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<https://scholar.google.com/citations?user=JWgNG04AAAAJ&hl=en>

1. Current Position

- 2020.1 – present, Dean’s Chair Professor, Department of Mechanical Engineering, National University of Singapore
- 2017.7 – present, Associate Professor, Department of Mechanical Engineering, National University of Singapore

2. Employment History

- 2011.1-2017.6, Assistant professor, Department of Mechanical Engineering, National University of Singapore
- 2006.8-2010.12, Instructor, Department of Mechanical Engineering, National University of Singapore
- 2000.9-2006.7, Research fellow, Department of Mechanical Engineering, National University of Singapore

3. Academic qualifications

- Ph.D (Mechanical Engineering), Jiangsu University, 2000
- M.S. (Mechanical Engineering), Jiangsu University, 1997
- B.S. (Mechanical Engineering), Jiangsu University, 1994

4. Professional membership

- Institute of Combustion – Member
- American Society of Mechanical Engineers (ASME) – Member
- American Chemical Society (ACS) – Member
- In 2003, selected as a member of American Association for the Advancement of Science (AAAS)

5. Recent Awards

- 1 Jan 2020, Dean’s Chair Professor
- 2014, Highly cited research paper award, An H, Yang W.M*, Chou SK, Chua K.J, “Combustion and emissions characteristics of diesel engine fueled by biodiesel at partial load conditions.”
- 2015, Highly cited review paper award, Chua KJ*, Chou SK, **Yang W.M**, Yan J., “Achieving better energy-efficient air conditioning – A review of technologies and strategies.”
- 2012, 2nd prize, contribution to Science and Technology Progress, Issued by the Ministry of Education of China. Subject: “Study on the working process and key technologies of power machinery and their application”

- 2009, 2nd prize, contribution to Science and Technology progress, issued by the Government of Jiangsu province of China. Subject: “Development of combustion theory and combustion system in power machinery and their application”
- 2003, 2nd prize, contribution to Science and Technology progress, issued by the Society of Mechanical Engineering of China. Subject: “Fundamental study on the combustion process of diesel engine with swirl chamber”

6. Editorial Boards and Reviewers

- 2020-, Editor-in-chief, Energy Engineering
- 2016- , Guest editor, Energies
- 2018-, Guest editor, Applied sciences

Served as Reviewers

Reviewer of a large number of journals such as Applied Energy, Energy, Nano Energy, Progress in Energy and Combustion Science, Fuel, Fuel Processing Technology, Scientific report, Energy Conversion and Management, Combustion theory and modelling, Combustion Science and Technology, Combustion and Flame, Proceedings of Combustion Institute, Applied Thermal Engineering, International Journal of Thermal Science, International Journal of Heat and Mass Transfer, International Journal of Hydrogen Energy, Journal of Applied Physics, Applied Physics Letters, Chemical Physics Letters, Chemical Engineering Science, Chemical Engineering Journal, Solar Energy, Solar Energy Materials and Solar Cells, Renewable Energy, Renewable and Sustainable Energy Reviews, Journal of Micromechanics and Microengineering, etc.

7. Publications

More than 300 publications (book chapters, peer reviewed journal and conference papers), of which, more than 260 papers are registered in Web of Science. I am the first author or corresponding author for more than 200 papers.

8. Citations

- As of 31 August 2020, total citations is 7957 times with an H-index of 49 as obtained from SCOPUS
- As of 31 Aug 2020, total citations is 10013 times with an H-index is 54, as obtained from Google Scholar Citations.

9. Research Projects

I have initiated and participated in many national, international and industrial cooperation projects, including two international joint projects with Tsinghua University under the Singapore-China joint programme, one project with University of Cambridge under the CREATE programme. The total budget of the funded research projects amounts to 35 million Singapore dollars, or 25 million US dollars.

