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**Spray Characterization of Gas-to-Liquid Synthetic Jet Fuels** KUMARAN KANNAIYAN, REZA SADR, Texas A&M University at Qatar, GTL JET FUEL CONSORTIUM TEAM — Gas-to-Liquid (GTL) Synthetic Paraffinic Kerosene (SPK) fuel obtained from Fischer-Tropsch synthesis has grabbed the global attention due to its cleaner combustion characteristics. GTL fuels are expected to meet the vital qualities such as atomization, combustion and emission characteristics of conventional jet fuels. It is imperative to understand fuel atomization in order to gain insights on the combustion and emission aspects of an alternative fuel. In this work spray characteristics of GTL-SPK, which could be used as a drop-in fuel in aircraft gas turbine engines, is studied. This work outlines the spray experimental facility, the methodology used and the results obtained using two SPK's with different chemical compositions. The spray characteristics, such as droplet size and distribution, are presented at three differential pressures across a simplex nozzle and compared with that of the conventional Jet A-1 fuel. Experimental results clearly show that although the chemical composition is significantly different between SPK's, the spray characteristics are not very different. This could be attributed to the minimal difference in fluid properties between the SPK's. Also, the spray characteristics of SPK's show close resemblance to the spray characteristics of Jet A-1 fuel.

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