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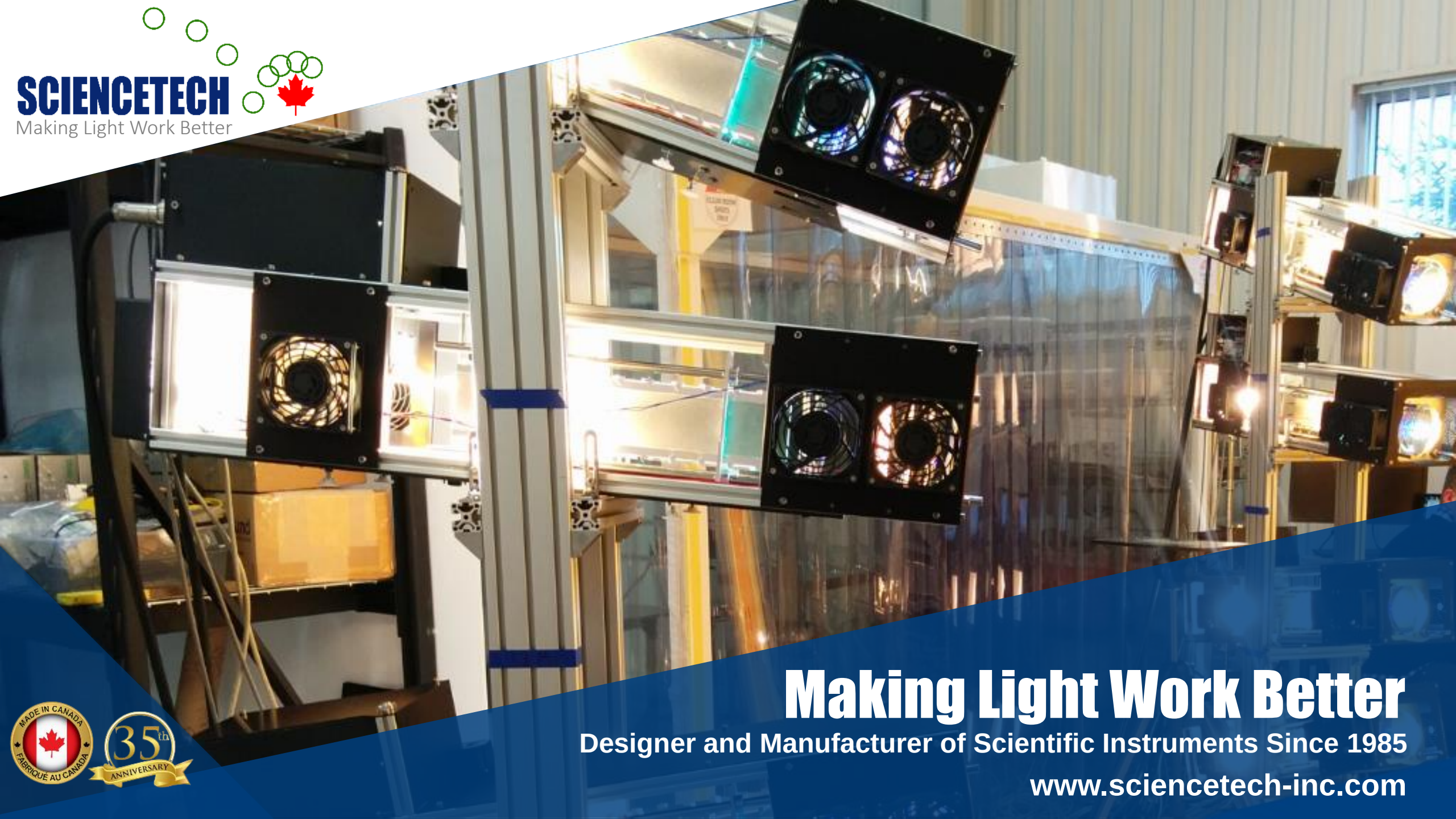

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Designer and Manufacturer of Scientific Instruments Since 1985

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35th ANNIVERSARY

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About Us

Celebrating

35th ANNIVERSARY

1985 - 2020

London Chamber of Commerce

BUSINESS ACHIEVEMENT AWARDS
2019 FINALIST

Sciencetech strives to maintain our long term commitment to research and development over a broad spectrum of industries and applications by designing and manufacturing solar simulators and optical spectroscopy instruments.

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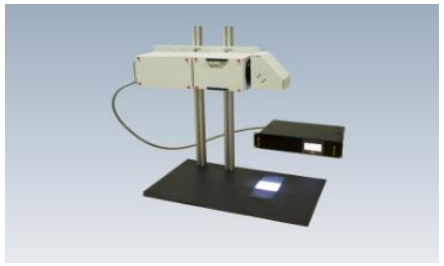
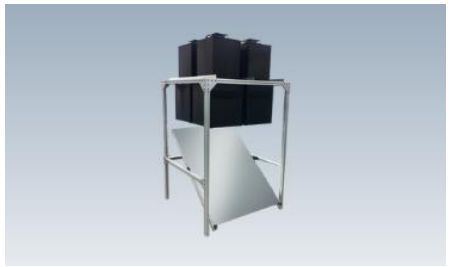
Main Lines of Equipment

