COMBUSTION WEBINAR

IMPACT Overview and Research Progress

Speaker: Dr. Yuanjiang Pei

Aramco Americas: Aramco Research Center - Detroit

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Biography: Dr. Yuanjiang Pei is a Team Leader at the Aramco Americas' Detroit Research Center. His team focuses on innovating and developing sustainable transport technologies using state-of-the-art simulation tools. He recently initiated an industry-focused consortium called, IMPACT (Initiative for Modeling Propulsion And Carbon-neutral Transportation), to develop accelerated virtual methods for sustainable transport technologies. Pei is actively involved in the organization of several international conferences, serving both Society of Automotive Engineers (SAE) and American Society of Mechanical Engineers (ASME). He was presented with numerous prestigious awards, including the HPCwire Award four years in a row and 2019 ASME Chairman's Distinguished Service Award.

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Abstract: IMPACT (Initiative for Modeling Propulsion And Carbon-neutral Transportation) is an initiative with a focus on the development and demonstration of virtual engine and fuel methodologies to advance sustainable transportation technologies. Commencing its operations in early 2023, IMPACT has garnered significant interest and enthusiastic participation from leading transportation and mobility OEMs across the globe. The initiative effectively tackles three pivotal technical challenges, namely low climate impact fuels with an emphasis on hydrogen; pre-chamber combustion; and engine emissions, through a coordinated global endeavor. Working with world-renowned research institutions, detailed and extensive experimental characterizations have been planned to facilitate the development of advanced numerical models and processes, with a primary emphasis on advancing Simulation-Based Product Development (SBPD) techniques. During this period of energy transition, when the industry grapples with resource allocation challenges across multiple platforms, IMPACT plays a pivotal role in addressing the pressing need for solid SBPD techniques in the transportation sector. Substantial progress has already been accomplished, and in this presentation, an overview of the initiative and the significant research progress achieved thus far will be presented.

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