- Total: S\$35,792,498.17
- Principal Investigator (PI): S\$9,796,138.50
- Co-Investigator (Co-PI): S\$17,429,169
- Collaborator: S\$8,566,590.67

Principal Investigator (PI)

- 1) Cambridge Centre for Carbon Reduction in Chemical Technology Phase 2 (C4T2), S\$1379,212.50, (Singapore National Research Foundation), (PI)
- 2) Fundamental study on the sooting characteristics of liquid fuels with different molecular structures, S\$478,200, 01/2018-12/2020. (Singapore National Research Foundation), (PI)
- 3) Development of an advanced platform for boilers with high combustion efficiency and low emissions, S\$6,960,105, 04/2016-03/2020 (Singapore National Research Foundation and Sembcorp) (PI)
- 4) Combustion and emissions control of internal combustion engines fueled by biofuels and novel blend fuels, S\$270,200, 08/2012-07/2015 (Singapore A*STAR) (PI)
- 5) Fundamental study on the combustion of biofuels in diesel engine, S\$179,878. 04/2011-03/2014 (Singapore Ministry of Education) (PI)
- 6) Development of a novel micro modular thermophotovoltaic power generator, S\$ 178,000, 03/2013-02/2016 (Singapore Ministry of Education) (PI)
- 7) Development of an ultralight diesel engine for UAVs application, S\$150,000, 03/2015-02/2018 (Singapore Ministry of Education). (PI)
- 8) Development of the next generation IC engine via innovative RCCI technology, S\$150,543, 03/2018-02/2021, (PI).
- 9) Impact of low GHG molecular structures on combustion and particulate emissions, S\$50,000, 11/2019 – 10/2022, (PI).

Co-Investigator (Co-PI)

- 1) Energy and Environmental Sustainability Solutions for Megacities (E2S2-CREATE), S\$11,300,000, 07/2018 – 06/2023. (Singapore National Research Foundation)
- 2) Cambridge centre for carbon reduction in chemical technology, S\$4,801,689, 04/2013-04/2018 (Singapore National Research Foundation)
- 3) Analysis of Energy Consumption and Emissions by Shipping Lines, S\$707,080, 09/2013-08/2015 (Singapore Maritime Institute)
- 4) A novel desiccant/nano-woven membrane air dehumidification to enhance building energy efficiency, S\$620,400, 03/2012-02/2015 (Singapore A*STAR-MND)

Collaborator

- 1) A highly energy efficient portable power source for on/off field military applications, S\$49,000, 07/2010-01/2012 (Singapore Ministry of Defense)
- 2) An Innovative solar-driven air treatment system for improved air quality, reduced humidity load and energy efficient ACMV, S\$1,076,400, 08/2014-07/2017 (Singapore National Research Foundation)
- 3) Air-conditioning systems efficiency: a novel hybrid cogeneration-based district cooling to achieve 0.65±0.5 kW/Rton, S\$7,441,190.67, 04/2013-04/2018 (Singapore National Research Foundation)

10. Invited Speaker (Keynotes and Plenary)

- Keynote speaker, "Study on combustion and emissions characteristics of diesel engine fueled by biodiesel with different saturation level", 2nd International summit on Energy Science and Technology, Xian, China, 17-19 Jan 2018.
- Keynote speaker, "Major factors affecting the combustion process and emissions formation in IC engines", 2018 world internal combustion engines congress, Wuxi, China, 9-11 Nov 2018.
- Keynote speaker, "Effect of various factors on heat transfer and combustion process in micro combustors", 7th Asian Symposium on computational heat transfer and fluid flow, Tokyo, Japan, 3-7 Sep 2019.
- Keynote speaker, "Fuel design and its impact on the performance and emissions of internal combustion engines," The 2nd International Conference on Materials Technology and Energy, Miri, Malaysia, 6-8 Nov 2019.
- Plenary Talk: Yang W.M., An H., Maghbouli A., Li J., "Three dimensional numerical modeling

on the combustion and emission characteristics of biodiesel in diesel engine.” Proceedings of the Fifth International Symposium on Physics of Fluids (ISPF-5), 10-13 June 2013, Changbaishan, China.