Research Grade Light Sources

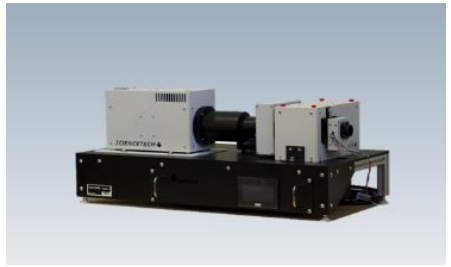


Solar Simulators



Large Area Solar Simulator

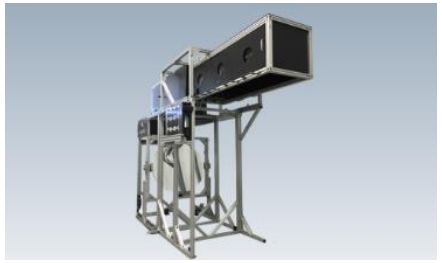
QE/IPCE Measurement System



Tunable Light Sources

Monochromators

THz Spectroscopy



Custom Solutions

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Research Grade Light Sources

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Research Grade Light Sources

Xenon Arc Lamp

- Operational wattages : 75W – 1.6kW
- Collimated or focused beam output
- Broadband light emission from deep UV to IR

Deuterium Lamps

- Operational wattages : 30W – 500W
- Collimated or focused beam output
- Ideal for high intensity deep UV emission

QTH Lamps

- Wattages from 50W– 2000W
- Highly stable light output
- Ideal for applications in VIS and IR emission

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Solar Simulators

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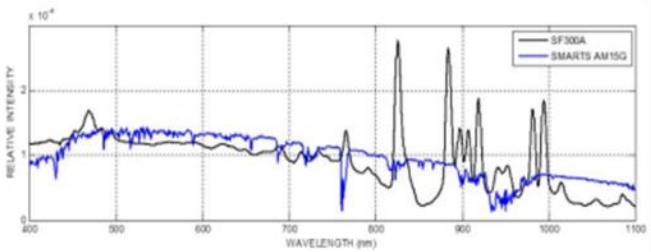
Solar Simulator Guidelines and principles

Characteristics 'simulated' from a Solar Simulator

1) Spectral match

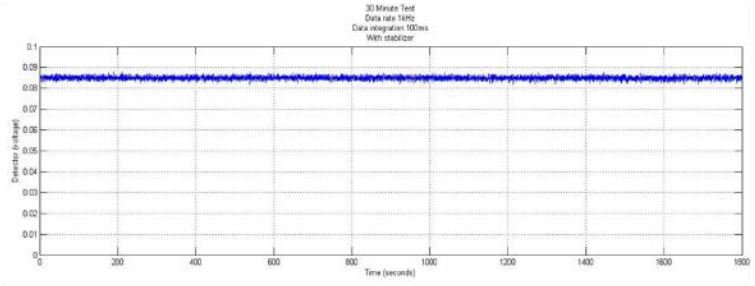


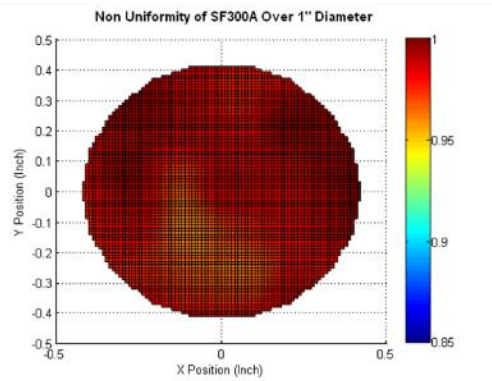
2) Spatial uniformity

3) Temporal stability

4) Power/Irradiance at the target of illumination

5) Collimation angle of the output beam





Watch our webinar for an overview of the guidelines and principles behind Solar Simulators.
Link: https://youtu.be/YOf2N9gMum0

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Main Standards for Solar Simulation

Sciencetech Solar Simulators reproduce the sun irradiance according to:

- ASTM E927 - Specification for Solar Simulation for Photovoltaic Testing
- IEC 60904-9 - Solar Simulator performance requirements
- JIS C 8912 - Solar simulators for crystalline solar cells and modules
- JIS C 8933 - Solar Simulators For Amorphous Solar Cells
- JIS C8942 Solar Simulator for Multi-junction solar cells and modults
- IEC 61215 - Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval
- IEC 61646 - Thin-film terrestrial photovoltaic (PV) modules - Design qualification and type approval
- US Military Standard MIL-STD810 H_Method 505.7 For Solar Radiation (Sunshine)
- DIN 75220 - Ageing of Automotive Components in Solar Simulation Units
- COLIPA/ ISO24443 and ISO24443 for dermatological, cosmetic and sunscreen testing

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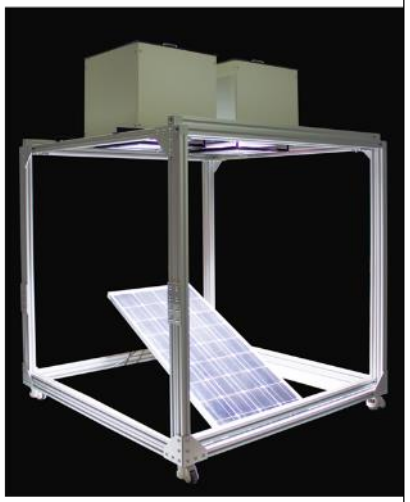
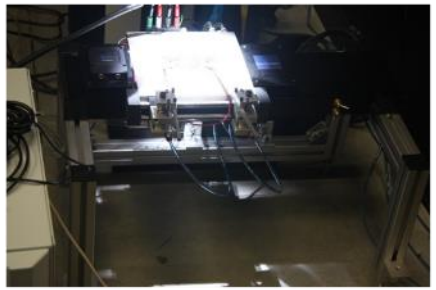
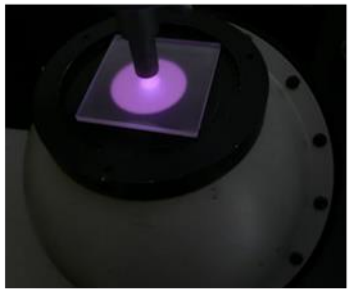
Applications of Solar Simulators

Why use a solar simulator?

