

IAF SPACE PROPULSION SYMPOSIUM (C4)
Late breaking abstracts (LBA)

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POST HOT FIRE ANALYSIS OF THE WORLD'S MOST POWERFUL STUDENT-BUILT ROCKET
ENGINE.**Abstract**

Space Concordia from Concordia University has embarked on a unique mission to build the world's first student suborbital liquid rocket to surpass the Karman line. The development of this rocket required building a liquid engine larger and more intricate than any previous existing academic designs. The unique set of challenges presented by the complexity and large scale of a 40kN keralox liquid engine, on a student budget with limited resources required multiple innovations to accomplish. The groundbreaking work from the Space Concordia team culminated in a series of eight recent hot fire tests. This paper presents an overview of the results from each test, as well as the modifications and implementations that were required to successfully achieve stable ignition, full thrust, and prolonged burn durations. The innovations required to develop an industry-tier propulsion system for spaceflight at the undergraduate level has the potential to significantly impact the launch industry.