Michael Yong Zhao
Department of Mechanical and Aerospace Engineering
Email: yong.zhao@nu.edu.kz

Research interests

1) Computational Fluid Dynamics-Discrete Element Methods-Fluid-Structure Interaction (CFD-DEM-FSI); 2) Hi-fidelity Concurrent Multidisciplinary Design Analysis and Optimization(MDAO); 3) Biomechanics; 4) Physics-informed Neural Network/Physics-informed Machine Learning (PINN/PIML) based Simulation; 5) Renewable Energy (Wind Energy).

Employment

Professor
Professor
School of Engineering and Digital Sciences
Nazarbayev University
Kazakhstan
Aug 9 2016 → present

Research outputs

Physics-informed neural network for fast prediction of temperature distributions in cancerous breasts as a potential efficient portable AI-based diagnostic tool
Mukhmetov, O., Zhao, Y., Mashekova, A., Zarikas, V., Ng, E. Y. K. & Aidossov, N., Dec 2023, In: Computer Methods and Programs in Biomedicine. 242, 107834.

Adjoint-Based High-Fidelity Concurrent Aerodynamic Design Optimization of Wind Turbine
Batay, S., Kamalov, B., Zhangaskanov, D., Zhao, Y., Wei, D., Zhou, T. & Su, X., Mar 2023, In: Fluids. 8, 3, 85.

Arbitrary Hybrid Turbulence Modeling Approach for High-Fidelity NREL Phase VI Wind Turbine CFD Simulation
Kamalov, B., Batay, S., Zhangaskhanov, D., Zhao, Y. & Ng, E. Y. K., Jul 2022, In: Fluids. 7, 7, 236.

Numerical scheme for solving the Richard's equation based on finite volume model with unstructured mesh and implicit dual-time stepping
Su, X., Zhang, M., Zou, D., Zhao, Y., Zhang, J. & Su, H., Jul 2022, In: Computers and Geotechnics. 147, 104768.

Numerical investigation of sand production mechanisms in weak sandstone formations with various reservoir fluids
Khamitov, F., Minh, N. H. & Zhao, Y., Jun 2022, In: International Journal of Rock Mechanics and Mining Sciences. 154, 105096.

High-Fidelity 2-Way FSI Simulation of a Wind Turbine Using Fully Structured Multiblock Meshes in OpenFoam for Accurate Aero-Elastic Analysis
Zhangaskanov, D., Batay, S., Kamalov, B., Zhao, Y., Su, X. & Kweeng, E., May 2022, In: Fluids. 7, 5, 169.

Numerical simulations of sand production in oil wells using the CFD-DEM-IBM approach
Rakhimzhanova, A., Thornton, C., Amanbek, Y. & Zhao, Y., Jan 2022, In: Journal of Petroleum Science and Engineering. 208, 109529.

A novel dynamic adaptive unstructured mesh algorithm for simulating multi-object relative motion in incompressible fluid
Su, X., Zhang, K., Zhao, Y., Zhang, M. & Zhang, J., 2022, (Accepted/In press) In: International Journal for Numerical Methods in Fluids.

Early detection of the breast cancer using infrared technology – A comprehensive review
Mashekova, A., Zhao, Y., Ng, E. Y. K., Zarikas, V., Fok, S. C. & Mukhmetov, O., 2022, In: Thermal Science and Engineering Progress. 27, 101142.

An arbitrary hybrid turbulence modeling approach for efficient and accurate automotive aerodynamic analysis and design optimization
Maulenkul, S., Yerzhanov, K., Kabidollayev, A., Kamalov, B., Batay, S., Zhao, Y. & Wei, D., Nov 2021, In: Fluids. 6, 11, 407.

Inverse thermal modeling and experimental validation for breast tumor detection by using highly personalized surface thermal patterns and geometry of the breast
Mukhmetov, O., Mashekova, A., Zhao, Y., Ng, E. Y. K., Midlenko, A., Fok, S. & Teh, S. L., Oct 2021, In: Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science. 235, 19, p. 3777-3791 15 p.