- Provides effective, repeatable and controllable outdoor conditions inside laboratories to test,
  - Performance of power plants
  - Develop new photovoltaic technologies
  - Research work conducted with solar energy
  - Material testing for weathering
  - Simulate extraterrestrial conditions







Sunscreen testing with a UV solar simulator

Watch our webinar on Applications of Solar Simulators Webinar
Link: https://youtu.be/V-MTEfkFP9I

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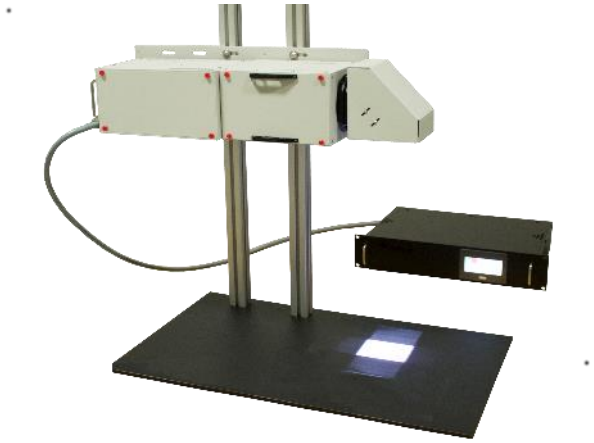
Small Area Solar Simulators

SF-Series

- Up to class AAA
- Target size upto 50 mm diameter
- One sun irradiance

SciSun



- Class AAA
- Target size 50 mm × 50 mm
- Up to two sun irradiance

Available Air Mass filters include AM0, AM1.0, AM1.5G (more options available upon request)

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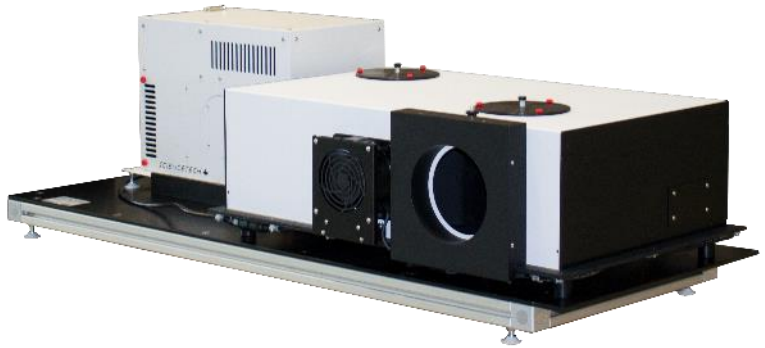
Medium Area Solar Simulators

Fully Reflective Solar Simulator



- Class AAA Solar Simulation
- Provides a well collimated light output
- Ideal for applications requiring higher UV output
- No refractive optics and free of chromatic aberration

SL Series

- Class AAA Solar Simulation
- Target size up to 60 mm × 60 mm
- Provides up to two sun irradiance
- Comes with a workstation ideal for PV cell testing.

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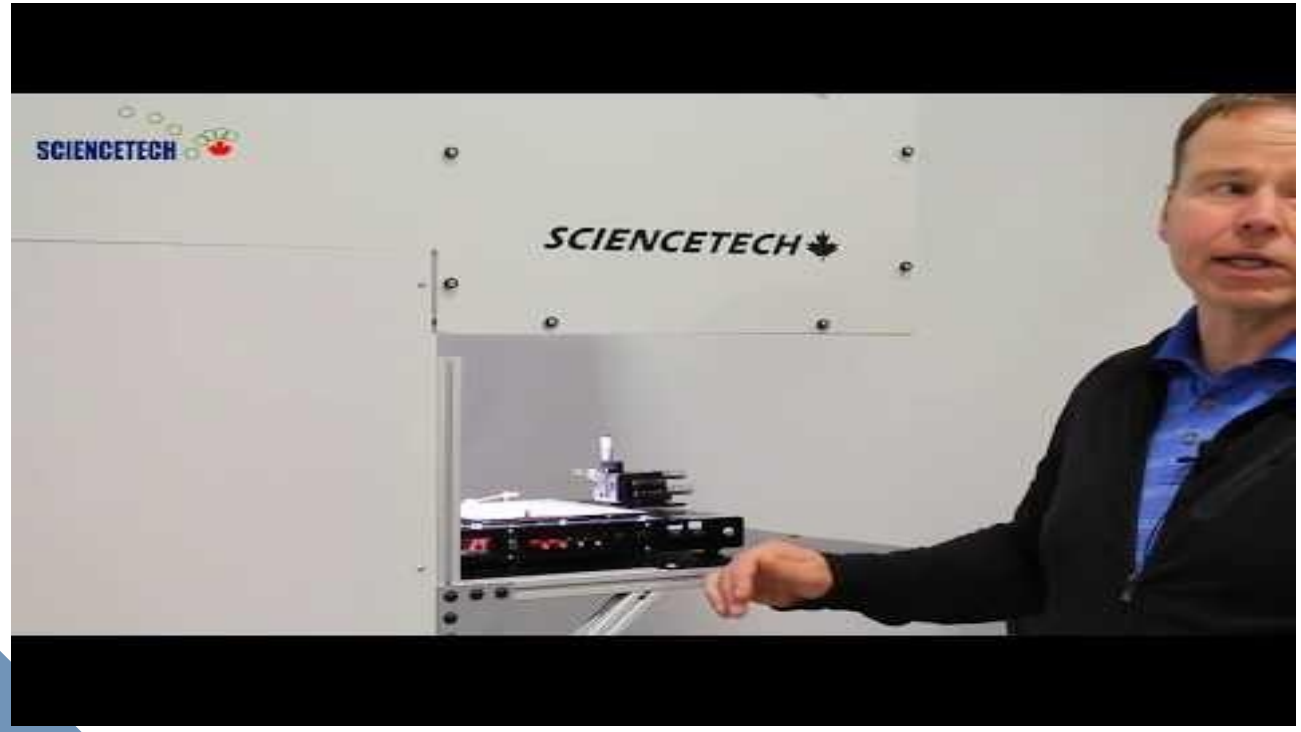
Medium Area Solar Simulators

