

RESUME

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Academic Qualifications

Degree	University/Institute	Year	Marks/CGPA
B. Tech	University College of Engineering, JNTU Kakinada, AP	2005	70.28
M. Tech	IIT Kanpur	2008	7.5/10
Ph. D	IIT Bombay	2013	Excellence in Thesis Award

Professional Experience

May 2019 – Present: Asst. Prof., Department of Mechanical Engineering, IIT Kharagpur.

June 2017 – May 2019: Visiting Faculty, School of Energy Science & Engineering, IIT Kharagpur.

Jan 2017 – June 2017: Assistant Professor, PDPU, Gandhinagar, Gujarat

October 2013 – December 2016: Post-Doctoral Fellow, CCRC, KAUST, Saudi Arabia.

March 2013 – October 2013: Research associate, Aerospace Engineering Department, IIT Bombay, Mumbai, India.

June 2008 – December 2008: Assistant Manager Trainee, NMSEZ, Mumbai, India.

Awards and Achievements

- **Excellence in Ph.D. thesis award- IIT Bombay 2014**
- **MIT TR 35 India – 2012 Young Innovator award (flameless combustion with liquid fuels)**
<http://www.technologyreview.com/tr35/profile.aspx?TRID=1255>
- **6th ENERTIA Award 2012-** India's Award for Sustainable Energy & Power
- **Travel Award – Combustion Institute** for 34th International Symposium on Combustion

Areas of Research

- Flameless/MILD combustion with liquid fuels
- Emission Control
- Auto ignition and MILD combustion at high pressure
- Heavy Fuel Oil combustion
- Low emission combustion with biodiesel
- Numerical modeling
- Spray formation and Analysis

Postdoc work Experience

- **Pyrolysis of HFO for cenosphere formation**
- **Autoignition and MILD combustion at high pressure of 40 bar**

PHD Thesis Topic

Flameless combustion with liquid fuels

List of publications

International Journals:

- [1] Neelesh Soni, Debojit Sharma, Mustafa M. Rahman, Prashanth R. Hanmaiahgari, V. Mahendra Reddy. "Mathematical Modeling of Solar Energy based Thermal Energy Storage for House Heating in Winter". Journal of Energy Storage. 2021; 34, 102203. (*IF: 3.5*)
- [2] Debojit Sharma, Subhankar Mahapatra, Subrat Garnayak, Vaibhav K Arghode, Aditya Bandopadhyay, S. K. Dash, V. Mahendra Reddy. "Development of Reduced Chemical Kinetic Mechanism for Combustion of H₂/CO/ C₁-C₄ Hydrocarbons". Energy & Fuels. 2020 (Accepted) (*IF:3.4*)
- [3] Subhankar Mohapatra, Subrat Garnayak, Bok Jik Lee, Ayman M. Elbaz, William L. Roberts, Sukanta Kumar Dash, V. Mahendra Reddy, Numerical and chemical kinetic analysis to evaluate the effect of steam dilution and pressure on combustion of n-dodecane in a swirling flow environment. Fuel. 2020; 119710. (*IF: 5.4*)
- [4] V Nimesh, D Sharma, VM Reddy, AK Goswami. "Implication viability assessment of shift to electric vehicles for present power generation scenario of India" Energy. 2020; 195, 11697 (*IF: 5.6*)

- [5] Subhankar M, V Mahendra Reddy, S K Dash, Prashant Naehe,. “Numerical study of lifted spray flames in various coflow conditions” Combustion Science and Technology (Accepted). **(IF: 1.6)**
- [6] Pavani S, T K K Reddy, Prabhu S, Mahendra Reddy V, Bok Jik Lee. “Design of Active Cooling Panels of Scramjet Combustor Considering Thermal Cracking of Fuel”. Applied Thermal Engineering. 2019; 147, 231–41. **(IF:4.7)**
- [7] Shantanu M, V. Mahendra Reddy, Srinibas Karmakar. “Experimental and numerical studies on heat recirculated high intensity meso-scale combustor for mini gas turbine applications”. Energy Conversion and Management. 2018; 176, 324-33. **(IF:8.2)**
- [8] Chen Z, Mahendra RV, Ruan S, Doan NAK, Roberts WL, Swaminathan N. “Simulation of MILD combustion using Perfectly Stirred Reactor model”. Proceedings of combustion Institute. 2016; 36 (3), 4279-4286. **(IF:5.4)**
- [9] Mahendra RV, Rahman MM, Gandi AN, Elhagrasy AM, Schrecengost RA, Roberts WL. “Cenosphere formation from heavy fuel oil: a numerical analysis accounting for the balance between porous shells and internal pressure”. Combustion Theory and Modelling. 2016; 20: 154-172. **(IF:2.0)**
- [10] Nehe P, Mahendra RV, Kumar S. “Investigations on a new internally-heated tubular packed-bed methanol steam reformer” International Journal of Hydrogen Energy. 2015; 40: 5715 -5725. **(IF:4.9)**
- [11] Mahendra RV, Katoch A, Roberts WL, Kumar S. “Experimental and numerical analysis for high intensity swirl based ultra-low emission flameless combustor operating with liquid fuels”. Proceedings of combustion Institute. 2015; 35: 3581–3589. **(IF:5.4)**
- [12] Mahendra RV, Trivedi D, Sawant D, Kumar S. Investigations on emission characteristics of liquid fuels in a swirl combustor. Combustion Science and Technology. 2015; 187: 469-488. **(IF:1.6)**
- [13] Mahendra RV, Biswas P, Garg P, Kumar S. “Combustion characteristics of biodiesel fuel in high recirculation conditions”. Fuel Processing Technology. 2014; 118: 310 – 317. **(IF:4.9)**
- [14] Mahendra RV, Sawant D, Trivedi D, Kumar S. “Studies on a liquid fuel based two stage flameless combustor”. Proceedings of combustion Institute. 2013; 34, 3319 – 3326. **(IF:5.4)**
- [15] Mahendra RV, Sudheer S, Prabhu S, Kumar S. “Design and calibration of a new compact radiative heat-flux gauge (RHFG) for combustion applications” Sensors and Actuators - A:

Physical. 2013; 203: 62 – 68. (**IF:2.9**)

- [16] Mahendra RV, Kumar S. “Development of high intensity low emission combustor for achieving flameless combustion of liquid fuels.” Propulsion and Power Research 2013; 2: 139-147
- [17] Mahendra RV, Trivedi D, Kumar S. “Experimental investigations on lifted spray flames for a range of coflow conditions”. Combustion Science and Technology. 2012; 184:44–63. (**IF:1.6**)

International and National Conferences

- [1] Mahendra RV, Trivedi D, Kumar S. “Experimental investigations on lifted spray flames in a co-flow field”. 23rd International Colloquium on Dynamics of Reactive and Explosive Systems, University of California, Irvine, USA, 24-29 July 2011.
- [2] Mahendra RV, Trivedi D, Kumar S. “Investigation of lifted flame dynamics with biodiesel in coflow field”. International Conference on Advances in Energy Research (ICAER), Indian Institute of Technology Bombay, Dec., 9-11, 2011
- [3] Sawant D, Mahendra RV, Trivedi D, Kumar S. “Computational analysis to determine the optimal burner geometry for achieving flameless combustion with liquid fuels”. 22nd National conference on I. C. Engines and Combustion, NIT Calicut, India. Dec., 10-13 2011.
- [4] Mahendra RV, Sawant D, Trivedi D, Kumar S. “Studies on a liquid fuel based two stage flameless combustor”. 34th International Symposium on Combustion, Warsaw University of Technology, Warsaw, Poland. 29th July- 3rd Aug, 2012.
- [5] Mahendra RV, Sawant D, Kumar S. “Studies on optimization of a liquid fuel based low emission combustor”. GTIndia2012-9674, Proceedings of the 2012 ASME GT India conference, Mumbai. Dec. 1st, 2012.
- [6] Mahendra RV, Kumar S. “Development of high intensity ultra low emission combustor with biodiesel”. 4th International Symposium on Energy & Environment: ACCESS, Oberoi Hotel. Mumbai, India. Dec. 9 - 12, 2012
- [7] Mahendra RV, Sawant D, Kumar S. “Development of combustor for achieving flameless combustion of liquid fuels”. National Propulsion Conference, Indian Institute of Technology, Madras, Chennai. Feb. 21-23 2013.

- [8]. Nehe, P. Kumar, S, Reddy, V.M, Characteristics of hydrogen produced by methanol reformation in compact whirling orbital plate fluidized bed reactor. Asia-Pacific Conference on Combustion, ASPACC 2017; University of Sydney, Sydney; Australia; 10 - 14 December 2017; Code 133864.
- [9] Subhankar M, V Mahendra Reddy, S K Dash. Reduction of emissions by steam dilution in high swirl liquid fuel combustion, NAPC-2018.
- [10] Subrat G, V Mahendra Reddy, S K Dash. Liquid fuel combustion in extremely diluted oxidizer at high swirl flows operates at high pressure, NAPC-2018.
- [11] Ashok K, Roshan S, Karmakar S, Roy A, Reddy VM. Numerical analysis to predict optimal computational technique for liquid fuel combustion in highly swirling flows. NAPC-2018.

Book Chapters:

- [1] **VM Reddy**, S Kumar, "Flameless combustion with liquid fuels" Chapter 9, p.p. 219-238, In: AK Agarwal, SK Aggarwal, AK Gupta, A Kushari, A Pandey (Eds.) Energy, Combustion & Propulsion: New Perspectives, **Athena Academic, UK** 2015. ISBN: 9781910390290
- [2] Reddy VM, Roberts WL, "Numerical modeling of MILD combustion at high pressure to predict the optimal operating conditions" pp 55-76. In AK Agarwal, S De, A Pandey, AP Singh (Eds) **Combustion for Power Generation and Transportation**, Springer publications, 2017. **ISBN978-981-10-3785-6**

Patents (Indian)

- Mahendra RV, Sudheer S, Prabhu S, Kumar S. "Design of a probe for measuring radiative heat flux from combustion systems" : 3368/MUM/2012 (Final Review Submitted).