

NAME: Peng Zhang

TITLE: Assistant Professor

DEPARTMENT: Mechanical Engineering

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RESEARCH INTERESTS:

- Computational fluid dynamics
- Experimental fluid and solid mechanics
- Fluid-structure interactions
- Multi-functional materials
- Optimal design

Educational Background:

- Ph.D., Engineering Mechanics, Virginia Tech, Blacksburg, Virginia, USA, 2016
- M.S., Mathematics, Virginia Tech, Blacksburg, Virginia, USA, 2014
- B.S., Theoretical and Applied Mechanics, Beijing Institute of Technology, Beijing, China, 2011

Selected Publications:

Multifunctional materials

- Zhang P., Ulbricht N., Boldini A., Ohanian O., Porfiri M., 2023: "Multifunctional nylon filaments for simultaneous ultra-violet light and strain sensing", The European Physical Journal D, 77(3), 44.
- Zhang P., Ohanian O., Porfiri M., 2022: "Spiropyran-functionalized photochromic nylon webbings for long-term ultraviolet light sensing", Journal of Applied Physics, 132(6), 064504. (Cover image of the issue)
- Zhang P., Carrillo Segura S., Boldini A., Di Trollo P., Ohanian O., Porfiri M., 2021: "A photochromic nylon webbing for ultra-violet light sensing", Smart Materials and Structures, 30, 085015.
- Zhang P., Porfiri M., 2022: "Modeling the actuation of curved ionic polymer metal composites", Smart Materials and Structures, 31, 035013.

Fluid-structure interactions

- Zhang P., Carretto A., Porfiri M., 2020: “Simultaneous digital image correlation/particle image velocimetry to unfold fluid-structure interaction during air-backed impact”, *Journal of Fluids and Structures*, 95, 102980.
- Zhang P., Rosen M., Peterson S., Porfiri M., 2018: “An information-theoretic approach to study fluid-structure interactions”, *Journal of Fluid Mechanics*, 848, 968-986.
- Carrillo Segura S., Zhang P., Porfiri M., 2022: “Three-dimensional exact solution of free vibrations of a simply supported rectangular plate in contact with a fluid”, *Journal of Sound and Vibration*, 534, 117007.

Aerodynamics of road vehicles

- Zhang P., Vo A.-V., Laefer D., Porfiri M., 2021: “Integrated evolutionary algorithms/computational fluid dynamics for drag reduction in highway design”, *Journal of Infrastructure Systems*, 27(3), 04021025.

Hydrodynamics of fish swimming

- Zhang P., Peterson S., Porfiri M., 2023: “Dipole- and vortex sheet-based models of fish swimming”, *Journal of Theoretical Biology*, 556, 111313.
- Porfiri M., Zhang P., Peterson S., 2022: “Hydrodynamic model of fish orientation in a channel flow”, *eLife*, 11, e75225.
- Zhang P., Krasner E., Peterson S., Porfiri M., 2019: “An information-theoretic study of fish swimming in the wake of a pitching airfoil”, *Physica D*, 396, 35-46.
- Mwaffo V., Zhang P., Romero Cruz S., Porfiri M., 2017: “Zebrafish swimming in the flow: a particle image velocimetry study”, *PeerJ*, 5, e4041.