Ultra High Efficiency (UHE)



- Class AAA Solar Simulation
- High electrical to optical power conversion efficiency
- Environmentally friendly operation.
- Target size up to 30 cm × 30 cm

Watch our product demonstration video for ultra high efficiency solar simulator (UHE-NL-150) with I-V testing equipment
Link: https://youtu.be/A0oS70Dn5sQ

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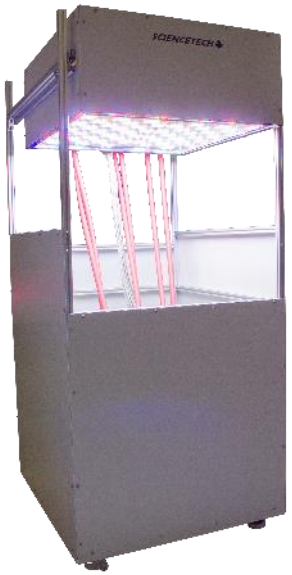
Large Area Solar Simulators

Large Area Solar Simulators

- Variable illumination areas upto 5mx5m
- Class AAA solar simulation
- AM0, AM1.5G or other specialty spectral matches
- Various degrees of collimation, depending on customer requirements

LED Solar Simulator



- Customizable large LED solar simulators available upon request
- Spectrally adjustable, ideal for multi junction PV testing
- Stepwise/ continuous irradiance attenuations

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Highly Collimated Solar Simulators

Highly Collimated Solar Simulators

Solar Simulator. Highly Collimated Solar Simulators
Link: https://youtu.be/BsR_j12i4sw

- Highly collimated, 0.7 ° collimation half angle
- AM0, AM1.5G or other specialty spectral matches
- Up to class ABA
- Target size up to 30 cm diameter
- Fresnel lenses are used as optics to provide highly collimated light output

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Fiber Optic Output Solar Simulators

- Fiber optic output for flexible illumination
- Up to class AAA solar simulation
- Upto 50mm × 50mm
- Upto 9 suns irradiance on target plane
- Collimated or focused beam outputs available
- AM1.0D, AM1.5G, AM1.5D, AM2.0 and other specialty spectral filters available
- Integrate with glove boxes, vacuum chambers & other specialty sample chambers

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Flash Solar Simulators

Large Area Flash Solar Simulators

- Class AAA
- Target Size: up to 2 m × 2 m
- Uses a heavy duty xenon flash lamp
- Pulse duration: 0.5 – 2.5 ms

Concentrated Flash Solar Simulators

- Class AAA
- Target size: 5 cm × 5 cm
- Ultra high intensity, up to 4000 suns

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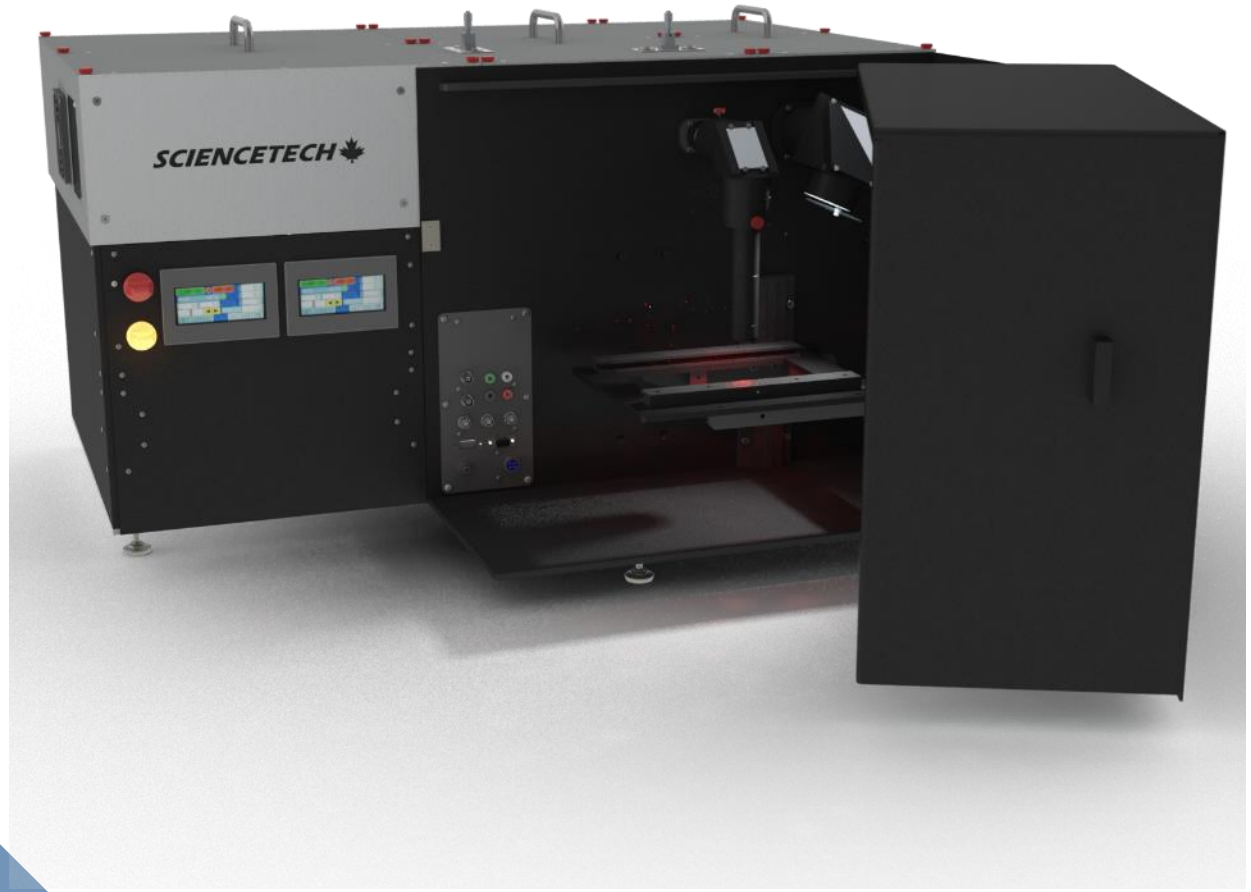
Quantum Efficiency Measurement



