

Stanford



Werner Ihme

Professor of Mechanical Engineering and of Photon Science

CONTACT INFORMATION

• Administrative Contact

Susan Dorman - Administrator

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Bio

BIO

Large-eddy simulation and modeling of turbulent reacting flows, non-premixed flame, aeroacoustics and combustion generated noise, turbulence and fluid dynamics, numerical methods and high-order schemes.

ACADEMIC APPOINTMENTS

- Professor, Mechanical Engineering
- Professor, Photon Science Directorate

PROFESSIONAL EDUCATION

- Ph.D, Stanford University , Mechanical Engineering (2008)
- M.Sc., University of Erlangen, Germany , Computational Engineering (2002)
- Dipl.-Ing., Munich University of Applied Sciences, Germany , Mechanical Engineering (2000)

Teaching

COURSES

2021-22

- Advanced Fluid Mechanics Multiphase Flows: ME 451A (Win)
- Gas-Turbine Design Analysis: ME 257 (Spr)

2020-21

- Engineering Thermodynamics: ME 30 (Win)
- Seminar in Fluid Mechanics: ENGR 298 (Win)
- The Future of Mechanical Engineering: ME 228 (Win)
- Turbulent Combustion: ME 471 (Spr)

2019-20

- Discontinuous Galerkin Methods for Fluid-Flow Simulations: ME 336 (Aut)
- Engineering Thermodynamics: ME 30 (Win)
- Gas-Turbine Design Analysis: ME 257, ME 357 (Spr)

2018-19

- Advanced Fluid Mechanics Multiphase Flows: ME 451A (Aut)
- Fluid Mechanics: Compressible Flow and Turbomachinery: ME 131B (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Wai Tong Chung, Jack Guo, Fredric Lam, Filip Simeski

Orals Chair

Jason Chou

Postdoctoral Faculty Sponsor

Haoyuan Li, Pushan Sharma, Karl Toepferwien, Niccolo Tonicello, Guillaume Vignat

Doctoral Dissertation Advisor (AC)

Bassem Akoush, Kihiro Bando, Emeric Boigne, Matthew Bonanni, Steven Brill, Wai Tong Chung, Nguyen Ly, Arijit Majumdar, Priyanka Muhunthan, Filip Simeski

Master's Program Advisor

Hongzhou Dai, Jack Dibachi, Jami Rose

Postdoctoral Research Mentor

Davy Brouzet

Doctoral (Program)

Arijit Majumdar, Christopher Williams, Khaled Younes

Publications

PUBLICATIONS

- **Destabilization of binary mixing layer in supercritical conditions** *JOURNAL OF FLUID MECHANICS*
Ly, N., Ihme, M.
2022; 945
- **Combustion machine learning: Principles, progress and prospects** *PROGRESS IN ENERGY AND COMBUSTION SCIENCE*
Ihme, M., Chung, W., Mishra, A.
2022; 91
- **On the hot surface ignition of a wall-stagnating spray flame** *COMBUSTION AND FLAME*
Mohaddes, D., Ihme, M.
2022; 240
- **Interpretable data-driven methods for subgrid-scale closure in LES for transcritical LOX/GCH₄ combustion** *COMBUSTION AND FLAME*
Chung, W., Mishra, A., Ihme, M.
2022; 239
- **A TensorFlow simulation framework for scientific computing of fluid flows on tensor processing units** *COMPUTER PHYSICS COMMUNICATIONS*
Wang, Q., Ihme, M., Chen, Y., Anderson, J.
2022; 274

