagement Workshop)
23.	12-04-2013	21-04-2013	Detroit, USA	Intl. Conference (SAE World Congress-2013)
24.	14-05-2013	05-06-2013	Technical Univ. of Vienna, Austria	Visiting Professor
25.	20-06-2013	01-07-2013	Hanyang University, Seoul, South Korea	Indo-South Korea Inter- governmental S&T Cooperation Program
26.	10.07.2014	20.07.2014	Hanyang University, Seoul, South Korea	Indo-South Korea Inter- governmental S&T Cooperation Program
27.	15-10-2014	22-10-2014	Columbus, Indiana, USA	Intl. Conference (ASME ICED Conference-2014)
28.	28-02-2015	03-03-2015	KAUST, Saudi Arabia	Invitation to Deliver a Seminar
29.	17-10-2015	26-10-2015	KAIST, Daejeon, South Korea	Indo-South Korea Inter- governmental S&T Cooperation Program
30.	20-06-2017	25-06-2017	Bucharest, Romania	Fifth Laser Ignition Conference 2017 (LIC'17)
31.	17-03-2019	23-03-2019	NTU, Singapore	Academic Leadership Program-2019
32.	14-02.-2023	18-02-2023	Technion, Haifa, Israel	Keynote Address at the 10th Conference on Propulsion Technologies for Unmanned Aerial Vehicles

Invited Lectures and Seminars

- 1994: Institution of Engineers (India), Rajasthan State Chapter, Jaipur.
- 1998: University of Roorkee, India
- 1999: Indian Institute of Technology, Kanpur
- 1999: University of Wisconsin, Madison, USA
- 2000: Indian Institute of Technology, Delhi
- 2000: Indian Institute of Technology, Kanpur
- 2002: Wolfson School of Mechanical and Manufacturing Engineering, University of Loughborough, UK
- 2002: Institution of Engineers (India), Kanpur Local Chapter, Kanpur
- 2003: Center for High Technology, Ministry of Petroleum, Government of India
- 2003: Indian Oil Corporation (R&D Center), Faridabad
- 2004: Diesel Locomotive Workshop, Varanasi.
- 2004: Photonics Institute, Technical University of Vienna, Austria
- 2004: Chemical Engineering Department, Technical University of Vienna, Austria
- 2005: Argonne National Laboratory, Chicago, USA
- 2005: College of Military Engineering, Vadodara
- 2006: Research Designs and Standards Organization, Lucknow
- 2006: University of Michigan, Dearborn, USA
- 2006: Institution of Engineering (India), Kanpur Local Chapter on 'World Environment Day.'
- 2007: Rajiv Gandhi Technical University, Bhopal
- 2007: University Institute of Chemical Technology, Mumbai, UICT- Alkyl Amine Foundation Day Young Scientist Award Lecture, 4th August 2007.
- 2009: Indian Institute of Science, Bangalore
- 2010: Indian Institute of Technology Bombay
- 2010: Asian Institute of Technology, Bangkok
- 2012: Hanyang University, Seoul
- 2013: Technical University of Vienna, Austria
- 2013: Hanyang University, Seoul, South Korea
- 2013: Indian Institute of Technology Roorkee, India
- 2014: Hanyang University, Seoul, South Korea
- 2014: University of Illinois, Chicago, USA
- 2015: King Abdullah University of Science and Technology, Saudi Arabia
- 2015: Korea Advanced Institute of Science and Technology, Daejeon, South Korea
- 2015: MACFAST, Thiruvalla, Kerala, India
- 2016: MNIT, Jaipur
- 2016: Amity University, Gwalior
- 2017: Amity University, Gwalior
- 2018: National Institute of Technology Agartala
- 2018: National Environmental Engineering Research Institute Nagpur
- 2018: Indian Institute of Technology Delhi
- 2018: Railways Board, New Delhi
- 2018: Central Pollution Control Board, New Delhi
- 2019: SMC, Indian Institute of Technology Kanpur

- ▣ 2019: SURGE, Indian Institute of Technology Kanpur
- ▣ 2019: LEAP Program, Banaras Hindu University, Varanasi
- ▣ 2019: Annual FIPI Convention, New Delhi (Keynote)
- ▣ 2020: S S Bhatnagar Endowed Lecture, IIT Ropar
- ▣ 2020: Opinion Society, IIT Kanpur.
- ▣ 2021: Neurological Society of India Webinar on Innovation, Incubation and Patents.
- ▣ 2021: Clean Energy Technologies Lecture, organised by IIT Dhanbad, ACS International Student Chapter, and IChE Regional Centre Dhanbad.
- ▣ 2022: Technology Excellence Celebrations for Engineers' Week, Wabtec Corporation, India
- ▣ 2022: Sixth Lecture Workshop on Trans-disciplinary Areas of Research and Teaching by Shanti Swarup Bhatnagar Awardees, jointly organized by NASI and Deen Dayal Upadhyaya College, University of Delhi.
- ▣ 2022: Hansraj College, University of Delhi.

Dr Avinash Kumar Agarwal