11. Service

- Member of NUS Faculty of Engineering's GSCC (graduate studies committee courses) (since 2017)
- Member of NUS Department of Mechanical Engineering's Graduate Studies Committee (since 2015)
- Member of NUS Department of Mechanical Engineering's Academic Affairs Committee (since 2019)
- Member of NUS Department of Mechanical Engineer's Graduate reform committee (since 2017)
- Deputy Lab Supervisor of NUS Department of Mechanical Engineering's Energy & Bio-thermal Systems Group (since 2015)
- Member of NUS Department of Mechanical Engineering's CARE network (2012-2014)

12. Supervision of PhD student and participation of PhD thesis evaluation panel

- Supervised 28 PhD students, 16 post-doc research fellows.
- As examiners for more than 60 PhD thesis from various countries

- Wu, S., Tay, K. L., Yu, W., Lin, Q., Li, H., Zhao, F., & Yang, W. (2020). Development of a highly compact and robust chemical reaction mechanism for the oxidation of tetrahydrofurans under engine relevant conditions. *FUEL*, 276, 12 pages. doi: [10.1016/j.fuel.2020.118034](https://doi.org/10.1016/j.fuel.2020.118034)
- Xu, Q., Yang, S., Yang, W., Tang, Z., Hu, X., Song, W., & Zhou, B. (2020). Micro-structure of crushed coal with different metamorphic degrees and its low-temperature oxidation. *Process Safety and Environmental Protection*, 140, 330-338. doi: [10.1016/j.psep.2020.05.007](https://doi.org/10.1016/j.psep.2020.05.007)
- Yu, W., Zhao, F., & Yang, W. (2020). Qualitative analysis of particulate matter emission from diesel engine fueled with Jet A-1 under multivariate combustion boundaries by principal component analysis. *Applied Energy*, 269. doi: [10.1016/j.apenergy.2020.115068](https://doi.org/10.1016/j.apenergy.2020.115068)
- Zeng, G., Zhao, Y., Cai, Y., Zheng, Z., Li, Z., Xu, M., & Yang, W. (2020). Study on ignition behaviors of bias parallel pulverized coal streams in a reducing atmosphere: Influences of exit velocity. *FUEL*, 268, 11 pages. doi: [10.1016/j.fuel.2020.117360](https://doi.org/10.1016/j.fuel.2020.117360)
- Tu, Y., Xu, S., Xu, M., Liu, H., & Yang, W. (2020). Numerical study of methane combustion under moderate or intense low-oxygen dilution regime at elevated pressure conditions up to 8 atm. *Energy*, 197. doi: [10.1016/j.energy.2020.117158](https://doi.org/10.1016/j.energy.2020.117158)
- Wei, L., Li, X., Yang, W., Dai, Y., & Wang, C. -H. (2020). Optimization of operation strategies of a syngas-fueled engine in a distributed gasifier-generator system driven by horticulture waste. *ENERGY CONVERSION AND MANAGEMENT*, 208, 15 pages. doi: [10.1016/j.enconman.2020.112580](https://doi.org/10.1016/j.enconman.2020.112580)
- Wu, S., Akroyd, J., Mosbach, S., Brownbridge, G., Parry, O., Page, V., . . . Kraft, M. (2020). Efficient simulation and auto-calibration of soot particle processes in Diesel engines. *APPLIED ENERGY*, 262, 13 pages. doi: [10.1016/j.apenergy.2019.114484](https://doi.org/10.1016/j.apenergy.2019.114484)
- Kan, X., Wei, L., Li, X., Li, H., Zhou, D., Yang, W., & Wang, C. H. (2020). Effects of the three dual-fuel strategies on performance and emissions of a biodiesel engine. *Applied Energy*, 262. doi: [10.1016/j.apenergy.2020.114542](https://doi.org/10.1016/j.apenergy.2020.114542)
- Zhou, A., Xu, H., Xu, M., Yu, W., Li, Z., & Yang, W. (2020). Numerical investigation of biomass co-combustion with methane for NO_x reduction. *ENERGY*, 194, 13 pages. doi: [10.1016/j.energy.2019.116868](https://doi.org/10.1016/j.energy.2019.116868)
- Yu, W., Zong, Y., Lin, Q., Tay, K., Zhao, F., Yang, W., & Kraft, M. (2020). Experimental study on engine combustion and particle size distributions fueled with Jet A-1. *FUEL*, 263, 9 pages. doi: [10.1016/j.fuel.2019.116747](https://doi.org/10.1016/j.fuel.2019.116747)
- Peng, Q., Yang, W., E, J., Xu, H., Li, Z., Tay, K., . . . Yu, W. (2020). Investigation on premixed H₂/C₃H₈/air combustion in porous medium combustor for the micro thermophotovoltaic application. *APPLIED ENERGY*, 260, 12 pages. doi: [10.1016/j.apenergy.2019.114352](https://doi.org/10.1016/j.apenergy.2019.114352)
- Li, J., Yu, X., Xie, J., & Yang, W. (2020). Mitigation of high pressure rise rate by varying IVC timing and EGR rate in an RCCI engine with high premixed fuel ratio. *ENERGY*, 192, 14 pages. doi: [10.1016/j.energy.2019.116659](https://doi.org/10.1016/j.energy.2019.116659)