- **Computation of hypersonic viscous flows with the thermally perfect gas model using a discontinuous Galerkin method** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS*
Ching, E. J., Bensassi, K., Lv, Y., Ihme, M.
2022
- **Chemical and Reactive Transport Processes Associated with Hydraulic Fracturing of Unconventional Oil/Gas Shales.** *Chemical reviews*
Jew, A. D., Druhan, J. L., Ihme, M., Kovscek, A. R., Battiato, I., Kaszuba, J. P., Bargar, J. R., Brown, G. E.
2022
- **General Drag Coefficient for Flow over Spherical Particles** *AIAA JOURNAL*
Singh, N., Kroells, M., Li, C., Ching, E., Ihme, M., Hogan, C. J., Schwartzentruber, T. E.
2022; 60 (2): 587-597
- **Structural analysis of biomass pyrolysis and oxidation using in-situ X-ray computed tomography** *COMBUSTION AND FLAME*
Boigne, E., Bennett, N., Wang, A., Ihme, M.
2022; 235
- **Quail: A lightweight open-source discontinuous Galerkin code in Python for teaching and prototyping** *SOFTWAREX*
Ching, E. J., Bornhoft, B., Lasemi, A., Ihme, M.
2022; 17
- **Structure of the thermal boundary layer in turbulent channel flows at transcritical conditions** *Journal of Fluid Mechanics*
Guo, J., Yang, X. I., Ihme, M.
2022; 934 (A45)
- **Quantitative X-ray computed tomography: Prospects for detailed in-situ imaging in bench-scale fire measurements** *FIRE SAFETY JOURNAL*
Boigne, E., Bennett, N., Wang, A., Ihme, M.
2021; 126
- **Heat transfer augmentation by recombination reactions in turbulent reacting boundary layers at elevated pressures** *INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER*
Perakis, N., Haidn, O. J., Ihme, M.
2021; 178
- **Infrasound Radiation From Impulsive Volcanic Eruptions: Nonlinear Aeroacoustic 2D Simulations** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Watson, L. M., Dunham, E. M., Mohaddes, D., Labahn, J., Jaravel, T., Ihme, M.
2021; 126 (9)
- **Development of a particle collision algorithm for discontinuous Galerkin simulations of compressible multiphase flows** *JOURNAL OF COMPUTATIONAL PHYSICS*
Ching, E. J., Ihme, M.
2021; 436
- **Efficient projection kernels for discontinuous Galerkin simulations of disperse multiphase flows on arbitrary curved elements** *JOURNAL OF COMPUTATIONAL PHYSICS*
Ching, E. J., Ihme, M.
2021; 435
- **Hot surface ignition of a wall-impinging fuel spray: Modeling and analysis using large-eddy simulation** *COMBUSTION AND FLAME*
Mohaddes, D., Boettcher, P., Ihme, M.
2021; 228: 443–56
- **Analysis of droplet evaporation in isotropic turbulence through droplet-resolved DNS** *INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER*
Dodd, M. S., Mohaddes, D., Ferrante, A., Ihme, M.
2021; 172
- **Effects of evaporation on chemical reactions in counterflow spray flames** *PHYSICS OF FLUIDS*
Xie, W., Wu, W., Ren, Z., Liu, H., Ihme, M.
2021; 33 (6)