Patient/breast-specific detection of breast tumor based on patients' thermograms, 3d breast scans, and reverse thermal modelling
Mukhmetov, O., Mashekova, A., Zhao, Y., Midlenko, A., Ng, E. Y. K. & Fok, S. C., Jul 2021, In: Applied Sciences (Switzerland). 11, 14, 6565.

Numerical simulations of cone penetration in cemented sandstone
Rakhimzanova, A., Thornton, C., Amanbek, Y. & Zhao, Y., Jun 7 2021, *Numerical simulations of cone penetration in cemented sandstone.* EPJ Web of Conferences, Vol. 249. 4 p. 14010

3D multidisciplinary automated design optimization toolbox for wind turbine blades
Sagimbayev, S., Kylyshbek, Y., Batay, S., Zhao, Y., Fok, S. & Lee, T. S., Apr 2021, In: Processes. 9, 4, 581.

Thermal modeling for breast tumor detection using thermography
Mukhmetov, O., Igali, D., Mashekova, A., Zhao, Y., Ng, E. Y. K., Fok, S. C. & Teh, S. L., Mar 2021, In: International Journal of Thermal Sciences. 161, 106712.

3D NUMERICAL STUDY OF TEMPERATURE PATTERNS IN A FEMALE BREAST WITH TUMOR USING A REALISTIC MULTI-LAYERED MODEL
Zhao, M., Myrzhakhmet, A., Mashekova, A., Ng, EYK. & Mukhmetov, O., Feb 10 2021, In: THE BULLETIN. 389, p. 6-13 8 p.

An integrated laboratory experiment of realistic diagenesis, perforation and sand production using a large artificial sandstone specimen
Kozhagulova, A., Shabdirova, A., Minh, N. H. & Zhao, Y., Feb 2021, In: Journal of Rock Mechanics and Geotechnical Engineering. 13, 1, p. 154-166 13 p.

Coupled CFD–DEM numerical modelling of perforation damage and sand production in weak sandstone formation
Khamitov, F., Minh, N. H. & Zhao, Y., 2021, (Accepted/In press) In: Geomechanics for Energy and the Environment. 28, 100255.

Patient-specific CFD simulation of aerodynamics for nasal pathology: a combined computational and experimental study
Sagandykova, N. S., Fakhradiyev, I. R., Sajjala, S. R., Taukeleva, S. A., Shemetova, D. E., Saliev, T. M., Tanabayeva, S. B. & Zhao, Y., 2021, (Accepted/In press) In: Computer Methods in Biomechanics and Biomedical Engineering: Imaging and Visualization. 9, 5, p. 470-479 10 p.

Experimental and Analytical Investigation of Sand Production in Weak formations for Multiple Well Shut-Ins
Kozhagulova, A., Minh, N. H., Zhao, Y. & Fok, S. C., Dec 2020, In: Journal of Petroleum Science and Engineering. 195, 107628.

Experimental and Numerical Investigation of the Plastic Zone Permeability
Shabdirova, A., Khamitov, F., Kozhagulova, A., Amanbek, Y., Nguyen, M. & Zhao, Y., Sept 18 2020, *American Rock Mechanics Association.*

Investigation of high lift force generation of dragonfly wing by a novel advanced mode in hover
Su, X., Zhang, K., Zheng, J., Zhao, Y., Han, R. & Zhang, J., Jun 2020, In: Fluids. 5, 2, 59.

A study on bond breakage behavior of weak Cretaceous Kazakhstani reservoir sandstone analogue
Kozhagulova, A., Minh, N. H., Zhao, Y. & Fok, S. C., Mar 2020, In: Geomechanics for Energy and the Environment. 21, 100159.

Comparative Analysis of Turbulence Models for Automotive Aerodynamic Simulation and Design
Igali, D., Mukhmetov, O., Zhao, Y., Fok, S. C. & Teh, S. L., Dec 1 2019, In: International Journal of Automotive Technology. 20, 6, p. 1145-1152 8 p.

