

Dhananjay Kumar

Department of Mechanical Engineering
Indian Institute of Technology Kanpur
Kanpur, India



Present Address

I-219, Hall-8
Indian Institute of Technology Kanpur
Kanpur-208016, India
E-mail: dhanu@iitk.ac.in

Permanent Address

H-8, Kutlupur
Bara, Ben,
Nalanda -803117, India
E-mail: dhananjayk.iitk@gmail.com

Academic Information

Degree	Stream	Year	Marks	Institute/University
Ph.D.	Mechanical Engineering	2017-	7.4/10	IIT Kanpur, India
M. Tech	Mechanical Engineering	2017-2021	7.4/10	IIT Kanpur, India
B. Tech	Mechanical Engineering	2013-2017	8.34/10	NIT Mizoram, India

Area of Research Interest

- ✓ Laser Ignition
- ✓ Constant Volume Combustion Chamber Study
- ✓ H2/CNG/HCNG Engine Development
- ✓ Combustion diagnostics
- ✓ Engine emission measurement
- ✓ Particulate characterization and their control
- ✓ Alternative fuels
- ✓ Engine Modeling and Simulation

Awards and Honors

- ✓ Awarded "Best M.Tech. Thesis Award" by International Society for Energy, Environment and Sustainability (December 2021).
- ✓ Won "Best Paper Presentation Award in Track" in International Conference on "Sustainable Energy and Environmental Challenges" (III-SEEC), at Indian Institute of Technology Roorkee, India (Dec 2018).
- ✓ Selected for Internship at IIT Guwahati under Ishan Vikas Program of MHRD. (July 2016).
- ✓ Teaching Assistant at IIT Kanpur (2017-2021).

Publications

Master Dissertation

M.Tech Thesis on "Simulation of High-Pressure Co-Axial Injection System for Methanol Adaptation in a Locomotive Engine", under the supervision of Prof. Avinash Kumar Agarwal at Indian Institute of Technology Kanpur, India. (2017-2021)

Refereed International Journals

- (1) Valera, H., **Kumar, D.** and Agarwal, A.K., 2022. Evaluating the effect of variable methanol injection timings in a novel co-axial fuel injection system equipped locomotive engine. *Journal of Cleaner Production*, 349, p.131452.
- (2) **Kumar, D.**, Sonawane, U., Chandra, K. and Agarwal, A.K., 2022. Experimental investigations of methanol fumigation via port fuel injection in preheated intake air in a single cylinder dual-fuel diesel engine. *Fuel*, 324, p.124340.
- (3) **Kumar D**, Vsalera H, Gautam A, Agarwal AK. Simulations of methanol fueled locomotive engine using high pressure co-axial direct injection system. *Fuel*. 2021 Jul 1;295:120231.
- (4) Singh AP, **Kumar D**, Agarwal AK. Particulate characteristics of laser ignited hydrogen enriched compressed natural gas engine. *International Journal of Hydrogen Energy*. 2020 Jun 22.
- (5) **Kumar D**, Sonawane U, Gohil MK, Pol R, Patil AS, Mittal R, Agarwal AK. Design and development of a portable disinfectant device. *Transactions of the Indian National Academy of Engineering*. 2020 Jun;5(2):299-303.
- (6) Maurya, D., Gohil, M.K., Sonawane, U., **Kumar, D.**, Awasthi, A., Prajapati, A.K., Kishnani, K., Srivastava, J., Age, A., Pol, R. and Misra, S., 2020. Development of autonomous advanced disinfection tunnel to tackle external surface disinfection of COVID-19 virus in public places. *Transactions of the Indian National Academy of Engineering*, 5(2), pp.281-287.

Book/Monograph

- (1) Singh AP, **Kumar D**, Agarwal AK. *Alternative Fuels and Advanced Combustion Techniques as Sustainable Solutions for Internal Combustion Engines*, 2021, Springer, Singapore.
- (2) Agarwal, A.K., **Kumar, D.**, Sharma, N., Sonawane, U. *Engine Modeling and Simulation*. *Energy, Environment, and Sustainability*, 2022, Springer, Singapore.