- **A discontinuous Galerkin method for wall-modeled large-eddy simulations** *COMPUTERS & FLUIDS*
Lv, Y., Yang, X. A., Park, G., Ihme, M.
2021; 222
- **Limitations of flamelet formulation for modeling turbulent pool fires** *COMBUSTION AND FLAME*
Wu, B., Ihme, M., Zhao, X.
2021; 227: 346–58
- **Sensitivity of Hypersonic Dusty Flows to Physical Modeling of the Particle Phase** *JOURNAL OF SPACECRAFT AND ROCKETS*
Ching, E., Barnhardt, M., Ihme, M. I.
2021; 58 (3): 653-667
- **Data-assisted combustion simulations with dynamic submodel assignment using random forests** *COMBUSTION AND FLAME*
Chung, W., Mishra, A., Perakis, N., Ihme, M.
2021; 227: 172–85
- **Using adjoint-based optimization to enhance ignition in non-premixed jets** *PROCEEDINGS OF THE ROYAL SOCIETY A-MATHEMATICAL PHYSICAL AND ENGINEERING SCIENCES*
Qadri, U., Magri, L., Ihme, M., Schmid, P. J.
2021; 477 (2245)
- **Using adjoint-based optimization to enhance ignition in non-premixed jets.** *Proceedings. Mathematical, physical, and engineering sciences*
Qadri, U. A., Magri, L., Ihme, M., Schmid, P. J.
2021; 477 (2245); 20200472
- **Analysis of low-temperature chemistry in a turbulent swirling spray flame near lean blow-out** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Mohaddes, D., Xie, W., Ihme, M.
2021; 38 (3): 3435-3443
- **Structural analysis and regime diagrams of laminar counterflow spray flames with low-temperature chemistry** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Xie, W., Govindaraju, P. B., Ren, Z., Ihme, M.
2021; 38 (2): 3193-3200
- **Pore-resolved simulations of porous media combustion with conjugate heat transfer** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Ferguson, J. C., Sobhani, S., Ihme, M.
2021; 38 (2): 2127-2134
- **Investigation of CO recombination in the boundary layer of CH₄/O₂ rocket engines** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Perakis, N., Haidn, O. J., Ihme, M.
2021; 38 (4): 6403-6411
- **Stability diagram and blow-out mechanisms of turbulent non-premixed combustion** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Li, D., Ihme, M.
2021; 38 (4): 6337-6344
- **Kinetics for the hydrolysis of Ti(OC₃H₇)(₄) : A molecular dynamics simulation study** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Wei, J., Ostadossein, A., Li, S., Ihme, M.
2021; 38 (1): 1433-1440
- **Analysis of core-noise contributions in a realistic gas-turbine combustor operated near lean blow-out** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Shao, C., Maeda, K., Ihme, M.
2021; 38 (4): 6203-6211
- **Experimental feasibility of tailored porous media burners enabled via additive manufacturing** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Sobhani, S., Muhunthan, P., Boigne, E., Mohaddes, D., Ihme, M.
2021; 38 (4): 6713-6722
- **Pareto-efficient combustion framework for predicting transient ignition dynamics in turbulent flames: Application to a pulsed jet-in-hot-coflow flame** *COMBUSTION AND FLAME*

- Douasbin, Q., Ihme, M., Arndt, C.
2021; 223: 153–65
- **Carbon oxidation in turbulent premixed jet flames: A comparative experimental and numerical study of ethylene, n-heptane, and toluene** *COMBUSTION AND FLAME*
Pineda, D., Paxton, L., Perakis, N., Wei, C., Luna, S., Kahouli, H., Ihme, M., Egolfopoulos, F. N., Spearrin, R.
2020; 221: 371–83
 - **Thermodynamic cycle analysis of superadiabatic matrix-stabilized combustion for gas turbine engines** *ENERGY*
Mohaddes, D., Chang, C. T., Ihme, M.
2020; 207
 - **Modeling Heat-Shield Erosion due to Dust Particle Impacts for Martian Entries**
Palmer, G., Ching, E., Ihme, M., Allofs, D., Guelhan, A.
AMER INST AERONAUTICS ASTRONAUTICS.2020: 857–75
 - **Additive Manufacturing of Tailored Macroporous Ceramic Structures for High-Temperature Applications** *ADVANCED ENGINEERING MATERIALS*
Sobhani, S., Allan, S., Muhunthan, P., Boigne, E., Ihme, M.
2020
 - **A two-way coupled Euler-Lagrange method for simulating multiphase flows with discontinuous Galerkin schemes on arbitrary curved elements** *JOURNAL OF COMPUTATIONAL PHYSICS*
Ching, E. J., Brill, S. R., Barnhardt, M., Ihme, M.
2020; 405
 - **Experimental investigation of lean premixed pre-vaporized liquid-fuel combustion in porous media burners at elevated pressures up to 20 bar** *COMBUSTION AND FLAME*
Sobhani, S., Legg, J., Bartz, D. F., Kojima, J. J., Chang, C. T., Sullivan, J. D., Moder, J. P., Ihme, M.
2020; 212: 123–34
 - **Modeling Adsorption in Silica Pores via Minkowski Functionals and Molecular Electrostatic Moments** *Energies*
Simeski, F., Boelens, A. M., Ihme, M.
2020; 13 (22)
 - **Simultaneous in-situ measurements of gas temperature and pyrolysis of biomass smoldering via X-ray computed tomography.** *Proceedings of the Combustion Institute*
Boigne, E., Bennett, N. R., Wang, A., Mohri, K., Ihme, M.
2020
 - **Ensemble Kalman Filter for Assimilating Experimental Data into Large-Eddy Simulations of Turbulent Flows** *FLOW TURBULENCE AND COMBUSTION*
Labahn, J. W., Wu, H., Harris, S. R., Coriton, B., Frank, J. H., Ihme, M.
2019
 - **Data Assimilation and Optimal Calibration in Nonlinear Models of Flame Dynamics** *JOURNAL OF ENGINEERING FOR GAS TURBINES AND POWER-TRANSACTIONS OF THE ASME*
Yu, H., Jaravel, T., Ihme, M., Juniper, M. P., Magri, L.
2019; 141 (12)
 - **Molecular diffusion and phase stability in high-pressure combustion** *COMBUSTION AND FLAME*
Yao, M. X., Hickey, J., Ma, P. C., Ihme, M.
2019; 210: 302–14
 - **Numerical Analysis of Heat and Mass Transfer Coupled With Gaseous Fuel Injection in Reactive Porous Media** *JOURNAL OF HEAT TRANSFER-TRANSACTIONS OF THE ASME*
Cheng, Z., Yang, J., Guo, Z., Fu, P., Ihme, M., Wang, Q.
2019; 141 (11)
 - **Efficient time-stepping techniques for simulating turbulent reactive flows with stiff chemistry** *COMPUTER PHYSICS COMMUNICATIONS*
Wu, H., Ma, P. C., Ihme, M.
2019; 243: 81–96