- Wu, S., Lao, C. T., Akroyd, J., Mosbach, S., Yang, W., & Kraft, M. (2020). A joint moment projection method and maximum entropy approach for simulation of soot formation and oxidation in diesel engines. *APPLIED ENERGY*, 258, 15 pages. doi: [10.1016/j.apenergy.2019.114083](https://doi.org/10.1016/j.apenergy.2019.114083)
- Zheng, Z., Yang, W., Yu, P., Cai, Y., Zhou, H., Boon, S. K., & Subbaiah, P. (2020). Simulating growth of ash deposit in boiler heat exchanger tube based on CFD dynamic mesh technique. *Fuel*, 259. doi: [10.1016/j.fuel.2019.116083](https://doi.org/10.1016/j.fuel.2019.116083)
- Li, G., Yang, W., Tay, K. L., Yu, W., & Chen, L. (2020). A reduced and robust reaction mechanism for toluene and decalin oxidation with polycyclic aromatic hydrocarbon predictions. *FUEL*, 259, 14 pages. doi: [10.1016/j.fuel.2019.116233](https://doi.org/10.1016/j.fuel.2019.116233)
- Zhao, F., Yang, W., & Yu, W. (2020). A progress review of practical soot modelling development in diesel engine combustion. *Journal of Traffic and Transportation Engineering (English Edition)*. doi: [10.1016/j.jtte.2020.04.002](https://doi.org/10.1016/j.jtte.2020.04.002)
- Li, Z., Xu, H., Yang, W., Zhou, A., & Xu, M. (2019). CFD simulation of a fluidized bed reactor for biomass chemical looping gasification with continuous feedstock. *ENERGY CONVERSION AND MANAGEMENT*, 201, 11 pages. doi: [10.1016/j.enconman.2019.112143](https://doi.org/10.1016/j.enconman.2019.112143)
- Wu, S., Zhou, D., & Yang, W. (2019). Implementation of an efficient method of moments for treatment of soot formation and oxidation processes in three-dimensional engine simulations. *APPLIED ENERGY*, 254, 12 pages. doi: [10.1016/j.apenergy.2019.113661](https://doi.org/10.1016/j.apenergy.2019.113661)
- Peng, Q., Yang, W., E, J., Xu, H., Li, Z., Yu, W., . . . Wu, Y. (2019). Experimental investigation on premixed hydrogen/air combustion in varied size combustors inserted with porous medium for thermophotovoltaic system applications. *ENERGY CONVERSION AND MANAGEMENT*, 200, 11 pages. doi: [10.1016/j.enconman.2019.112086](https://doi.org/10.1016/j.enconman.2019.112086)
- Wu, S., Yang, W., Xu, H., & Jiang, Y. (2019). Investigation of soot aggregate formation and oxidation in compression ignition engines with a pseudo bi-variate soot model. *APPLIED ENERGY*, 253, 12 pages. doi: [10.1016/j.apenergy.2019.113609](https://doi.org/10.1016/j.apenergy.2019.113609)
- Yang, L. M., Shu, C., Yang, W. M., & Wu, J. (2019). An improved three-dimensional implicit discrete velocity method on unstructured meshes for all Knudsen number flows. *Journal of Computational Physics*, 396, 738-760. doi: [10.1016/j.jcp.2019.07.002](https://doi.org/10.1016/j.jcp.2019.07.002)
- Wu, S., & Yang, W. (2019). Comparisons of methods for reconstructing particle size distribution from its moments. *FUEL*, 252, 325-338. doi: [10.1016/j.fuel.2019.04.124](https://doi.org/10.1016/j.fuel.2019.04.124)
- Xu, M., Tu, Y., Zhou, A., Xu, H., Yu, W., Li, Z., & Yang, W. (2019). Numerical study of HCN and NH₃ reduction in a two-stage entrained flow gasifier by implementing MILD combustion. *FUEL*, 251, 482-495. doi: [10.1016/j.fuel.2019.03.135](https://doi.org/10.1016/j.fuel.2019.03.135)
- Yang, L. M., Shu, C., Yang, W. M., & Wu, J. (2019). Simulation of conjugate heat transfer problems by lattice Boltzmann flux solver. *International Journal of Heat and Mass Transfer*, 137, 895-907. doi: [10.1016/j.ijheatmasstransfer.2019.04.003](https://doi.org/10.1016/j.ijheatmasstransfer.2019.04.003)
- Zhou, A., Xu, H., Tu, Y., Zhao, F., Zheng, Z., & Yang, W. (2019). Numerical investigation of the effect of air supply and oxygen enrichment on the biomass combustion in the grate boiler. *APPLIED THERMAL ENGINEERING*, 156, 550-561. doi: [10.1016/j.applthermaleng.2019.04.053](https://doi.org/10.1016/j.applthermaleng.2019.04.053)

