

## **ADVANCED MATERIALS DEVELOPMENT UNDER NASA'S HYBRID THERMALLY EFFICIENT CORE (HYTEC) PROJECT**

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The Hybrid Thermally Efficient Core (HyTEC) project aims to develop small core turbofan engine technologies that will enable fuel burn reductions, additional use of electric airplane systems through power extraction, and to advance engine operability and compatibility with sustainable aviation fuels. As such, a portfolio of technologies that contribute to raising the pressure, temperature and efficiency of turbofan engine cores needs developed. Included in HyTEC's technology portfolio to enable these advancements are enhanced combustor liner materials and higher temperature capable turbine blades and vanes manufactured using ceramic matrix composites (CMCs) and environmental barrier coatings (EBCs). These technologies are being developed and tested in laboratory-scale relevant environments to advance the technology readiness level (TRL) to 4 or 5, before moving into an engine core demonstrator to raise the TRL to 6. The focus of this poster presentation will be on the development of a new Natural Gas/Oxygen burner rig facility that will be used to simulate turbine engine relevant environments at the laboratory/coupon scale. In addition, improvements to enable sub-element, or more complex component testing in NASA Glenn's combustor facilities will be presented.