- **Closure of the scalar dissipation rate in the spray flamelet equations through a transport equation for the gradient of the mixture fraction** *COMBUSTION AND FLAME*
Olguin, H., Scholtissek, A., Gonzalez, S., Gonzalez, F., Ihme, M., Hasse, C., Gutheil, E.
2019; 208: 330–50
- **A regularized deconvolution model for sub-grid dispersion in large eddy simulation of turbulent spray flames** *COMBUSTION AND FLAME*
Wang, Q., Zhao, X., Ihme, M.
2019; 207: 89–100
- **Examination of diesel spray combustion in supercritical ambient fluid using large-eddy simulations** *INTERNATIONAL JOURNAL OF ENGINE RESEARCH*
Chung, W., Ma, P. C., Ihme, M.
2019
- **A regularized deconvolution method for turbulent closure modeling in implicitly filtered large-eddy simulation** *COMBUSTION AND FLAME*
Wang, Q., Ihme, M.
2019; 204: 341–55
- **On the numerical behavior of diffuse-interface methods for transcritical real-fluids simulations** *INTERNATIONAL JOURNAL OF MULTIPHASE FLOW*
Ma, P. C., Wu, H., Banuti, D. T., Ihme, M.
2019; 113: 231–49
- **X-ray Computed Tomography for Flame-Structure Analysis of Laminar Premixed Flames.** *Combustion and flame*
Boigne, E., Muhunthan, P., Mohaddes, D., Wang, Q., Sobhani, S., Hinshaw, W., Ihme, M.
2019; 200: 142–54
- **X-ray computed tomography for flame-structure analysis of laminar premixed flames** *COMBUSTION AND FLAME*
Boigne, E., Muhunthan, P., Mohaddes, D., Wang, Q., Sobhani, S., Hinshaw, W., Ihme, M.
2019; 200: 142–54
- **Error-controlled kinetics reduction based on non-linear optimization and sensitivity analysis** *COMBUSTION AND FLAME*
Jaravel, T., Wu, H., Ihme, M.
2019; 200: 192–206
- **DATA ASSIMILATION AND OPTIMAL CALIBRATION IN NONLINEAR MODELS OF FLAME DYNAMICS**
Yu, H., Jaravel, T., Ihme, M., Juniper, M. P., Magri, L., ASME
AMER SOC MECHANICAL ENGINEERS.2019
- **Functionalization of 2D materials for enhancing OER/ORR catalytic activity in Li–oxygen batteries** *Communications Chemistry*
Ostadossein, A., Guo, J., Simeski, F., Ihme, M.
2019; 2 (95)
- **Modulation of heat transfer for extended flame stabilization in porous media burners via topology gradation** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Sobhani, S., Mohaddes, D., Boigne, E., Muhunthan, P., Ihme, M.
2019; 37 (4): 5697–5704
- **Pareto-efficient combustion modeling for improved CO-emission prediction in LES of a piloted turbulent dimethyl ether jet flame** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Wu, H., Ma, P. C., Jaravel, T., Ihme, M.
2019; 37 (2): 2267–76
- **Analysis of transient blow-out dynamics in a swirl-stabilized combustor using large-eddy simulations** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Ma, P. C., Wu, H., Labahn, J. W., Jaravel, T., Ihme, M.
2019; 37 (4): 5073–82
- **Data assimilation using high-speed measurements and LES to examine local extinction events in turbulent flames** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Labahn, J. W., Wu, H., Coriton, B., Frank, J. H., Ihme, M.
2019; 37 (2): 2259–66