Book Chapters

- (1) **Kumar D**, Agarwal AK. Laser Ignition Technology for Gaseous Fuelled Automotive Engines. In *Simulations and Optical Diagnostics for Internal Combustion Engines 2020* (pp. 143-163). Springer, Singapore.
- (2) Valera H, **Kumar D**, Singh AP, Agarwal AK. Modelling Aspects for Adaptation of Alternative Fuels in IC Engines. In *Simulations and Optical Diagnostics for Internal Combustion Engines 2020* (pp. 9-26). Springer, Singapore.
- (3) **Kumar D**, Valera H, Agarwal AK. Technology Options for Methanol Utilization in Large Bore Diesel Engines of Railroad Sector. *Methanol*. 2021:11-37.
- (4) Rai A, **Kumar D**, Sonawane U, Agarwal AK. Dimethyl Ether Spray Characteristics for Compression Ignition Engines. In *Novel Internal Combustion Engine Technologies for Performance Improvement and Emission Reduction 2021* (pp. 79-103). Springer, Singapore.
- (5) Chintagunti SJ, Kalwar A, **Kumar D**, Agarwal AK. Spray Chamber Designs and Optical Techniques for Fundamental Spray Investigations. In *Novel Internal Combustion Engine Technologies for Performance Improvement and Emission Reduction 2021* (pp. 105-144). Springer, Singapore.

International Conference Papers

- (1) **Kumar D**, Valera H, Agarwal AK. Numerical Predictions of In-Cylinder Phenomenon in Methanol Fueled Locomotive Engine Using High Pressure Direct Injection Technique. SAE Technical Paper; 2021 Apr 6.
- (2) Valera H, **Kumar D**, Agarwal AK. Feasibility Assessment of Methanol Fueling in Two-Wheeler Engine Using 1-D Simulations. SAE Technical Paper; 2021 Apr 6.

Conference Proceedings (National/ International)

- (1) **Kumar D**, Agarwal AK. 1-D Modelling and Simulation of 4-Cylinder 4-Stroke SI Engine Using GT-Suite, III-SEEC held at IIT Roorkee (18-21st December, 2018)
- (2) **Kumar D**, Singh AP, Agarwal AK. Particulate Matter Investigation of Different Blend of Hydrogen Enriched CNG Laser Ignited Engine, IV-SEEC held at NEERI Nagpur (27-29th November, 2019)
- (3) **Kumar D**, Valera H, Agarwal AK. Numerical Predictions of In-Cylinder Phenomenon in Methanol Fueled Locomotive Engine Using High Pressure Direct Injection Technique. SAE WCX; 2021 Apr 6.
- (4) Valera H, **Kumar D**, Agarwal AK. Feasibility Assessment of Methanol Fueling in Two-Wheeler Engine Using 1-D Simulations. SAE WCX; 2021 Apr 6.
- (5) **Kumar D**, Agarwal AK, Poster Presentation on “Assessment of Methanol Fueling in ALCO-251 Locomotive Engine using Simulation Approach” at KAUST hybrid Conference held on June 2021.

Membership of Professional Societies

- (1) Executive Committee Member and Treasurer, International Society of Energy, Environment and Sustainability (ISEES)
- (2) Member, Society of Automotive Engineers (SAE)
- (3) Member, American Society of Mechanical Engineers (ASME)

Personal Information

Father's Name : Mr. Balbir Prasad
Marital Status : Single
Nationality : Indian

Declaration

I do hereby declare that the above particulars furnished by me are true to the best of my knowledge and belief.

Date: July 2022

Dhananjay Kumar

References

[Prof. Avinash Kumar Agarwal](#)

Department of Mechanical Engineering
Indian Institute of Technology Kanpur
Kanpur-208016, India
akag@iitk.ac.in

[Dr. Jishnu Bhattacharya](#)

Department of Mechanical Engineering
Indian Institute of Technology Kanpur
Kanpur-208016, India
jishnu@iitk.ac.in



Scopus

