

2019 JOURNAL PUBLICATIONS

Note that CoMFRE affiliates are identified by **bold** names.

October-December

- K.J. Sumaria, R.W. Hyers, and J. **Lee**, 2019, "Numerical Prediction of Oscillation Behaviors of a Multiphase Core-Shell Droplet During Interfacial Tension Measurement," *Metallurgical and Materials Transactions*, v50B, pp. 3012-3019.
- **Passalacqua**, F. Laurent, R.O. **Fox**, A second-order realizable scheme for moment advection on unstructured grids, *Computer Physics Communications*. (2019) 106993.
<https://doi.org/10.1016/j.cpc.2019.106993>.
- F. Chowdhury, B. Elchamaa, M. Ray, A. Sowinski, A. **Passalacqua**, P. Mehrani, Apparatus design for measuring electrostatic charge transfer due to particle-particle collisions, *Powder Technology*. (2019). <https://doi.org/10.1016/j.powtec.2019.11.013>.

July-September

- Chausalkar, A., S.-C. **Kong**, and J.B. **Michael**, "Multicomponent Drop Breakup During Impact with Heated Walls," *International Journal of Heat and Mass Transfer*, 141:685-695, 2019.
- **Fox**, R. O., "A Kinetic-Based Hyperbolic Two-Fluid Model for Binary Hard-Sphere Mixtures," *Journal of Fluid Mechanics* 877:282-329, 2019.
- Gao, L.Y., Y. Liu, L.Q. Ma, and H. **Hu**. "A Hybrid Strategy Combining Minimized Leading-Edge Electric-Heating and Superhydro-/Ice-Phobic Surface Coating for Wind Turbine Icing Mitigation", *Renewable Energy*, 140:943-956, 2019.
<https://doi.org/10.1016/j.renene.2019.03.112>
- Gao, L.Y., R. Veerakumar, Y. Liu, and H. **Hu**. "Quantification of the 3D Shapes of the Ice Structures Accreted on a Wind Turbine Airfoil Model", *Journal of Visualization*, 22(4):661–667, 2019. <https://doi.org/10.1007/s12650-019-00567-4>
- Guo, J., A.E. Niaraki Asli, K.R. Williams, P.L. Lai, X. Wang, R. Montazami, and N.N. **Hashemi**, "Viability of Neural Cells on 3D Printed Graphene Bioelectronics", *Biosensors*, 9(4):112, 2019.
<https://doi.org/10.3390/bios9040112>
- Heylmun, J. C., B. Kong, A. **Passalacqua**, and R. O. **Fox**, "A Quadrature-Based Moment Method for Polydisperse Bubbly Flows," *Computer Physics Communications* 244:187-204, 2019.
- Li, D., Bothell, J.K., Morgan, T.B., Machicoane, N., Aliseda, A., Kastengren, A.L., and **Heindel**, T.J., "Time-Averaged Spray Analysis in the Near-Field Using X-ray Measurements," *Atomization and Sprays*, 29(4): 331-349, 2019. DOI: 10.1615/AtomizSpr.2019030744
- Li, LK, Y. Liu, and H. **Hu**. "An Experimental Study on Dynamic Ice Accretion Process over the Surfaces of Rotating Aero-Engine Spinners". *Experimental Thermal and Fluid Science*, 109: 109879 (13 pages). 2019. <https://doi.org/10.1016/j.expthermflusci.2019.109879>.
- Liu, Y., C. Kolbakir, H.Y. Hu, X.S. Meng, and H. **Hu**. "An Experimental Study on the Thermal Effects of Duty-Cycled Plasma Actuation Pertinent to Aircraft Icing Mitigation", *International Journal of Heat and Mass Transfer*, 136:864-876, 2019. <https://doi.org/10.1016/j.ijheatmasstransfer.2019.03.068>