- **Shock capturing for discontinuous Galerkin methods with application to predicting heat transfer in hypersonic flows** *JOURNAL OF COMPUTATIONAL PHYSICS*
Ching, E. J., Lv, Y., Gnoffob, P., Barnhardt, M., Ihme, M.
2019; 376: 54–75
- **A new ignition time model applied to super knock** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Grogan, K. P., Ihme, M.
2019; 37 (3): 3487–94
- **Assessment of spray combustion models in large-eddy simulations of a polydispersed acetone spray flame** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Wang, Q., Jaravel, T., Ihme, M.
2019; 37 (3): 3335–44
- **Coupling of turbulence on the ignition of multicomponent sprays** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Govindaraju, P. B., Jaravel, T., Ihme, M.
2019; 37 (3): 3295–3302
- **Large-eddy simulations of transcritical injection and auto-ignition using diffuse-interface method and finite-rate chemistry** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Ma, P. C., Wu, H., Jaravel, T., Bravo, L., Ihme, M.
2019; 37 (3): 3303–10
- **Large eddy simulations of diesel-fuel injection and auto-ignition at transcritical conditions**
Ihme, M., Ma, P. C., Bravo, L.
SAGE PUBLICATIONS LTD.2019: 58–68
- **Assessment of differential diffusion effects in flamelet modeling of oxy-fuel flames** *COMBUSTION AND FLAME*
Gierth, S., Hunger, F., Popp, S., Wu, H., Ihme, M., Hasse, C.
2018; 197: 134–44
- **Thermodynamic structure of supercritical LOX-GH2 diffusion flames** *COMBUSTION AND FLAME*
Banuti, D. T., Ma, P. C., Hickey, J., Ihme, M.
2018; 196: 364–76
- **Nonadiabatic Flamelet Formulation for Predicting Wall Heat Transfer in Rocket Engines** *AIAA JOURNAL*
Ma, P. C., Wu, H., Ihme, M., Hickey, J.
2018; 56 (6): 2336–49
- **Structure of wall-bounded flows at transcritical conditions** *PHYSICAL REVIEW FLUIDS*
Ma, P. C., Yang, X. A., Ihme, M.
2018; 3 (3)
- **Effects of Nozzle Helmholtz Number on Indirect Combustion Noise by Compositional Perturbations** *JOURNAL OF ENGINEERING FOR GAS TURBINES AND POWER-TRANSACTIONS OF THE ASME*
Magri, L., O'Brien, J., Ihme, M.
2018; 140 (3)
- **Phase transitions of ordered ice in graphene nanocapillaries and carbon nanotubes** *SCIENTIFIC REPORTS*
Raju, M., van Duin, A., Ihme, M.
2018; 8: 3851
- **Atomistic and continuum scale modeling of functionalized graphyne membranes for water desalination** *NANOSCALE*
Raju, M., Govindaraju, P. B., van Duin, A. T., Ihme, M.
2018; 10 (8): 3969–80
- **Formulation of optimal surrogate descriptions of fuels considering sensitivities to experimental uncertainties** *COMBUSTION AND FLAME*
Govindaraju, P. B., Ihme, M.
2018; 188: 337–56