A Comparative Analysis of Different Turbulence Models for Simulating Complex Turbulent Separated Flows over Cubic Geometries
Praliyev, N., Sarsen, A., Kaishubayeva, N., Zhao, Y., Fok, S. C. & Teh, S. L., Oct 16 2019, In: IOP Conference Series: Materials Science and Engineering. 616, 1, 012002.

Numerical Investigations on High Lift Force Generation of 3D Dragonfly Wing during Hovering Motions
Su, X., Zhang, K., Zheng, J., Zhang, J. & Zhao, Y., Oct 16 2019, In: IOP Conference Series: Materials Science and Engineering. 616, 1, 012005.

Numerical simulations of triaxial compression tests of cemented sandstone
Rakhimzhanova, A. K., Thornton, C., Minh, N. H., Fok, S. C. & Zhao, Y., Sept 1 2019, In: Computers and Geotechnics. 113, 103068.

Shape optimization for composite polymers in 3D printing
Ali, M. H., Yerbolat, G., Islam, G., Amangeldi, S. & Zhao, M. Y., Apr 2019, In: International Journal of Innovative Technology and Exploring Engineering. 8, 6, p. 55-61 7 p.

A sand production prediction model for weak sandstone reservoir in Kazakhstan
Shabdirova, A., Minh, N. H. & Zhao, Y., Jan 1 2019, In: Journal of Rock Mechanics and Geotechnical Engineering. 11, 4, p. 760-769 10 p.

Computational Fluid-Structure Interaction: Methods, Models and Applications
Zhao, Y., 2019, Academic Press.

Finite element modelling for the detection of breast tumor
Mukhmetov, O., Igali, D., Zhao, Y., Fok, S. C., Teh, S. L., Mashekova, A. & Kwee, N. Y., Dec 6 2018, *Proceedings - 2018 IEEE 18th International Conference on Bioinformatics and Bioengineering, BIBE 2018*. Institute of Electrical and Electronics Engineers Inc., p. 360-363 4 p. 8567517. (Proceedings - 2018 IEEE 18th International Conference on Bioinformatics and Bioengineering, BIBE 2018).

An Experimental Framework for Validation of Thermal Modeling for Breast Cancer Detection
Igali, D., Mukhmetov, O., Zhao, Y., Fok, S. C. & Teh, S. L., Oct 1 2018, In: IOP Conference Series: Materials Science and Engineering. 408, 1, 012031.

Computational fluid-structure interaction: Methods, models, and applications
Zhao, Y. & Su, X., Sept 27 2018, Elsevier B.V. 504 p.

Numerical and experimental investigations on the hydrodynamic performance of a tidal current turbine
Su, X., Zhang, H., Zhao, G., Cao, Y. & Zhao, Y., Apr 1 2018, In: Journal of Offshore Mechanics and Arctic Engineering. 140, 2, 021902.

Numerical and Experimental Investigations on the Hydrodynamic Performance of a Tidal Current Turbine
Su, X., Zhang, J., Zhao, Y., Zhang, H., Zhao, G. & Cao, Y., Dec 20 2017, In: IOP Conference Series: Materials Science and Engineering. 280, 1, 012001.

Numerical Study of a Fire in a Shopping Mall Café and the Associated Evacuation Processes
Malik, A., Ospanov, S., Zhao, Y., Lee Teh, S. & Fok, S. C., Nov 18 2017, (Accepted/In press).

Study of Flame and Smoke Propagation and Fire Safety in a Small Cinema Hall Using LES Fire and Evacuation Simulation
Akitayev, A., Beisekenov, I., Malik, A., Zhao, Y., Teh, S. L. & Fok, S. C., Nov 18 2017, (Accepted/In press).

Numerical Investigations on Aerodynamic Forces of Deformable Foils in Hovering Motions
Zhao, Y., Yin, Z., Su, X., Zhang, J. & Cao, Y., Sept 8 2017, In: IOP Conference Series: Materials Science and Engineering. 234, 1, 012006.

Numerical Investigations on Aerodynamic Forces of Deformable Foils in Hovering Motions
Zhao, Y., Yin, Z., Su, X., Zhang, J. & Cao, Y., Sept 8 2017, In: IOP Conference Series: Materials Science and Engineering. 234, 1, 012006.