- Liu, Y., W.L. Chen, Y.H. Peng, and H. **Hu**. "An Experimental Study on the Dynamic Ice Accretion Processes on Bridge Cables with Different Surface Modifications", *Journal of Wind Engineering & Industrial Aerodynamics*, 190:218-229, 2019. <https://doi.org/10.1016/j.jweia.2019.05.007>.
- Liu, Y., Z.C. Zhang, H.Y. Hu, A. Samanta, Q.H. Wang, H.T. Ding and H. **Hu**. "An Experimental Study to Characterize a Surface Treated with a Novel Laser Surface Texturing Technique: Water Repellency and Reduced Ice Adhesion", *Surface and Coatings Technology*, 374:634-644, 2019. <https://doi.org/10.1016/j.surfcoat.2019.06.046>.
- McNamara, M.C., R.J. Pretzer, R. Montazami, and N.N. **Hashemi**, "Shear at Fluid-Fluid Interfaces Affects the Surface Topologies of Alginate Microfibers", *Clean Technologies*, 1, 265-272, 2019.
- Peng, C., B. Kong, J. Zhou, B. Sun, A. **Passalacqua**, S. **Subramaniam**, and R. O. **Fox**, "Implementation of Pseudo-Turbulence Closures in an Eulerian-Eulerian Two-Fluid Model for Non-Isothermal Gas-Solid Flow," *Chemical Engineering Science* 207, 663-671, 2019.
- R.L. Pemathilaka, R.L., D.E. Reynolds, and N.N. **Hashemi**, "Drug Transport across the Human Placenta: Review of Placenta-on-a-Chip and Previous Approaches", *Interface Focus*, 9, 20190031, 2019.
- Sharifi, F., B.B. Patel, M.C. McNamara, P. Meis, M. Roghair, M. Lu, R. Montazami, D.S. Sakaguchi, and N.N. **Hashemi**, "Photo-Cross-Linked Poly(ethylene glycol) Diacrylate Hydrogels: Spherical Microparticles to Bow Tie-Shaped Microfibers", *ACS Applied Materials & Interfaces*, 11:18797-18807, 2019.
- Wang, X.D., Z.L. Ye, S. Kang, and H. **Hu**. "Investigations on the Unsteady Aerodynamic Characteristics of a Horizontal-Axis Wind Turbine during Dynamic Yaw Processes", *Energies*, 12:3124, 2019. <https://doi.org/10.3390/en12163124>
- Wrede, A.H., F. Al-Masri, R. Montazami, and N.N. **Hashemi**, "Investigation of Cavitation-Induced Damage on PDMS Films", *Analytical Methods*, 2019. <https://doi.org/10.1039/C9AY01576K>
- Yeh, H.-L., and **Juárez**, J.J. "Oil Phase Displacement by Acoustic Streaming in a Reservoir-on-a-Chip", *Microfluidics and Nanofluidics*, 23:113, 2019. <https://doi.org/10.1007/s10404-019-2279-x>
- Zheng, K., W. Tian, J. Qian, S.L. Zhang and H. **Hu**. "Effect of Film Cooling Injection on Aerodynamic Performances of Scramjet Isolator", *Aerospace Science and Technology*, 2019. <https://doi.org/10.1016/j.ast.2019.105383>.

April-June

- Chen, X., Zhong, W., and **Heindel**, T.J., "Orientation of cylindrical particles in a fluidized bed based on stereo X-ray particle tracking velocimetry (XPTV)," *Chemical Engineering Science*, 20:104-112, 2019. <https://doi.org/10.1016/j.ces.2019.03.067>.
- Heylman, J.C., **Kong**, B., **Passalacqua**, A., and **Fox**, R.O. "A quadrature-based moment method for polydisperse bubbly flows," *Computer Physics Communications*, 2019. doi:[10.1016/j.cpc.2019.06.005](https://doi.org/10.1016/j.cpc.2019.06.005).

- Lawrence, A.R., Laktas, J.M., Place, G.J., Jelliss, P.A., Buckner, S.W., and **Sippel**, T.R., “Organically-capped, nanoscale alkali metal hydride and aluminum particles as solid propellant additives,” *Journal of Propulsion and Power*, 1-11, 2019.
- Machicoane, N., Bothell, J.K., Li, D., Morgan, T.B., **Heindel**, T.J., Kastengren, A.L., and Aliseda, A., “Synchrotron radiography characterization of the liquid core dynamics in a canonical two-fluid coaxial atomizer,” *International Journal of Multiphase Flow*, 115:1-8, 2019. <https://doi.org/10.1016/j.ijmultiphaseflow.2019.03.006>.
- Ray, M., Chowdhury, F., Sowinski, A., Mehrani, P., and **Passalacqua**, A., “An Euler-Euler model for mono-dispersed gas-particle flows incorporating electrostatic charging due to particle-wall and particle-particle collisions,” *Chemical Engineering Science*, 197:327-344, 2019. doi:[10.1016/j.ces.2018.12.028](https://doi.org/10.1016/j.ces.2018.12.028)
- Yang, X., **Kong**, S.-C. “Adaptive resolution for multiphase smoothed particle hydrodynamics” *Computer Physics Communications*, 239:112–125, 2019.
- Yang, X., Pan, Y., **Kong**, S.-C., Ting, F.C., Lyer, C., Yi, J. “Numerical study of fuel droplet impact on heated surfaces using smoothed particle hydrodynamics method,” SAE Paper 2019-01-0291, 2019.