- **On underresolved simulations of compressible turbulence using an entropy-bounded DG method: Solution stabilization, scheme optimization, and benchmark against a finite-volume solver** *COMPUTERS & FLUIDS*
Lv, Y., Ma, P. C., Ihme, M.
2018; 161: 89–106
- **Flamelet regime characterization for non-premixed turbulent combustion simulations** *COMBUSTION AND FLAME*
Chan, W., Ihme, M.
2017; 186: 220–35
- **Lyapunov exponent as a metric for assessing the dynamic content and predictability of large-eddy simulations** *PHYSICAL REVIEW FLUIDS*
Nastac, G., Labahn, J. W., Magri, L., Ihme, M.
2017; 2 (9)
- **A general probabilistic approach for the quantitative assessment of LES combustion models** *COMBUSTION AND FLAME*
Johnson, R., Wu, H., Ihme, M.
2017; 183: 88–101
- **An entropy-stable hybrid scheme for simulations of transcritical real-fluid flows** *JOURNAL OF COMPUTATIONAL PHYSICS*
Ma, P. C., Lv, Y., Ihme, M.
2017; 340: 330–57
- **Fuel effects on lean blow-out in a realistic gas turbine combustor** *COMBUSTION AND FLAME*
Escalapez, L., Ma, P. C., Mayhew, E., Xu, R., Stouffer, S., Lee, T., Wang, H., Ihme, M.
2017; 181: 82–99
- **High-order discontinuous Galerkin method for applications to multicomponent and chemically reacting flows** *ACTA MECHANICA SINICA*
Lv, Y., Ihme, M.
2017; 33 (3): 486–99
- **Similarity law for Widom lines and coexistence lines** *PHYSICAL REVIEW E*
Banuti, D. T., Raju, M., Ihme, M.
2017; 95 (5)
- **Non-equilibrium wall-modeling for internal combustion engine simulations with wall heat transfer** *INTERNATIONAL JOURNAL OF ENGINE RESEARCH*
Ma, P. C., Greene, M., Sick, V., Ihme, M.
2017; 18 (1-2): 15-25
- **Regularized deconvolution method for turbulent combustion modeling** *COMBUSTION AND FLAME*
Wang, Q., Ihme, M.
2017; 176: 125-142
- **An investigation of internal flame structure in porous media combustion via X-ray Computed Tomography** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Dunnmon, J., Sobhani, S., Wu, M., Fahrig, R., Ihme, M.
2017; 36 (3): 4399-4408
- **Widom Lines in Binary Mixtures of Supercritical Fluids.** *Scientific reports*
Raju, M. n., Banuti, D. T., Ma, P. C., Ihme, M. n.
2017; 7 (1): 3027
- **SPECIES DEPENDENCY OF THE COMPOSITIONAL INDIRECT NOISE MECHANISM**
O'Brien, J. D., Ihme, M., ASME
AMER SOC MECHANICAL ENGINEERS.2017
- **EFFECTS OF NOZZLE HELMHOLTZ NUMBER ON INDIRECT COMBUSTION NOISE BY COMPOSITIONAL PERTURBATIONS**
Magri, L., O'Brien, J., Ihme, M., ASME
AMER SOC MECHANICAL ENGINEERS.2017
- **Combustion and Engine-Core Noise** *ANNUAL REVIEW OF FLUID MECHANICS, VOL 49*
Ihme, M.