Preface
Zhao, Y. & Christiaans, H., Sept 8 2017, In: IOP Conference Series: Materials Science and Engineering. 234, 1, 011001.

Effect of Free-Stream Turbulence Intensity on Transonic Airfoil with Shock Wave
Rojas Solorzano, L., Lutsenko, I., Serikbay, M., Akiltayev, A. & Zhao, Y., Jul 14 2017, In: IOP Conference Series: Materials Science and Engineering. 234, 012016, 234.

Numerical investigations on aerodynamic forces of deformable foils in hovering motions
Su, X., Yin, Z., Cao, Y. & Zhao, Y., Apr 1 2017, In: Physics of Fluids. 29, 4, 041902.

Aircraft tire temperature at touchdown with wheel prerotation
Alroqi, A. A., Wang, W. & Zhao, Y., 2017, In: Journal of Aircraft. 54, 3, p. 926-938 13 p.

An unstructured mesh arbitrary Lagrangian-Eulerian unsteady incompressible flow solver and its application to insect flight aerodynamics
Su, X., Cao, Y. & Zhao, Y., Jun 1 2016, In: Physics of Fluids. 28, 6, 061901.

Development and evaluation of aerogel-filled BMI sandwich panels for thermal barrier applications
Joshi, S. C., Sheikh, A. A., Dineshkumar, A. & Zhao, Y., Jan 1 2016, In: AIMS Materials Science. 3, 3, p. 938-953 16 p.

Simulations of fluid-structure interaction of a wind turbine
Zheng, S., Chua, L. P. & Zhao, Y., 2016, *Fluid-Structure-Sound Interactions and Control - Proceedings of the 3rd Symposium on Fluid-Structure-Sound Interactions and Control.* Zhou, Y., Lucey, A. D., Liu, Y. & Huang, L. (eds.). Springer Heidelberg, p. 407-413 7 p. (Lecture Notes in Mechanical Engineering).

Dragonfly (Sympetrum flaveolum) flight: Kinematic measurement and modelling
Chen, Y. H., Skote, M., Zhao, Y. & Huang, W. M., Jul 2013, In: Journal of Fluids and Structures. 40, p. 115-126 12 p.

2D unstructured mesh finite volume method for simulating structural dynamics
Hai, M. Y., Su, X. H., Cao, Y., Zhao, Y. & Zhang, J. T., 2013, *Materials and Diverse Technologies in Industry and Manufacture.* p. 345-348 4 p. (Applied Mechanics and Materials; vol. 376).

Emission fluxes of different metals in aerosol emitted during frying-effect of frying pan
Torkmahalleh, M., Zhao, Y., Goldasteh, I., Rossner, A., Hopke, P. K. & Ferro, A. R., 2013, *Conference Environment and Health – Bridging South, North, East and West.* Basel, Switzerland

Influence of food surface area on PM2.5 and particle number concentration during frying
Torkmahalleh, M., Zhao, Y., Goldasteh, I., Rossner, A., Hopke, P. K. & Ferro, A. R., 2013, *European Aerosol Conference.* Prague, Czech Republic

Performance evaluation of LPG desulfurization by adsorption for hydrogen production.
Kazerooni, M. R. M., Farahbod, F., Zhang, Y., Zhao, Y., Konarov, A., Gosselink, D., Soboleski, HG., Chen, P., Hosseinkhani, M. & Montazer, M., 2013, In: Journal of Environmental Science and Technology. 9, 1, p. 517-521 5 p.

Stiffness evaluation of the leading edge of the dragonfly wing via laser vibrometer
Chen, Y. H., Skote, M., Zhao, Y. & Huang, W. M., 2013, In: Materials Letters. 97, p. 166-168 3 p.

Unstructured mesh finite volume LBM
Su, X. H., Liu, Y., Zhang, K. L., Zhao, Y., Wang, W., Xie, R. & Zhao, G., Nov 2012, In: Dalian Ligong Daxue Xuebao/Journal of Dalian University of Technology. 52, 6, p. 809-815 7 p.