- Spectral Response : 250 - 2500 nm
- IV Measurements
- Internal and External Quantum Efficiency
- Reflectance and transmittance measurements
- Induced Voltage (IV) : V_{OC} , I_{SC}, R_{shunt}, P_{max}, efficiency %, and fill factor
- Monochromatic light power up to 125 mW
- Bias light : class AAA solar simulator included
- Keithley 2400 series source meter
- Stanford SR800 series lock-in amplifier
- Designed for compliance with ASTM E1021, ASTM E948, IEC 60904-8, IEC 60904-I

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Optical Spectroscopy Systems

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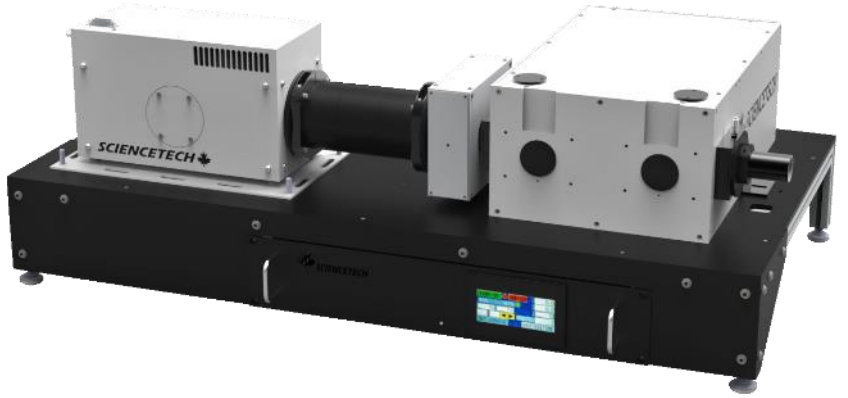
Tunable Light Sources

Introduction to Sciencetech TLS

Product Demonstration video
Link: https://youtu.be/JawQmMEc_m4



- Produces monochromatic light from 300 nm to 1800 nm.
- Optical resolution from 20 nm to 0.2 nm.
- Collimated light output is standard.
- Condensed or coupled output light can be provided.
- Sciencetech's software, Sci-Spec, controls all components of the system

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Monochromators

- Double additive/subtractive and triple monochromators are available!

	9030	9072	9010	9055	9057	9040	9490	9150
Focal Length (mm)	100	125	200	250	457	550	1000	1500
F/#	3.2	3.5	3.5	3.5	8	6.9	13	12
Grating Size*	S (32 × 32)	T (30 × 30)	D (50 ×50)	T (50 × 50)	T (50 × 50)	T (64 × 64)	T (64 ×64)	S (110 × 110)
Resolution (nm) **	1	0.4	0.4	0.2	0.2	0.03	0.017	0.013

*S for single, D for double, T for triple, grating size mm × mm

** Available for gratings with 1200l/mm

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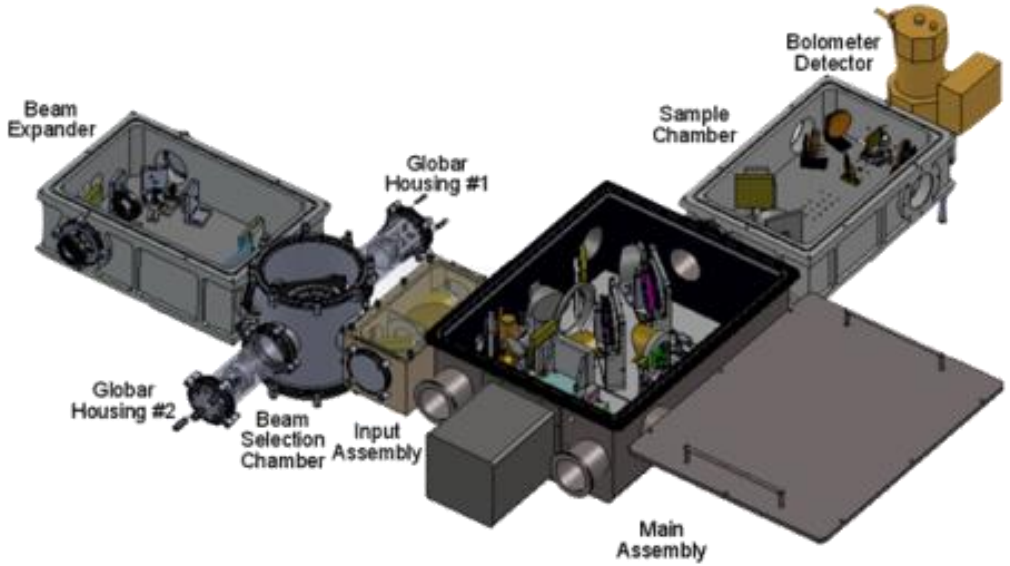
Far Infrared Fourier-Transform Spectrometer

