

Abstract Submitted
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Spray Characterization of Gas-to-Liquid Synthetic Jet Fuels¹ KUMARAN KANNAIYAN, REZA SADR, Texas A&M University at Qatar — In the recent years, development of alternative jet fuels is gaining importance owing to the demand for cleaner combustion. In addition to having energy density that matches those of conventional fuels, alternate jet fuels need to possess vital qualities such as rapid atomization and vaporization, quick re-ignition at high altitude, less emission, and poses ease of handling. The fuel preparatory steps (atomization and vaporization) and mixing in a combustion chamber play a crucial role on the subsequent combustion and emission characteristics. Gas-to-Liquid (GTL) synthetic jet fuel obtained from Fischer-Tropsch synthesis has grabbed the global attention due to its cleaner combustion characteristics as a result of the absence of aromatics and sulphur. As a part of an on-going joint effort between Texas A&M at Qatar (TAMUQ), Rolls-Royce (UK), and German Aerospace Laboratory (DLR), a spray characterization experimental facility is set up at TAMUQ to study the spray characteristics of GTL fuel and highlights the influence of change in fuel composition on the spray characteristics. In this work, spray characteristics such as droplet size, velocity, and distribution of different GTL fuel blends is investigated and compared with the spray characteristics of conventional JetA1 fuel.

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