Cost effective fabrication of wafer scale nanoholes for solar cells application
Zhao, Y. Q., Leung, K. K., Surya, C., Feng, C. K., Chen, Y. F., Chen, D. M., Shen, H. & Zhang, B. J., Jan 1 2012, *Advanced Materials Processing for Scalable Solar-Cell Manufacturing.* Vol. 1323. p. 81-86 6 p. (Materials Research Society Symposium Proceedings; vol. 1323).

A preconditioned implicit free-surface capture scheme for large density ratio on tetrahedral grids
Lv, X., Zou, Q., Reeve, D. E. & Zhao, Y., Jan 2012, In: Communications in Computational Physics. 11, 1, p. 215-248 34 p.

Physical Characteristics of Particle Emission from Multiple Cooking Activities
Zhao, Y., Torkmahalleh, M., Goldasteh, I., Rossner, A., Hopke, P. K. & Ferro, A. R., 2012, *AAAR 31st Annual Conference.* Minneapolis, Minnesota, USA

Silicon nanohole photovoltaic cells
Zhao, Y. Q., Leung, K. K., Chen, Y., Surya, C., Feng, C. K., Chen, Y. F., Chen, D. M., Shen, H. & Zhang, B. J., Dec 1 2011, *Program - 37th IEEE Photovoltaic Specialists Conference, PVSC 2011.* p. 699-702 4 p. 6186050. (Conference Record of the IEEE Photovoltaic Specialists Conference).

Enhanced Raman scattering from vertical silicon nanowires array
Huang, J. A., Zhao, Y. Q., Zhang, X. J., Luo, L. B., Liu, Y. K., Zapien, J. A., Surya, C. & Lee, S. T., May 2 2011, In: Applied Physics Letters. 98, 18, 183108.

A novel coupled level set and volume of fluid method for sharp interface capturing on 3D tetrahedral grids
Lv, X., Zou, Q., Zhao, Y. & Reeve, D., Apr 1 2010, In: Journal of Computational Physics. 229, 7, p. 2573-2604 32 p.

Exposure to different commercial oils
Torkmahalleh, M., Goldasteh, I., Zhao, Y., Rossner, A., Hopke, P. K. & Ferro, A. R., 2010, *AAAR 29th Annual Conference.* Portland, OR, USA

Kinematics of dragonfly (Sympetrum flaveolum) flight
Chen, Y. H., Zhao, Y., Huang, W. M. & Shu, D. W., 2010, *6th World Congress of Biomechanics, WCB 2010 - In Conjunction with 14th International Conference on Biomedical Engineering, ICBME and 5th Asia Pacific Conference on Biomechanics, APBiomech.* p. 56-59 4 p. (IFMBE Proceedings; vol. 31 IFMBE).

Tidal energy: Technologies and recent developments
Yong, Z. & Xiaohui, S., 2010, *2010 IEEE International Energy Conference and Exhibition, EnergyCon 2010.* p. 618-623 6 p. 5771755

Numerical analysis of transient blood flow characteristics of the circle of Willis
Shen, N., Yuan, Q., Chen, Z., Cui, C. & Zhao, Y., Sept 1 2009, In: Yingyong Lixue Xuebao/Chinese Journal of Applied Mechanics. 26, 3, p. 539-543 5 p.

Dynamic analysis for blood flow in circle of willis
Shen, N., Yuan, Q., Chen, Z., Cui, C. & Zhao, Y., Mar 1 2009, In: Yingyong Lixue Xuebao/Chinese Journal of Applied Mechanics. 26, 1, p. 51-54 4 p.

Parallel unstructured multigrid simulation of 3D unsteady flows and fluid-structure interaction in mechanical heart valve using immersed membrane method
Xia, G. H., Zhao, Y. & Yeo, J. H., Jan 2009, In: Computers and Fluids. 38, 1, p. 71-79 9 p.

An efficient parallel/Unstructured-Multigrid implicit method for simulating 3D Fluid-Structure Interaction
Lv., X., Zhao, Y., Huang, X. Y., Xia, G. H. & Su, X. H., Aug 2008, In: Communications in Computational Physics. 4, 2, p. 350-377 28 p.