2017; 49: 277-310

- **Regimes describing shock boundary layer interaction and ignition in shock tubes** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Grogan, K. P., Ihme, M.
2017; 36 (2): 2927-2935
- **Numerical investigation of soot-flame-vortex interaction** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Franzelli, B., Cuoci, A., Stagni, A., Ihme, M., Faravelli, T., Candel, S.
2017; 36 (1): 753-761
- **The role of preferential evaporation on the ignition of multicomponent fuels in a homogeneous spray/air mixture** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Stagni, A., Esclapez, L., Govindaraju, P., Cuoci, A., Faravelli, T., Ihme, M.
2017; 36 (2): 2483-2491
- **The cross-scale physical-space transfer of kinetic energy in turbulent premixed flames** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
O'Brien, J., Towery, C. A., Hamlington, P. E., Ihme, M., Poludnenko, A. Y., Urzay, J.
2017; 36 (2): 1967-1975
- **Development and Analysis of Wall Models for Internal Combustion Engine Simulations Using High-speed Micro-PIV Measurements** *FLOW TURBULENCE AND COMBUSTION*
Ma, P. C., Ewan, T., Jainski, C., Lu, L., Dreizler, A., Sick, V., Ihme, M.
2017; 98 (1): 283-309
- **Classification and lift-off height prediction of non-premixed MILD and autoignitive flames** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Evans, M. J., Medwell, P. R., Wu, H., Stagni, A., Ihme, M.
2017; 36 (3): 4297-4304
- **Multiple-scale thermo-acoustic stability analysis of a coaxial jet combustor** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Magri, L., See, Y., Tammsisola, O., Ihme, M., Juniper, M. P.
2017; 36 (3): 3863-3871
- **Compliance of combustion models for turbulent reacting flow simulations** *FUEL*
Wu, H., Ihme, M.
2016; 186: 853-863
- **Group contribution method for multicomponent evaporation with application to transportation fuels** *INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER*
Govindaraju, P. B., Ihme, M.
2016; 102: 833-845
- **An entropy-residual shock detector for solving conservation laws using high-order discontinuous Galerkin methods** *JOURNAL OF COMPUTATIONAL PHYSICS*
Lv, Y., See, Y. C., Ihme, M.
2016; 322: 448-472
- **Compositional inhomogeneities as a source of indirect combustion noise** *JOURNAL OF FLUID MECHANICS*
Magri, L., O'Brien, J., Ihme, M.
2016; 799
- **Spectral kinetic energy transfer in turbulent premixed reacting flows** *PHYSICAL REVIEW E*
Towery, C. A., Poludnenko, A. Y., Urzay, J., O'Brien, J., Ihme, M., Hamlington, P. E.
2016; 93 (5)
- **Phase transitions in quasi 1-D and 2-D nanoconfined water**
Raju, M., Van Duin, A., Ihme, M.
AMER CHEMICAL SOC.2016
- **Reaxff reactive force field study of oriented attachment of TiO₂ nanocrystals in non-aqueous solvents**
Raju, M., Penn, R., Fichthorn, K., Ihme, M.
AMER CHEMICAL SOC.2016

- **Water desalination and selective ion-separation using single-layer graphyne and hydrogenated graphyne membranes at realistic reverse-osmosis pressures**
Raju, M., Van Duin, A., Ihme, M.
AMER CHEMICAL SOC.2016
- **Characterizing spray flame-vortex interaction: A spray spectral diagram for extinction** *COMBUSTION AND FLAME*
Franzelli, B., Vie, A., Ihme, M.
2016; 163: 100-114
- **On the generalisation of the mixture fraction to a monotonic mixing-describing variable for the flamelet formulation of spray flames** *COMBUSTION THEORY AND MODELLING*
Franzelli, B., Vie, A., Ihme, M.
2015; 19 (6): 773-806
- **A Pareto-efficient combustion framework with submodel assignment for predicting complex flame configurations** *COMBUSTION AND FLAME*
Wu, H., See, Y. C., Wang, Q., Ihme, M.
2015; 162 (11): 4208-4230
- **Characterization of scalar mixing in dense gaseous jets using X-ray computed tomography** *EXPERIMENTS IN FLUIDS*
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