Exponent®
Engineering & Scientific Consulting

Domingo Elias-Soto, Ph.D.

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Professional Profile

Dr. Elias contributes to investigating and analyzing fires, explosions, and safety incidents. He also performs heat transfer and fluid flow analyses using analytic approaches, CFD software such as COMSOL Multiphysics, and computational tools such as MATLAB. In his team, Dr. Elias also contributes with research and analyses that provide LNG plants with technical information to comply with the requirements of the Federal Regulatory Commission in the areas of engineering controls and mitigation of fire, explosion, or dispersion of fuels.

Dr. Elias is trained in FLACS CFD software and its application to explosion and fire analysis, vapor dispersion, vapor cloud explosion, and the evaluation of mitigation strategies. Dr. Elias has also collaborated on hydrogen projects investigating the effects of hydrogen explosions and detonations on structural components.

Having held a license as an automotive technician, Dr. Elias can apply his knowledge to investigating car accidents, emissions claims, and root cause analysis of vehicle electrical, mechanical, and electromechanical failures.

Dr. Elias came to Exponent after holding a postdoctoral researcher position in the Chemical Engineering Department at LSU Baton Rouge, where he optimized packed bed catalytic reactors and the shapes of catalyst pellets using convex and nonconvex optimization science. Dr. Elias has expertise in modeling reactive, multiphase flow, and flow in porous media.

Before his postdoctoral position, Dr. Elias performed doctoral research for two departments at LSU Baton Rouge: chemical engineering and mechanical engineering. In chemical engineering, Dr. Elias merged optimization algorithms with simulations of packed bed reactors to determine the optimal void fraction distribution to reduce hotspots in packed bed reactors that produce ethylene from alkanes. The same topology optimization techniques were also applied to find the optimum shape of a catalyst to reduce hotspots and increase conversion and yield.

Before pursuing graduate studies, Dr. Elias worked for Halliburton as a Field Engineer in the oil and gas industry in Houma, Louisiana, specializing in oil and gas well completions. As a field engineer, Dr. Elias also received specialized training in geology, formation evaluation, drilling, well completions,production of oil and gas, and sand control. Dr. Elias likewise participated in well-completion jobs on land and offshore in the US and abroad.

Dr. Elias was an intern with the AERG (Advanced Engineering and Research Group) of NovaBus® (Volvo Group), where he assisted in designing and testing natural gas and hybrid transit buses. After working with the AERG at NovaBus®, he deepened his automotive technology knowledge by obtaining an

automotive technician license. As part of keeping the license current, he took continued education on automotive technology spanning automotive finishes, transmissions, and hybrid vehicles.

Academic Credentials & Professional Honors

Ph.D., Mechanical Engineering , Louisiana State University, 2022

M.S., Mechanical Engineering, Louisiana State University, 2015

B.S., Mechanical Engineering, University of Puerto Rico, 2001

Academic Appointments

Postdoctoral Researcher, Department of Chemical Engineering at Louisiana State University-Baton Rouge, 2022

Prior Experience

Postdoctoral Researcher, Department of Chemical Engineering at Louisiana State University, Baton Rouge 2022 (June 01, 2022-Nov 30, 2022)

Doctoral Research Assistant, Department of Mechanical Engineering LSU, 2018-2022

Doctoral Research Assistant, Department of Chemical Engineering LSU, 2018-2022

Field Engineer in Completions Tools with Halliburton, Houma, Louisiana, 2007-2009

Professional Affiliations

American Society of Mechanical Engineers (ASME)

AIChE

NFPA

Publications

D. Elias. "Particle and Reactor Scale Geometric Optimization Studies for the Oxidative Dehydrogenation of Ethane," LSU Doctoral Dissertations, May 2022.

D. Elias. "Influence of Magnetic Fields on the Evaporation and Combustion of a Single Droplet," LSU Master's Theses, January 2014.

Elias Domingo. Abstract: Catalyst Shape Optimization for the Reduction of Hotspots in an Exothermic Reaction, 19th MIE Graduate Student Conference Abstract Booklet, Baton Rouge, LA, 2022.

D. Elias. Abstract: Influence of Magnetic Fields on the Evaporation and Combustion of a Single Droplet, 13th MIE Graduate Student Conference Abstract Booklet, Baton Rouge, LA, 2014.

Presentations

Elias Domingo, Zanganeh Navid, Hart Ryan. PSM Pillars...or Dominoes? A Case Study to Consider the Link Between Certain PSM Pillars, 15th Annual AIChE Midwest Regional Conference, Chicago, IL, 2023.

Elias Domingo. Catalyst Shape Optimization for the Reduction of Hotspots in an Exothermic Reaction, 19th MIE Graduate Student Conference, Baton Rouge, LA, 2022.

Elias Domingo. Influence of Magnetic Fields on the Evaporation and Combustion of a Single Droplet, 13th MIE Graduate Student Conference, Baton Rouge, LA, 2014.

Halliburton Associate Professional-to-Technical Professional Breakout Presentation: Design and Technology of a Subsea Water Injector Well, Lafayette, LA, 2009

Halliburton Field Engineer 1st-year presentation: Technology and Selection of Metallic and Polymeric Materials 2008, Lafayette, LA, 2008

Halliburton Field Engineer 6-month Presentation: Slickline Services, Lafayette, LA, 2007

Additional Education & Training

Postdoctoral Fellow, Department of Chemical Engineering, Louisiana State University-Baton Rouge, 2022

Oil and Gas

· Field Engineer Training, Halliburton Technology Center, Duncan, Oklahoma, 2007

· Halliburton Well Completions I, Carrollton, TX

· Halliburton Well Completion Fluids, Baroid Drilling Fluids, Houston, TX

· Halliburton Sand Control in Oil and Gas Wells Production, Carrollton, TX

· Halliburton Slickline I, Carrollton, TX

· Halliburton Subsurface Safety Valves for Oil and Gas Wells, Carrollton, TX

· Halliburton Well Prototype, Carrollton, TX

· Halliburton Global Sales Group Training, Carrollton, TX

Halliburton In-house, Hands-on, Technical Training in Houma, LA

· CPS (Completion Products and Services) Assembly and Redress Shop

· Production Packers Shop

· Subsurface Safety Valves Shop

· Slickline Shop

Halliburton In-house, Hands-on, Training in New Iberia, LA

· Sand Control Tools for Production Assemblies (Shop)

Automotive technology seminars required to maintain the license:

· Cummins Diesel Engines & Signature Versions

· Toyota Hybrids

· General Motors Transmissions

· BASF Water-Based Automotive Finishes

· Use of Oscilloscope in Automotive Technology

· Use of OBD2 Scan Tool in Automotive Technology