3-dimensional steady/unsteady blood flow in the circle of Willis
Chen, Z., Yuan, Q., Shen, N., Cui, C. & Zhao, Y., Apr 1 2008, In: Hsi-An Chiao Tung Ta Hsueh/Journal of Xi'an Jiaotong University. 42, 4, p. 492-496 5 p.

On the characteristics-based ACM for incompressible flows
Su, X., Zhao, Y. & Huang, X., Nov 10 2007, In: Journal of Computational Physics. 227, 1, p. 1-11 11 p.

A matrix-free implicit unstructured multigrid finite volume method for simulating structural dynamics and fluid-structure interaction
Lv, X., Zhao, Y., Huang, X. Y., Xia, G. H. & Su, X. H., Jul 1 2007, In: Journal of Computational Physics. 225, 1, p. 120-144 25 p.

A 3D implicit unstructured-grid finite volume method for structural dynamics
Xia, G. H., Zhao, Y., Yeo, J. H. & Lv, X., Jul 2007, In: Computational Mechanics. 40, 2, p. 299-312 14 p.

Numerical simulation of 3D fluid-structure interaction flow using an immersed object method with overlapping grids
Tai, C. H., Liew, K. M. & Zhao, Y., Jun 2007, In: Computers and Structures. 85, 11-14, p. 749-762 14 p.

Particle image velocimetry study of pulsatile flow in bi-leaflet mechanical heart valves with image compensation method
Shi, Y., Yeo, T. J. H., Zhao, Y. & Hwang, N. H. C., Dec 2006, In: Journal of Biological Physics. 32, 6, p. 531-551 21 p.

An efficient parallel/unstructured-multigrid preconditioned implicit method for simulating 3D unsteady compressible flows with moving objects
Lv, X., Zhao, Y., Huang, X. Y., Xia, G. H. & Wang, Z. J., Jul 1 2006, In: Journal of Computational Physics. 215, 2, p. 661-690 30 p.

An efficient parallel computation of unsteady incompressible viscous flow with elastic moving and compliant boundaries on unstructured grids
Tai, C. H., Bals, B., Zhao, Y. & Liew, K. M., Dec 21 2005, In: International Journal for Numerical Methods in Engineering. 64, 15, p. 2072-2104 33 p.

Numerical simulation of 3D fluid-structure interaction using an immersed membrane method
Xia, G. H., Zhao, Y. & Yeo, J. H., Dec 20 2005, In: Modern Physics Letters B. 19, 28-29, p. 1447-1450 4 p.

Parallel-multigrid computation of unsteady incompressible viscous flows using a matrix-free implicit method and high-resolution characteristics-based scheme
Tai, C. H., Zhao, Y. & Liew, K. M., Sept 23 2005, In: Computer Methods in Applied Mechanics and Engineering. 194, 36-38, p. 3949-3983 35 p.

Parallel computation of unsteady incompressible viscous flows around moving rigid bodies using an immersed object method with overlapping grids
Tai, C. H., Zhao, Y. & Liew, K. M., Jul 20 2005, In: Journal of Computational Physics. 207, 1, p. 151-172 22 p.

Numerical study of steady/unsteady flow and heat transfer in porous media using a characteristics-based matrix-free implicit FV method on unstructured grids
Chiem, K. S. & Zhao, Y., Dec 2004, In: International Journal of Heat and Fluid Flow. 25, 6, p. 1015-1033 19 p.

Parallel computation of unsteady three-dimensional incompressible viscous flow using an unstructured multigrid method
Tai, C. H., Zhao, Y. & Liew, K. M., Nov 2004, In: Computers and Structures. 82, 28 SPEC. ISS., p. 2425-2436 12 p.

A finite volume unstructured multigrid method for efficient computation of unsteady incompressible viscous flows
Tai, C. H. & Zhao, Y., Sept 10 2004, In: International Journal for Numerical Methods in Fluids. 46, 1, p. 59-84 26 p.

Erratum: Numerical Simulation of a Systemic Flow Test Rig (ASAIO Journal (January-February 2004) 50 (54-64))
Shi, Y., Yeo, T. J. H. & Zhao, Y., May 2004, In: ASAIO Journal. 50, 3, p. 290 1 p.

