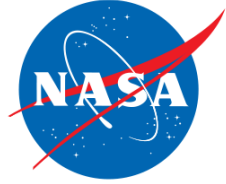


NASA Ames Interaction Heating Facility (IHF)



The segmented arc heater in the IHF.

Mission: The Interaction Heating Facility is designed to study aerodynamic heating in the thermal environment arising from the interaction of an energetic flow field during a hypersonic entry into a planetary atmosphere.

Location: NASA Ames Research Center, Moffett Field, CA, United States.

Type of tunnel: Constricted arc heater facility.

Test gas	Air		Test duration (min)	≤ 60	
Nozzle exit (mm)	Conical ($\theta/2=10^\circ$), 152,330,533,762 & 1041	Semielliptical, 203x813	Test article type	Stagnation point	Wedge/Flat plate
Input power (MW)	60		Test article size (mm)	Ø 380	610x610
Bulk enthalpy (MJ/kg)	2 to 28		Surface pressure, kPa	1-155	0.01-2
Flow rates (kg/s)	0.03 to 1.7		Heating rate (kW/m²) *	250-20000	60-4000

*Cold wall fully catalytic to a 102mm ø sphere (stagnation)

Instrumentation:

- Hot wall temperature: thermocouples, IR pyrometry and radiometry
- Pressure: Pitot/static
- Cold wall heat flux: calorimetric probes with copper gauges (Gardon, Slug and Null Point types)
- Optical diagnostics: optical emission spectroscopy (OES), laser induced fluorescence (LIF), photogrammetric ablation rate



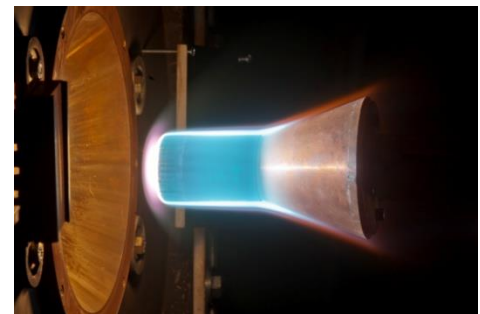
Large scale panel/pylon test in IHF.

References:

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Stewart, D.A., Gökçen, T., and Chen, Y.-K., "Characterization of Hypersonic Flows in the AHF and IHF NASA Ames Arc-Jet Facilities," *In 41st AIAA Thermophysics Conference*, AIAA 2009-4237, June 2009, San Antonio, TX.



UHTC ceramic tests in IHF

Information Contacts:

Ernest Fretter +1 (650) 604-6166

ernest.f.fretter@nasa.gov,

<http://www.nasa.gov/centers/ames/thermophysics-facilities-home>