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## **C3Or3C-02: In-situ, high-spatial resolution temperature measurement of liquid oxygen tank under liquefaction via fiber optics sensing system**

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Safe and efficient liquefaction of cryogenic propellants is critical to future Moon and Mars missions for NASA. There is a need to liquefy, store, and transport cryogenic fluids at temperatures that minimize liquid boil-off. A low-cost, low-SWaP (size, weight, and power) instrumentation suite to measure thermal response is critical to validating models and maturing liquefaction technologies. This presentation will discuss the fabrication, deployment, and experimental results of an array of enhanced fiber sensors, based on optical frequency domain reflectometry (OFDR), installed alongside co-locating silicon diode rake from NASA CryoFILL (Cryogenic Fluid In-situ Liquefaction for Landers) testing during 2022. Measurement data and measurement accuracy with respect to co-locating silicon diodes will be discussed in detail, and future work will be presented.

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