Numerical Simulation of a Systemic Flow Test Rig
Shi, Y., Yeo, T. J. H. & Zhao, Y., Jan 1 2004, In: ASAIO Journal. 50, 1, p. 54-64 11 p.

Computation of complex turbulent flow using matrix-free implicit dual time-stepping scheme and LRN turbulence model on unstructured grids
Zhao, Y., Jan 2004, In: Computers and Fluids. 33, 1, p. 119-136 18 p.

Parallel unsteady incompressible viscous flow computations using an unstructured multigrid method
Tai, C. H. & Zhao, Y., Nov 20 2003, In: Journal of Computational Physics. 192, 1, p. 277-311 35 p.

A general method for simulation of fluid flows with moving and compliant boundaries on unstructured grids
Zhao, Y. & Forhad, A., Sept 26 2003, In: Computer Methods in Applied Mechanics and Engineering. 192, 39-40, p. 4439-4466 28 p.

Parallel computation of unsteady three-dimensional incompressible viscous flow using an unstructured multigrid method
Tai, C. H., Zhao, Y. & Liew, K. M., Jun 2 2003, *Computational Fluid and Solid Mechanics 2003.* Elsevier, p. 1148-1152 5 p.

Numerical simulation of opening process in a bileaflet mechanical heart valve under pulsatile flow condition
Shi, Y., Zhao, Y., Hock Yeo, T. J. & Hwang, N. H. C., Mar 2003, In: Journal of Heart Valve Disease. 12, 2, p. 245-256 12 p.

A high-resolution characteristics-based implicit dual time-stepping VOF method for free surface flow simulation on unstructured grids
Zhao, Y., Tan, H. H. & Zhang, B., Nov 20 2002, In: Journal of Computational Physics. 183, 1, p. 233-273 41 p.

Simulation of micro flows with moving boundaries using high-order upwind FV method on unstructured grids
Zhao, Y., Tai, J. & Ahmed, F., Feb 2002, In: Computational Mechanics. 28, 1, p. 66-75 10 p.

Parallel computation of unsteady incompressible viscous flows using an unstructured multigrid method
Zhao, Y. & Tai, C. H., Jan 1 2002, *Fluids Engineering.* American Society of Mechanical Engineers (ASME), p. 389-398 10 p. (ASME International Mechanical Engineering Congress and Exposition, Proceedings).

Higher-order characteristics-based method for incompressible flow computation on unstructured grids
Zhao, Y. & Chin Hoe Tai, H. T., Jul 2001, In: AIAA journal. 39, 7, p. 1280-1287 8 p.

Investigation of pressure in pipe subjected to axial-symmetric pulse loading
Shu, D., Jianbo, D. & Yong, Z., Jul 2001, In: International Journal of Impact Engineering. 25, 6, p. 523-536 14 p.

Simulations of flow through fluid/porous layers by a characteristic-based method on unstructured grids
Zhang, B. & Zhao, Y., Apr 20 2001, In: International Journal for Numerical Methods in Engineering. 50, 11, p. 2443-2457 15 p.

Computational fluid dynamics study of a protruded-hinge bileaflet mechanical heart valve
Wang, J., Yao, H., Lim, C. J., Zhao, Y., Yeo, T. J. H. & Hwang, N. H. C., Apr 10 2001, In: Journal of Heart Valve Disease. 10, 2, p. 254-263 10 p.

Parallel unstructured dynamic grid direct Monte Carlo simulation of molecular gas dynamics and its applications
Singh, A. & Zhao, Y., Jan 1 2001, In: Journal of Scientific Computing. 16, 4, p. 553-568 16 p., 364262.

High-order characteristics upwind FV method for incompressible flow and heat transfer simulation on unstructured grids
Zhao, Y. & Zhang, B., Nov 10 2000, In: Computer Methods in Applied Mechanics and Engineering. 190, 5-7, p. 733-756 24 p.