- Li, Z., Xu, H., Yang, W., Xu, M., & Zhao, F. (2019). Numerical investigation and thermodynamic analysis of syngas production through chemical looping gasification using biomass as fuel. *Fuel*, *246*, 466-475. doi:[10.1016/j.fuel.2019.03.007](https://doi.org/10.1016/j.fuel.2019.03.007)
- Pan, J., Miao, N., Lu, Z., Lu, Q., Yang, W., Pan, Z., & Zhang, Y. (2019). Experimental and numerical study on the transition conditions and influencing factors of hetero-/homogeneous reaction for H₂/Air mixture in micro catalytic combustor. *Applied Thermal Engineering*, *154*, 120-130. doi:[10.1016/j.applthermaleng.2019.03.076](https://doi.org/10.1016/j.applthermaleng.2019.03.076)
- Peng, Q., Wu, Y., E, J., Yang, W., Xu, H., & Li, Z. (2019). Combustion characteristics and thermal performance of premixed hydrogen-air in a two-rearward-step micro tube. *Applied Energy*, *242*, 424-438. doi:[10.1016/j.apenergy.2019.03.137](https://doi.org/10.1016/j.apenergy.2019.03.137)
- Yu, W., Zhao, F., Yang, W., & Xu, H. (2019). Integrated analysis of CFD simulation data with K-means clustering algorithm for soot formation under varied combustion conditions. *Applied Thermal Engineering*, *153*, 299-305. doi:[10.1016/j.applthermaleng.2019.03.011](https://doi.org/10.1016/j.applthermaleng.2019.03.011)
- Peng, Q., Jiaqiang, E., Yang, W. M., Xu, H., Chen, J., Zhang, F., . . . Qiu, R. (2019). Experimental and numerical investigation of a micro-thermophotovoltaic system with different backward-facing steps and wall thicknesses. *Energy*, *173*, 540-547. doi:[10.1016/j.energy.2019.02.093](https://doi.org/10.1016/j.energy.2019.02.093)
- Tu, Y., Xu, M., Zhou, D., Wang, Q., Yang, W., & Liu, H. (2019). CFD and kinetic modelling study of methane MILD combustion in O₂/N₂, O₂/CO₂ and O₂/H₂O atmospheres. *Applied Energy*, *240*, 1003-1013. doi:[10.1016/j.apenergy.2019.02.046](https://doi.org/10.1016/j.apenergy.2019.02.046)
- Lin, Q., Tay, K. L., Zhou, D., & Yang, W. (2019). Development of a compact and robust Polyoxymethylene Dimethyl Ether 3 reaction mechanism for internal combustion engines. *ENERGY CONVERSION AND MANAGEMENT*, *185*, 35-43. doi:[10.1016/j.enconman.2019.02.007](https://doi.org/10.1016/j.enconman.2019.02.007)
- Li, H., Yang, W., Zhou, D., & Yu, W. (2019). Skeletal mechanism construction for heavy saturated methyl esters in real biodiesel fuels. *FUEL*, *239*, 263-271. doi:[10.1016/j.fuel.2018.11.020](https://doi.org/10.1016/j.fuel.2018.11.020)
- Xu, M., Tu, Y., Zeng, G., Wang, Q., Zhou, A., & Yang, W. (2019). Numerical study of further NO_x emission reduction for coal MILD combustion by combining fuel-rich/lean technology. *INTERNATIONAL JOURNAL OF ENERGY RESEARCH*, *43*(14), 8492-8508. doi:[10.1002/er.4849](https://doi.org/10.1002/er.4849)
- Yang, L. M., Shu, C., Yang, W. M., Wu, J., & Zhang, M. Q. (2019). Numerical investigation on performance of three solution reconstructions at cell interface in DVM simulation of flows in all Knudsen number regimes. *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS*, *90*(11), 545-563. doi:[10.1002/flid.4734](https://doi.org/10.1002/flid.4734)
- Zhou, D., Yang, W., Yang, L., & Lu, X. (2020). Modelling internal combustion engines with dynamic staggered mesh refinement. *Combustion Theory and Modelling*, *24*(1), 142-175. doi:[10.1080/13647830.2019.1662491](https://doi.org/10.1080/13647830.2019.1662491)
- Botero, M. L., Sheng, Y., Akroyd, J., Martin, J., Dreyer, J. A. H., Yang, W., & Kraft, M. (2019). Internal structure of soot particles in a diffusion flame. *Carbon*, *141*, 635-642. doi:[10.1016/j.carbon.2018.09.063](https://doi.org/10.1016/j.carbon.2018.09.063)