Late 2018-March 2019

- Barkley, S.J., Zhu, K., Lynch, J.E., **Michael**, J.B., **Sippel**, T.R., “Microwave plasma enhancement of multiphase flames: On-demand control of solid-propellant burning rate,” *Combustion and Flame*. 199: 14-23, 2019.
- Bingol, O, **Krishnamurthy**, A., “NURBS-Python: An open-source object-oriented NURBS modeling framework in Python,” *SoftwareX*. 9: 85-94, 2019.
- Chen, X., Zhong, W., and **Heindel**, T.J., “Using stereo XPTV to determine cylindrical particle distribution and velocity in a binary fluidized bed,” *AIChE Journal*. 65:2 520-535, 2019. <https://doi.org/10.1002/aic.16485>.
- Dou, Q., **Shrotriya**, P., Li, W., Hebert, K.R., “Stress-generating electrochemical reactions during the initial growth of anodic titanium dioxide nanotube layers,” *Electrochimica Acta*. 295: 418-426, 2019.
- **Heindel**, T.J., “X-ray imaging techniques to quantify spray characteristics in the near field,” *Atomization and Sprays*. 28:11 1029-1059, 2018. DOI: 10.1615/AtomizSpr.2019028797.
- Herrema, A.J., Johnson, E.L., Proserpio, D., Kiendl, J., **Hsu**, M.-C., “Penalty coupling of non-matching isogeometric Kirchhoff–Love shell patches with application to composite wind turbine blades,” *Computer Methods in Applied Mechanics and Engineering*. 346: 810–840, 2019. <https://doi.org/10.1016/j.cma.2018.08.038>.
- Herrema, A.J., Kiendl, J., **Hsu**, M.-C., “A framework for isogeometric analysis-based design and optimization of wind turbine blade structures,” *Wind Energy*. 22: 153–170, 2019. <https://doi.org/10.1002/we.2276>.
- Huston M.R., **Sippel**, T.R., “Confined flame propagation of Al/PTFE mechanically activated composites,” *Combustion and Flame*. 203: 83-91, 2019.
- Liu, Z., Hill, J.C., **Fox**, R.O., **Passalacqua**, A., Olsen M.G., “A delayed detached eddy simulation model with low Reynolds number correction for transitional swirling flow in a multi-inlet

- vortex nanoprecipitation reactor,” *Chemical Engineering Science*. 193: 66–75, 2019. doi:[10.1016/j.ces.2018.08.020](https://doi.org/10.1016/j.ces.2018.08.020).
- Ray, M., Chowdhury, F., Sowinski A., Mehrani, P., **Passalacqua**, A., “An Euler-Euler model for mono-dispersed gas-particle flows incorporating electrostatic charging due to particle-wall and particle-particle collisions,” *Chemical Engineering Science*. 197: 327–344, 2019. doi:[10.1016/j.ces.2018.12.028](https://doi.org/10.1016/j.ces.2018.12.028).
 - White, A.R., **Ward**, T., “Surface remobilization of buoyancy-drive surfactant-laden drops at low Reynolds and capillary numbers,” *AIChE Journal*. 65:1 294-304, 2019.
 - Wu, M.C.H., Zakerzadeh, R., Kamensky, D., Kiendl, J., Sacks, M.S., **Hsu**, M.-C., “An anisotropic constitutive model for immersogeometric fluid–structure interaction analysis of bioprosthetic heart valve,” *Journal of Biomechanics*. 74: 23–31, 2018. <https://doi.org/10.1016/j.jbiomech.2018.04.012>.
 - Xu, F., Bazilevs, Y., **Hsu**, M.-C., Immersogeometric analysis of compressible flows with application to aerodynamic simulation of rotorcraft. *Mathematical Models and Methods in Applied Sciences*. Accepted; 2019. <https://doi.org/10.1142/S0218202519410033>.
 - Xu, F., Morganti, S., Zakerzadeh, R., Kamensky, D., Auricchio, F., Reali, A., Hughes, T.J.R., Sacks, M.S., **Hsu**, M.-C., “A framework for designing patient-specific bioprosthetic heart valves using immersogeometric fluid–structure interaction analysis,” *International Journal for Numerical Methods in Biomedical Engineering*. 34: e2938, 2018. <https://doi.org/10.1002/cnm.2938>.
 - Yu, Y., Kamensky D., **Hsu**, M.-C., Lu, X.Y., Bazilevs, Y., Hughes, T.J.R., “Error estimates for dynamic augmented Lagrangian boundary condition enforcement, with application to immersogeometric fluid–structure interaction,” *Mathematical Models and Methods in Applied Sciences*. 28: 2457–2509, 2018. <https://doi.org/10.1142/S0218202518500537>.