A numerical method for simulation of forced convection in a composite porous/fluid system
Zhang, B. & Zhao, Y., Aug 2000, In: International Journal of Heat and Fluid Flow. 21, 4, p. 432-441 10 p.

Parallel unstructured grid DSMC for the study of molecular gas dynamics in semi-conductor manufacturing
Singh, A. & Yong, Z., 2000, In: Proceedings of SPIE - The International Society for Optical Engineering. 4228, p. 290-301 12 p.

Computation of shock/boundary-layer interactions in bump channels with transport-type turbulence models
Zhao, Y. & Ding, Z. M., Apr 23 1999, In: Computer Methods in Applied Mechanics and Engineering. 173, 1-2, p. 55-69 15 p.

Computation of internal high-speed separated flow with modified B-L and J-K models
Zhao, Y. & Ding, Z. M., Nov 15 1998, In: International Journal for Numerical Methods in Fluids. 28, 7, p. 1053-1071 19 p.

Numerical simulations of fluid flow and convection heat transfer through fluid/porous layers
Zhang, B. & Zhao, Y., 1998, *33rd Thermophysics Conference.* American Institute of Aeronautics and Astronautics Inc, AIAA, AIAA 99-3627

Stable computation of turbulent flows with a low-Reynolds-number k-∈ turbulence model and explicit solver
Zhao, Y., Nov 1997, In: Advances in Engineering Software. 28, 8, p. 487-499 13 p.

Computation of compressible separated channel flows with J-K and two-layer k-epsilon/K-L turbulence models
Zhao, Y. & Ding, Z., Jan 1 1997, p. 3. 1 p.

Development of Delaunay-based adaptation methods for compressible flows on unstructured meshes
Zhao, Y. & Huang, H., Jan 1 1997, p. 15. 1 p.

Multigrid computation of flow past airfoil using k-ε turbulence model
Zhao, Y. & Murali, D., Oct 1995, In: Journal of Aerospace Engineering. 8, 4, p. 180-188 9 p.

Projects

MDO-WT: Advanced study of aerodynamics, fluid-structure interaction and design optimization of wind turbines (MDO-WT)

Zhao, Y.
1/1/20 → 12/31/22

AP08857347: Application of artificial intelligence to complement thermography for breast cancer prediction
Zhao, Y., Ng, E. Y. K., Zarikas, V., Mashekova, A., Mukhmetov, O. & Aidossov, N.
1/1/20 → 12/31/22

BRAVE: Buckling-resistant double- & multi-layered shells with complex topologies for aerospace and land vehicles
Melnikov, A., Zhao, Y. & Kanguzhin, B.
1/1/24 → 12/31/26

CASIP: Clustering and settling of inertial particles: fluid-structure interactions approach
Sumbekova, S. & Zhao, Y.
1/31/19 → 12/31/22

CMM-SAND: CMM-SAND: Combined Multiscale/Multiphysics Experimental and Numerical Study of Sand Production Mechanisms in Oil Reservoirs
Zhao, Y., Sonny, I., Shabdirov, D. & Shabdirova, A.
1/1/22 → 12/31/24

HCT-MDO-WT: High-fidelity concurrent multidisciplinary design optimization based on arbitrary hybrid turbulence modelling and fully coupled FSI
Zhao, Y. & Wei, D.
1/1/23 → 12/31/25

AP19678197: Integrating Physic-Informed Neural Network, Bayesian and Convolutional Neural Networks for early breast cancer detection using thermography
Zhao, Y., Ng, E., Zarikas, V., Mashekova, A., Mukhmetov, O. & Aidossov, N.
1/1/23 → 12/31/25

Optimal design and development of multi-nozzle and multi-material based lower cost 3D printer
Ali, M. H., Kurokawa, S., Zhao, Y., Samad Kamal, A. & Shariff Ullah, A.
1/1/18 → 4/30/21

Heading

2022	Lorem ipsum dolor sit amet
2021	Lorem ipsum dolor sit amet
2020	Lorem ipsum dolor sit amet
2019	Lorem ipsum dolor sit amet
2018	Lorem ipsum dolor sit amet
2017	Lorem ipsum dolor sit amet