



Exponent[®]
Engineering & Scientific Consulting

Kee Onn Fong, Ph.D.

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Professional Profile

Dr. Kee Onn Fong specializes at developing mechanical engineering solutions for mechanical and fluid flow problems, with over 5 years of experience in multiphase fluid flows in materials processing and combustion applications. He is proficient in liquid and gas flow measurements in piping systems and wind tunnels, as well as conducting quantitative image analysis and statistical analysis. Dr. Fong has extensive experience bringing experiments and products from concept to implementation, including computer-aided design, rapid prototyping, and machining. Dr. Fong is keenly interested in solving engineering problems and failure incidents in industrial, materials processing, energy, HVAC, and environmental settings. He is also experienced with aircraft structural analysis, hard drives and biomedical devices.

Prior to joining Exponent, Dr. Fong earned his doctorate in Aerospace Engineering and Mechanics at the University of Minnesota, with a focus on experimental fluid mechanics. He studied the problem of solid particle agglomeration in a circulating fluidized bed, using lasers and high-speed cameras to track the agglomerates and determine the root cause of their formation. After earning his doctorate, Dr. Fong worked at the University of Washington as a postdoctoral scholar, studying gas-assisted atomization of liquids into small droplets under high-pressure conditions. Additionally, Dr. Fong also led or contributed his expertise to projects involving particulate transport in turbulent channel flows, stent and coil embolization of cerebral aneurysms, and development of a microfluidic device for detection of bacteria.

Dr. Fong has also worked as a test engineering intern in the hard drive industry investigating failures in hard drives, and as an intern in the aerospace industry conducting stress analysis on metallic aircraft structures. He is proficient in coding in Matlab and Python. He also has experience conducting workshops, having served as the instructor for undergraduate fluid mechanics at the University of Washington.

Academic Credentials & Professional Honors

Ph.D., Aerospace Engineering and Mechanics, University of Minnesota, 2021

M.S., Aerospace Engineering and Mechanics, University of Minnesota, 2018

B.S., Aerospace Engineering and Mechanics, University of Minnesota, 2015

Gold Global Excellence Scholarship – University of Minnesota 2012-2015

Prior Experience

Postdoctoral Scholar, University of Washington, 2021-2023

Graduate Research Assistant, University of Minnesota, 2015-2021

Test Engineering Intern, Seagate Technology, 2019

Stress Engineering Intern, Strand Aerospace Malaysia, 2013

Professional Affiliations

American Physical Society (APS)

Languages

Malay

Mandarin

Cantonese

Patents

US Patent 10,738,342: System for Microbial Species Detection, Quantification and Antibiotic Susceptibility Identification, 2020 (Finch MD, Fong KO, Kotian S, Munshi CB, Mahajan A, Lindborg BA)

Publications

Fong KO, Xue X, Osuna-Orozco, R, Aliseda A. Two-fluid coaxial atomization in a high-pressure environment. *Journal of Fluid Mechanics* 2022, 946, A4.

Fong KO, Coletti F. Experimental analysis of particle clustering in moderately dense gas-solid flow. *Journal of Fluid Mechanics* 2022, 933, A6.

Fong KO, Amili O, Coletti F. Velocity and spatial distribution of inertial particles in a turbulent channel flow. *Journal of Fluid Mechanics* 2019, 872, 367-406.

Wang G, Fong KO, Coletti F, Capecelatro J, Richter DH. Inertial particle velocity and distribution in vertical turbulent channel flow: a numerical and experimental comparison. *International Journal of Multiphase Flow* (2019), 120, 103105.

Presentations

Fong KO, Xue X, Osuna-Orozco, R, Aliseda A. Influence of swirl on gas-liquid coaxial atomization in high-pressure environments. Oral presentation, 75th Meeting of the Division of Fluid Dynamics, Indianapolis, IN, 2022.

Fong KO, Xue X, Osuna-Orozco, R, Aliseda A. The dynamics of the liquid-gas interface in two-fluid coaxial atomization in a high-pressure environment. Oral presentation, 74th Meeting of the Division of Fluid Dynamics, Phoenix, AZ, 2021.

Fong KO, Coletti F. Experimental analysis of clustering in particle risers. Oral presentation, 73rd Meeting of the Division of Fluid Dynamics, Chicago, IL, 2020.

Fong KO, Coletti F. Highly concentrated falling inertial particles in a vertical duct/riser. Oral presentation, 72nd Meeting of the Division of Fluid Dynamics, Seattle, WA, 2019.

Fong KO, Amili O, Coletti F. Transport and clustering of inertial particles in a turbulent channel flow. Oral

presentation, 71st Meeting of the Division of Fluid Dynamics, Atlanta, GA, 2018.

Fong KO, Amili O, Coletti F. Turbulence Modulation and Particle Segregation in a Turbulent Channel Flow. Oral presentation, 69th Meeting of the Division of Fluid Dynamics, Portland, OR, 2016.

Peer Reviews

Journal of Fluid Mechanics

International Journal of Multiphase Flows

European Journal of Mechanics B - Fluids