SPS-300



- Modified Michelson (Martin-Puplett) interferometer, vacuum compatible, helium-cooled bolometer
- Operates in the far infrared or THz spectral region (from 5 μm to 5000 μm, 0.06 to 60 THz or 2 cm^{-1} to 2000 cm^{-1})

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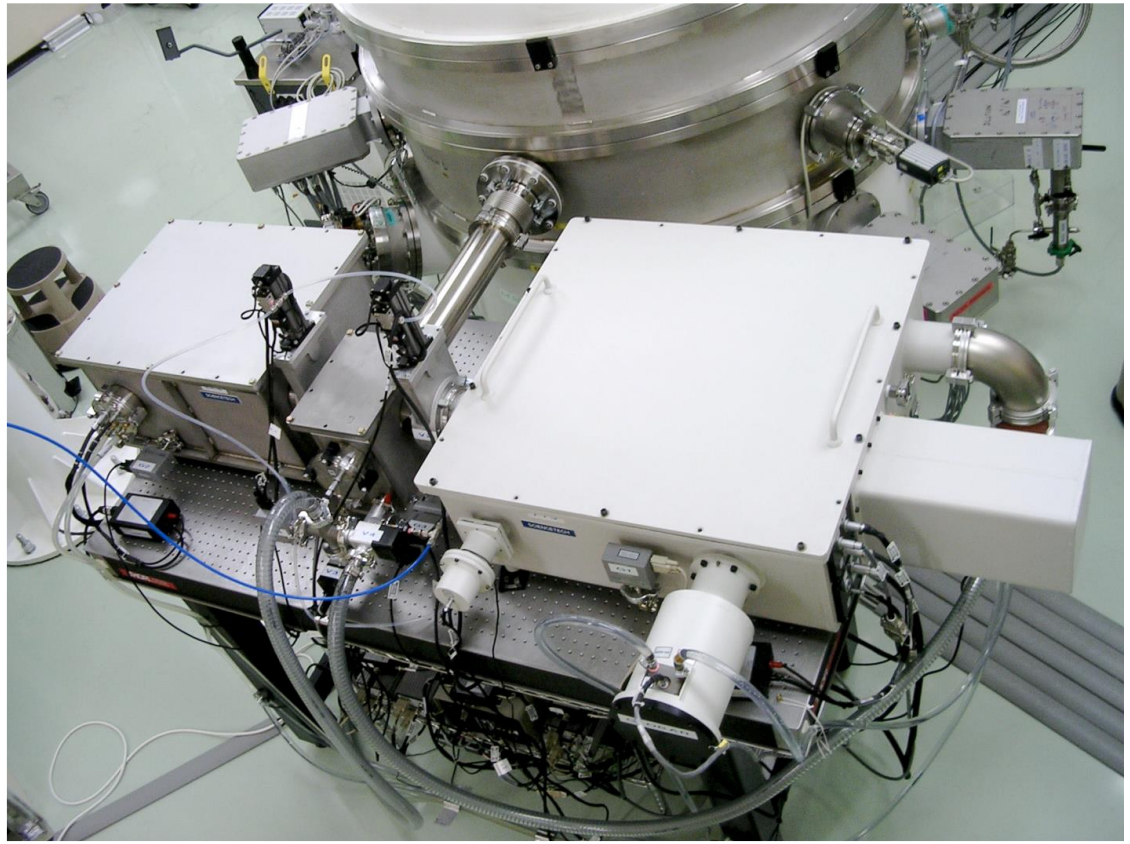
Far Infrared Fourier-Transform Spectrometer

ESA used Sciencetech's SPS-200* to calibrate the detectors for its Planck satellite, allowing the telescopes to analyze the infrared radiation remaining from the Big Bang



*SPS-200 is a precursor to the Sciencetech's current SPS-300

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Sciencetech Custom Solutions

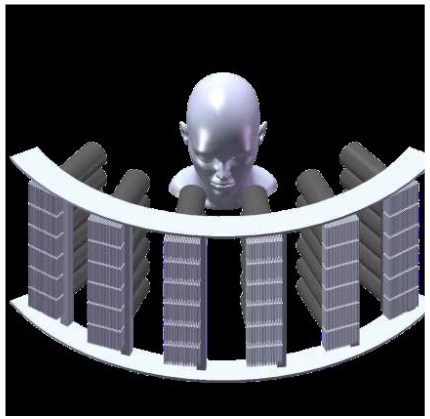
Sciencetech offers custom solutions for your research or industrial needs

Photovoltaic
Testing solar cell performance

Space Environment Simulation

Material Testing for automotive industry

Solar Thermal power plant testing



Dermatology and sunscreen testing

Custom solar simulators, speciality light sources and spectroscopy systems

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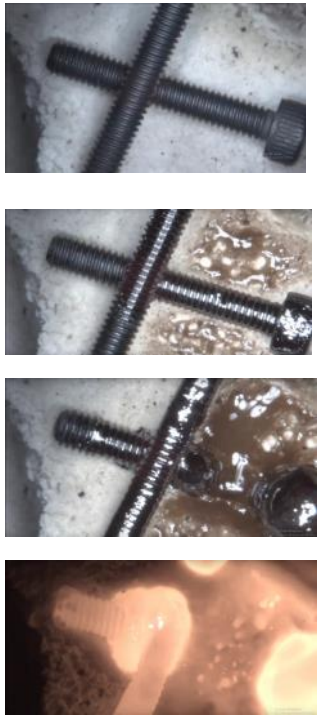
Spot-Focused Image Furnace for Ultra-High Temperature Oxidation Studies

