



**Exponent**<sup>®</sup>  
Engineering & Scientific Consulting

## Chris (Christodoulos) Xiouris, Ph.D., P.E.

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### Professional Profile

Dr. Xiouris is a Mechanical Engineer that specializes in combustion and fire science, heat transfer, thermodynamics, and experimental design and testing. He performs failure analysis of industrial equipment, oil and gas systems, and consumer appliances. He has conducted cause and origin investigations of fires and explosions in residential structures and industrial facilities, involving natural gas and propane equipment, furnaces, ovens, cooking and heating appliances, and consumer products utilizing Lithium-ion batteries. Additional projects include burn injuries and carbon monoxide release and poisoning events.

Dr. Xiouris' s project experience includes fire and heat transfer analysis pertaining to risk assessment and mitigation in industrial, and gas and electric utility facilities, including wildland fires. He is involved in fire and heat transfer testing, along with fire code compliance assessment.

Prior to joining Exponent, Dr. Xiouris completed his Ph.D. at the Combustion and Fuels Research Laboratory at the University of Southern California. He has extensive experience in quantifying propagation characteristics of flames under high pressure and temperature conditions, experimental design and instrumentation of combustion systems, experimental uncertainty quantification and error propagation, optics and laser diagnostics.

### Academic Credentials & Professional Honors

Ph.D., Mechanical Engineering, University of Southern California, 2017

M.S., Mechanical Engineering, University of Southern California, 2014

B.S., Mechanical Engineering, University of Patras, Greece, 2010

### Licenses and Certifications

Licensed Professional Engineer, Mechanical, California, #40067

Fire Cause and Origin Determination Training (1A), California Office of State Fire Marshall

OSHA 40-Hour Hazardous Waste Operations and Emergency Response (29 CFR 1910.120) Certification

## Prior Experience

Research and Teaching Assistant, Department of Aerospace and Mechanical Engineering, University of Southern California, 2011-2017

## Professional Affiliations

The Combustion Institute

National Fire Protection Association - NFPA

California Conference of Arson Investigators - CCAI

## Languages

Greek

English

## Publications

Xiouris C, Ye T, Jayachandran J, Egolfopoulos FN. Laminar flame speeds under engine-relevant conditions: Uncertainty quantification and minimization in spherically expanding flame experiments. *Combustion and Flame*, 2016; 163:270-283.

Xiouris CZ, Koutmos, P. Fluid dynamics modeling of a stratified disk burner in swirl co-flow. *Applied Thermal Engineering*, 2012; 35:60-70.

Xiouris C, Koutmos, P. An experimental investigation of the interaction of swirl flow with partially premixed disk stabilized propane flames. *Experimental Thermal and Fluid Science*, 2011; 35:1055-1066.

## Presentations

Xiouris C, Jayachandran J, Movaghar A, Lawson R, Ye T, Egolfopoulos F. An experimental study of cell-induced flame acceleration during the compression stage of confined spherical flame propagation, 11th National Combustion Meeting, Pasadena, CA, March 2019.

Christiansen EW, Xiouris, C, Zelhofer, AJ, Cymbalist, N. The Effect of Fuel Moisture on the Ignition of Forest Fuels by Molten Copper and Aluminum Droplets. Sixth International Fire Behavior and Fuels Conference, Sydney, Australia, May 2019.

Karnesky J, Reza A, Xiouris C. Accidental Activation of an Emergency Rocket Flare and Evaluation of Ignition Mechanism Designs, ISEE, Denver, CO, January 2020

Xiouris C, Ye T, Menon S, Egolfopoulos FN. Thermo-Diffusional Effects on Laminar Premixed Flames of Multicomponent Fuels. Poster presentation at the 35th International Symposium on Combustion, San Francisco, CA, August 2014.

Windom BC, Xiouris C, Fincham AM, Egolfopoulos FN. A Study of Spherically Expanding Flames Using Particle Image Velocimetry. Poster presentation at the Spring Meeting of the Western States Sections of the Combustion Institute, Arizona State University, AZ, March 2012.

## Peer Reviewer

Combustion and Flame

Combustion Science and Technology

Chemical Engineering Journal

Applied Energy

ISOPE (International Society of Offshore and Polar Engineers)