- Lin Tay, K., Yu, W., Zhao, F., & Yang, W. (2020). From fundamental study to practical application of kerosene in compression ignition engines: An experimental and modeling review. *PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART D-JOURNAL OF AUTOMOBILE ENGINEERING*, 234(2-3), 303-333. doi:[10.1177/0954407019841218](https://doi.org/10.1177/0954407019841218)
- Zheng, Z., Yang, W., Cai, Y., Wang, Q., & Zeng, G. (2020). Dynamic simulation on ash deposition and heat transfer behavior on a staggered tube bundle under high-temperature conditions. *ENERGY*, 190, 17 pages. doi:[10.1016/j.energy.2019.116390](https://doi.org/10.1016/j.energy.2019.116390)
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- Yang, L. M., Chen, Z., Shu, C., Yang, W. M., Wu, J., & Zhang, L. Q. (2018). Improved fully implicit discrete-velocity method for efficient simulation of flows in all flow regimes. *PHYSICAL REVIEW E*, 98(6), 21 pages. doi:[10.1103/PhysRevE.98.063313](https://doi.org/10.1103/PhysRevE.98.063313)
- Cai, Y., Tay, K., Zheng, Z., Yang, W., Wang, H., Zeng, G., . . . Subbaiah, P. (2018). Modeling of ash formation and deposition processes in coal and biomass fired boilers: A comprehensive review. *Applied Energy*, 230, 1447-1544. doi:[10.1016/j.apenergy.2018.08.084](https://doi.org/10.1016/j.apenergy.2018.08.084)
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- Yu, W., Tay, K., Zhao, F., Yang, W., Li, H., & Xu, H. (2018). Development of a new jet fuel surrogate and its associated reaction mechanism coupled with a multistep soot model for diesel engine combustion. *Applied Energy*, 228, 42-56. doi:[10.1016/j.apenergy.2018.06.076](https://doi.org/10.1016/j.apenergy.2018.06.076)
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- Pan, J., Chen, W., Yang, W., Xiao, M., Zhu, Y., & Fan, B. (2018). Effects of intake and exhaust valve timing on the performance of an air-powered rotary engine. *Environmental Progress and Sustainable Energy*, 37(4), 1462-1474. doi:[10.1002/ep.12797](https://doi.org/10.1002/ep.12797)

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- Wang, W., Zuo, Z., Liu, J., & Yang, W. (2018). The effects of hydrogen addition, inlet temperature and wall thermal conductivity on the flame-wall thermal coupling of premixed propane/air mixtures in meso-scale tubes. *International Journal of Hydrogen Energy*, *43*(22), 10458-10468. doi:[10.1016/j.ijhydene.2018.04.097](https://doi.org/10.1016/j.ijhydene.2018.04.097)
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