Screw melts in 30 seconds with only 20% power



- Four 6.5 kW Xenon Arc Lamps
- Target size 5 cm diameter
- More than 10 kW optical power at target plane
- More than 5,000 suns

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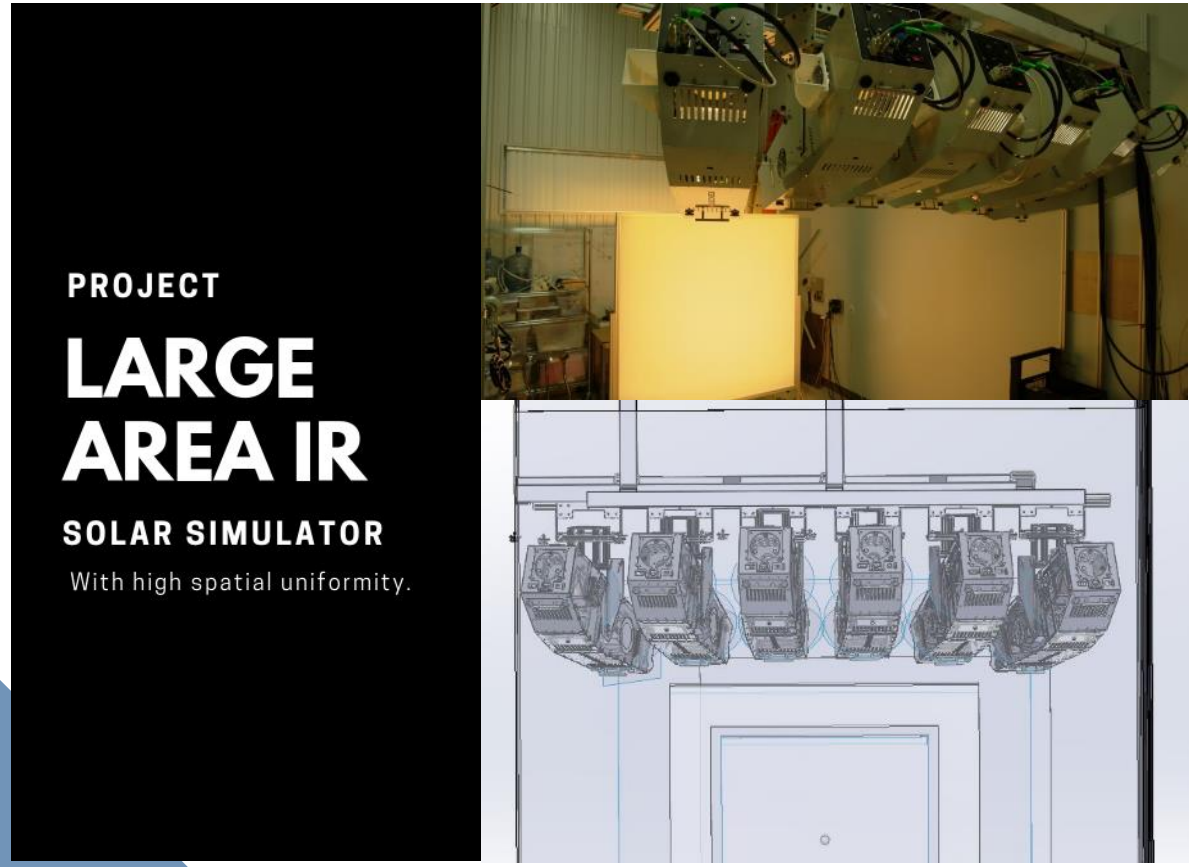
High Depth of Field IR Solar Simulator



- Target Area 1m × 1m : ± 5% Non-uniformity.
- Target Area 1.5m × 1.5m : ± 30% Non-uniformity.
- Spectral match : ASTM Class A in 700 nm – 1000 nm.
- Power and uniformity maintained over 30 cm depth.
- Application: 3D camera testing.

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Highly-Collimated Solar Simulator for Space-Related Research

PROJECT

HIGHLY COLLIMATED

SOLAR SIMULATOR

With automated beam angle movement. Developed for a prominent national space agency.

- Class AAA
- Highly collimated output : 0.35° half angle collimation
- AM0 spectral match
- 5-axis automated movement
- Continuous attenuation from 0.01-1 sun
- ISO7 cleanroom compliance

