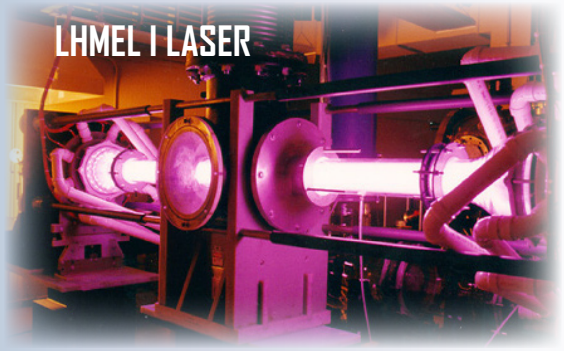
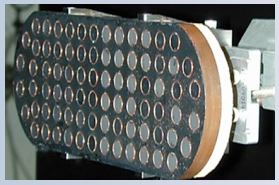


- 10-kW carbon dioxide (10.6 µm), continuous wave, flat top beam
- Spot sizes from 0.29 cm to 15 cm diameter
- Ideal for basic research and thermal simulation testing

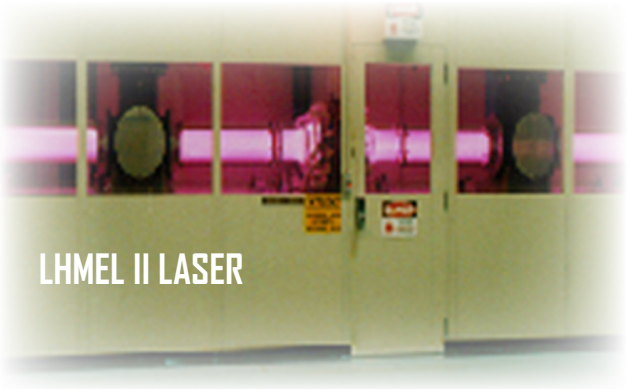
THERMAL SIMULATION

- High heating rates at intensities representative of re-entry, rocket firing, hypersonic flight or aerodynamic heating
- Suitable to validate thermal models or reproduce operating scenarios
- Excellent screening source prior to arc jet or other full scale testing



Aerodynamic Heating

Rocket Motor Liner



- 100-kW carbon dioxide (10.6 µm), continuous wave, flat top beam
- Spot sizes from 0.75 cm to 100 cm diameter
- Mid-scale testing bridge between materials "science" and full scale validation

ENVIRONMENTAL SIMULATION

- Space simulation chambers from 6 to 6,000 ft3
- Sub- and supersonic wind tunnels
- Tensile/compressive loading to 10 kip
- Hoop stress / structural simulation
- Low pressure wind tunnel for higher altitude simulation

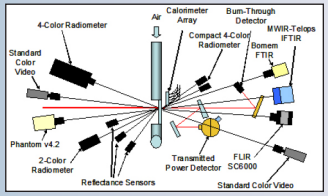
Low Pressure Wind Tunnel

Space Chamber

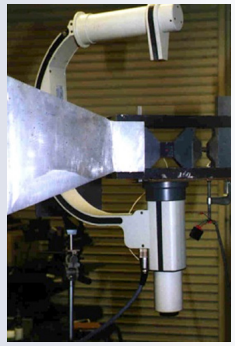
- 10-kW and 20-kW solid state fiber lasers (1.07 µm), continuous or pulsed format
- Gaussian or flat top beam
- Spot sizes from 0.5 cm to 30 cm diameter
- Ideal for basic research, thermal simulation or to determine effects at shorter wavelengths
- Extended run times (mins) possible

DIAGNOSTICS SUITE

- 4-color radiometer accurately measures surface temperature throughtout the exposure time.
- Real-time radiography for monitoring internal test article behavior
- High speed video for recording dynamic sample response.
- Easy access to front and back face



Sample Accessibility



Real Time Radiography

UNIQUE CAPABILITIES

ECONOMICAL
Rapid turn around times and low per day testing costs yields per sample test costs as low as $300/sample

REPEATABLE
Turn-key design, proven laser technology and a seasoned operating staff enable LHMEL to provide repeatable intensities on target.

VERSATILE
The combination of laser power, environmental simulation capabilities and a comprehensive diagnostic suite allow LHMEL to support numerous testing communities ranging from laser effects to thermal simulation.

ACCESSIBLE
Reimbursements can be made via direct fund cite, MIPR or commercial PO through an existing CRADA with AFRL/RX.

"LHMEL *testing has been critical to the success of our flight test program."*

LADD HENNEMAN, LOCKHEED MARTIN

For over 35 years, AFRL's LHMEL has provided the aerospace community with a comprehensive source for high temperature characterization of current and emerging materials using a variety of infrared laser sources and environmental simulation capabilities.

This nationally unique research and development laboratory specializes in laser/materials interaction testing, including thermal simulation testing, and features lasers ranging in power from 1-kW to 100-kW.

Managed by AFRL's Materials and Manufacturing Directorate and operated by UES, Inc. LHMEL provides high performance data to AF, DoD, NASA and commercial industry customers.

For more information

Mr. Jared Petry
937.255.6636 x3054
jared.petry@us.af.mil

MR. ROB HULL
UES, Inc.
937.252.3132 x3009
robert.hull.1.ctr@us.af.mil
Wright-Patterson Air Force Base • Dayton, Ohio

Air Force Research Laboratory, Materials and Manufacturing Directorate, Wright-Patterson AFB, OH 45433, USA

AFRL
THE AIR FORCE RESEARCH LABORATORY
LEAD | DISCOVER | DEVELOP | DELIVER

LHMEL
LASER/MATERIALS INTERACTION TESTING

MATERIALS AND MANUFACTURING DIRECTORATE