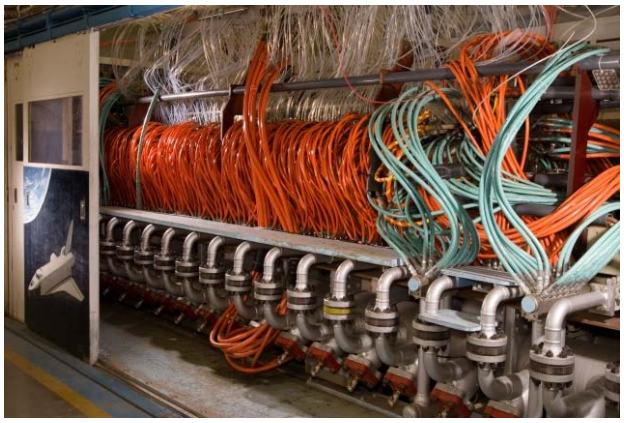
NASA Ames Interaction Heating Facility (IHF)



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.

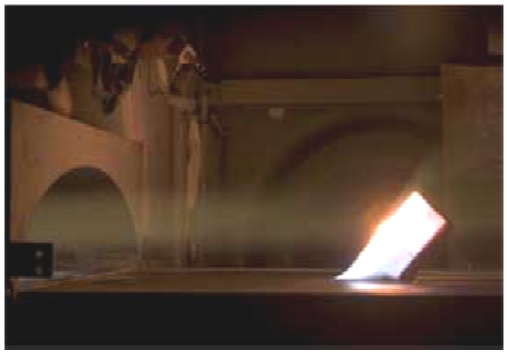
Type of tunnel: Constricted arc heater facility.

Test gas	Air		**Test duration (min)**	≤ 60	
Nozzle exit (mm)	Conical (θ/2=10°), Ø 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/m^2) ***	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:

Winter, M.W., Raiche, G.A., Terrazas-Salinas, I., Frank, C.L.H., White, B., and Taunk, J.S., "Measurements of Radiation Heat Flux to a Probe Surface in the NASA Ames IHF Arc Jet Facility," *In 43rd AIAA Thermophysics Conference*, AIAA 2012-3189, June 2012, New Orleans, LA.

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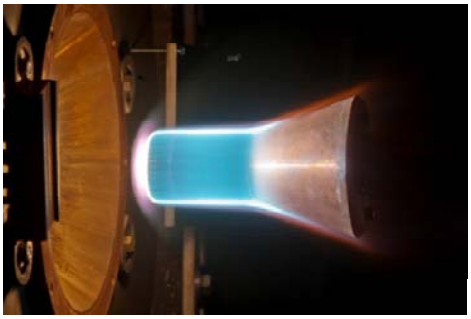

UHTC ceramic tests in IHF

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