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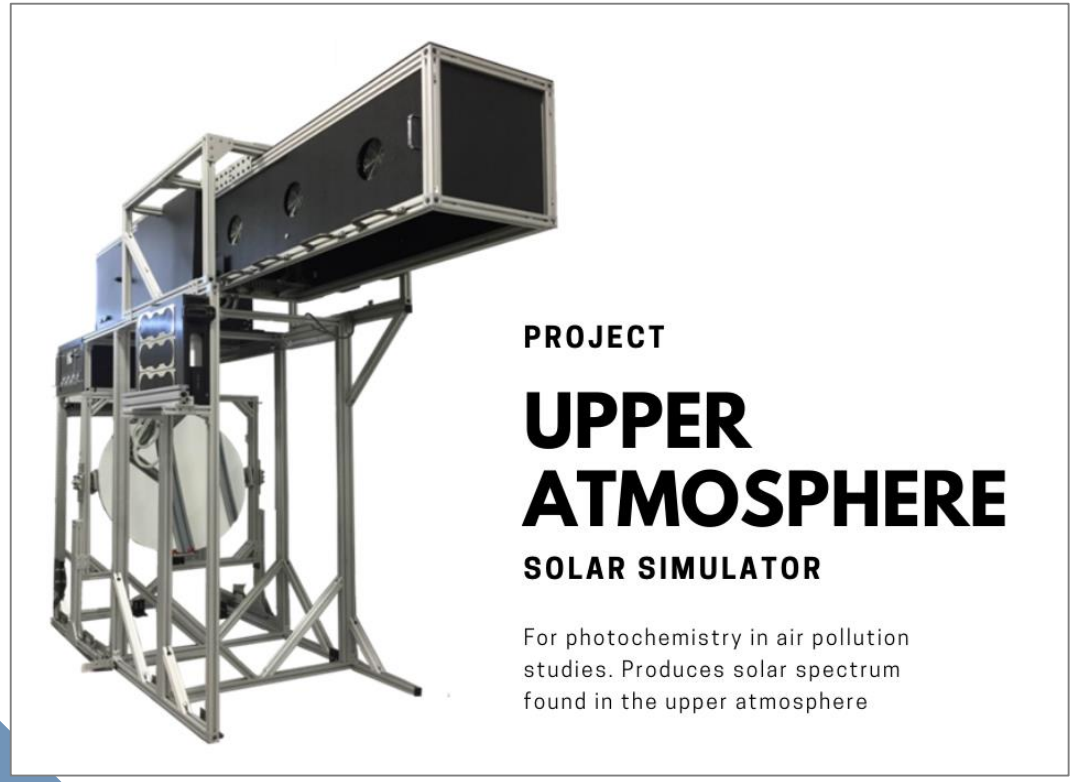
UV Solar Simulator for Air-pollution Studies in the Upper Atmosphere



- Illuminates a rotating cylindrical drum designed to hold aerosols in suspension.
- 0.5 m^2 target area
- Collimation of 1° half angle.
- AMO spectral match
- Variable attenuation from 0.25- 1 sun.
- The system was designed to fit within a room of dimensions 3m x 5m x 2.5m
- Constant temperature regulation of the system to maintain at 25 ° C

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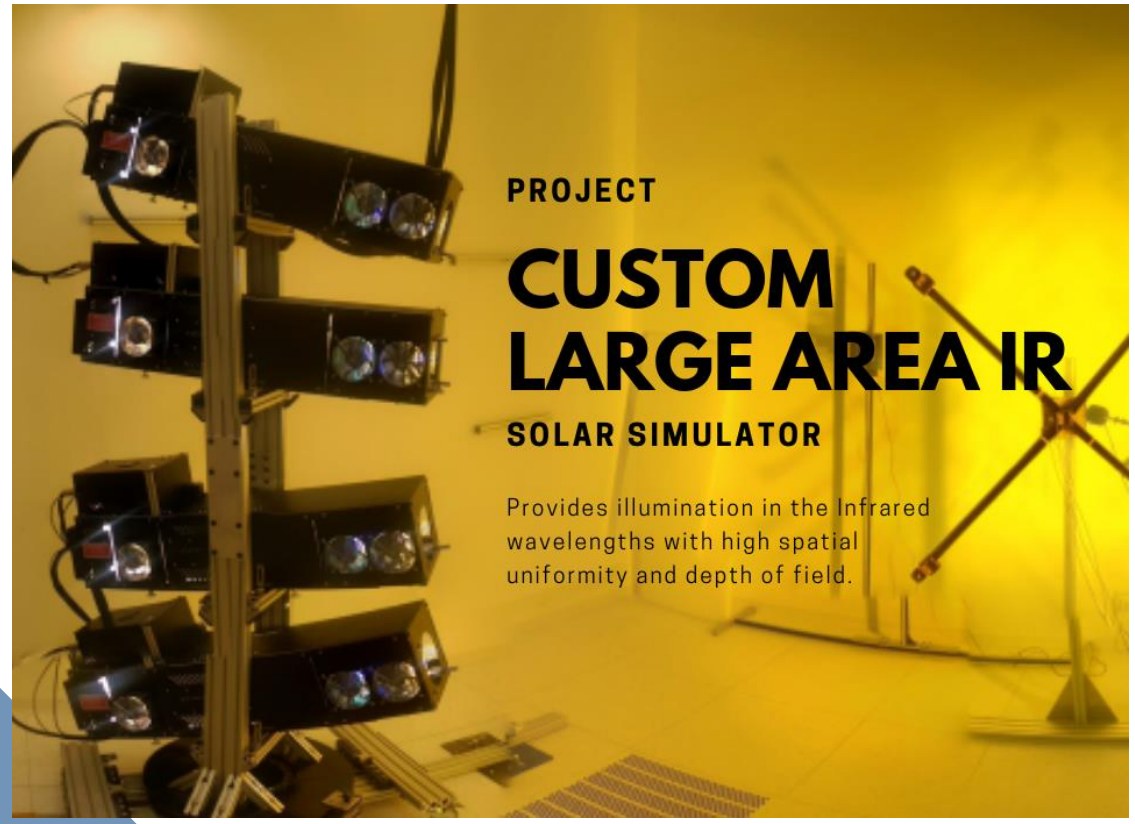
Large Area QTH Solar Simulator



- Solar Simulator consisted of Eight 2kW QTH sources
- Target area : 1.5m x 1.5m
- Wavelength range : 700-1100 nm (AM1.5G, 1 sun irradiance)
- Temporal Instability : ±5%.
- Irradiance attenuation adjustable between 0.1-1 sun

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Thank you and do contact us for your future optical spectroscopy and solar simulator needs!

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