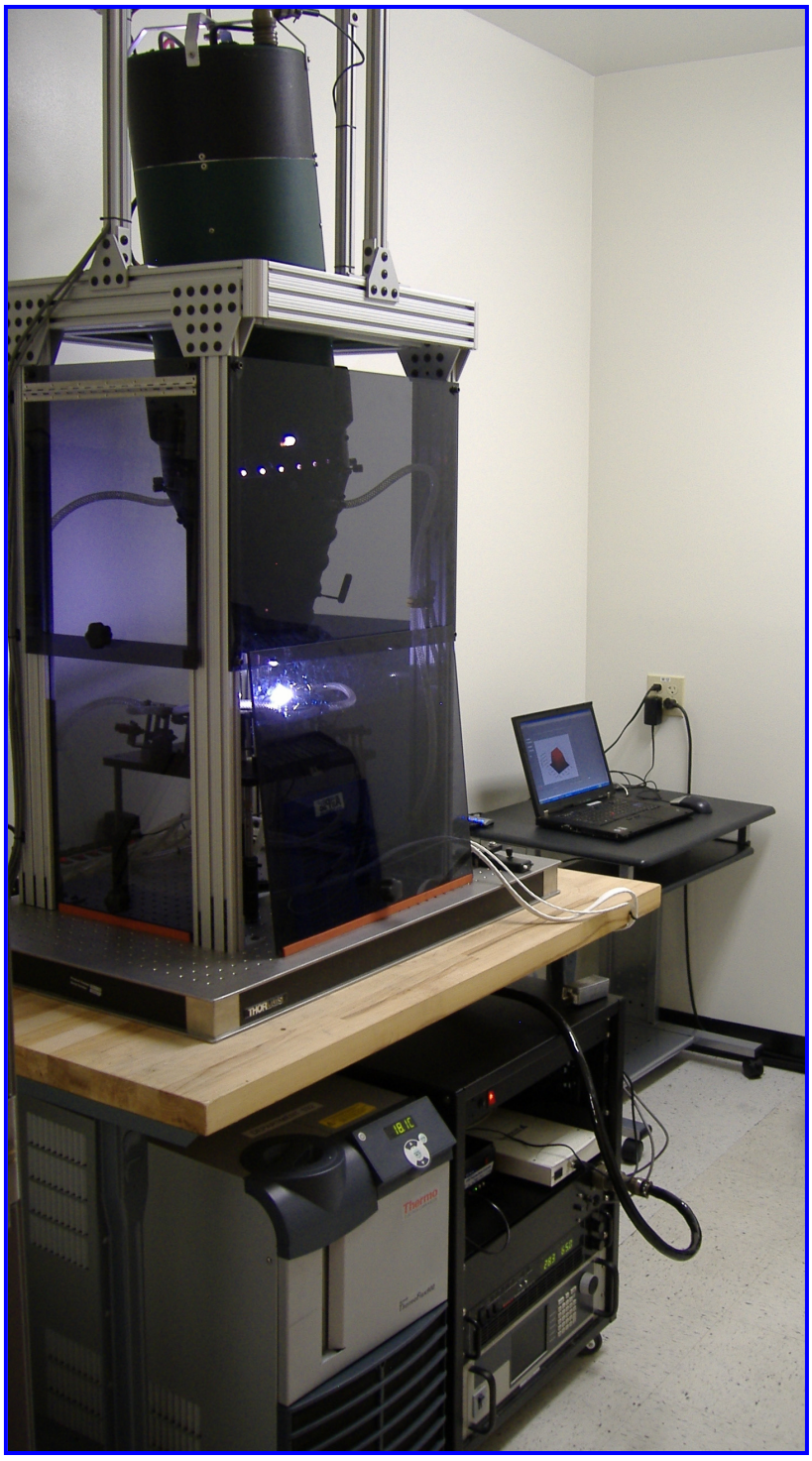
Spectrolab

Illumination Systems

www.spectrolab.com

Spectrolab Illumination Test and Analysis Complex (SITAC)



SITAC: Spectrolab's new testing facility provides optical testing and characterization capabilities for solar cells or optical materials using an XT-20 Continuous Wave Solar Simulator.

The XT-20 Solar Simulator contains:

- Continuous Xenon Arc Lamp beam
- Water-cooled test platforms with vacuum chucks
- Capacity for up to 12 test platforms at one time
- Computer controlled positioning
- Water-cooled beam dump
- LabVIEW based diagnostic software

Spectrolab Inc. 12500 Gladstone Avenue, Sylmar, California 91342 USA • Phone: 818.365.4611 • Fax: 818.361.5102

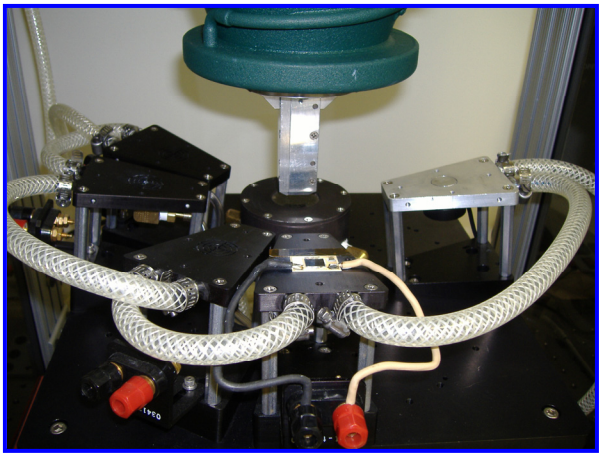
Capabilities:

Characterization of Solar Cells using our LabVIEW based IV Curve Data Acquisition System.

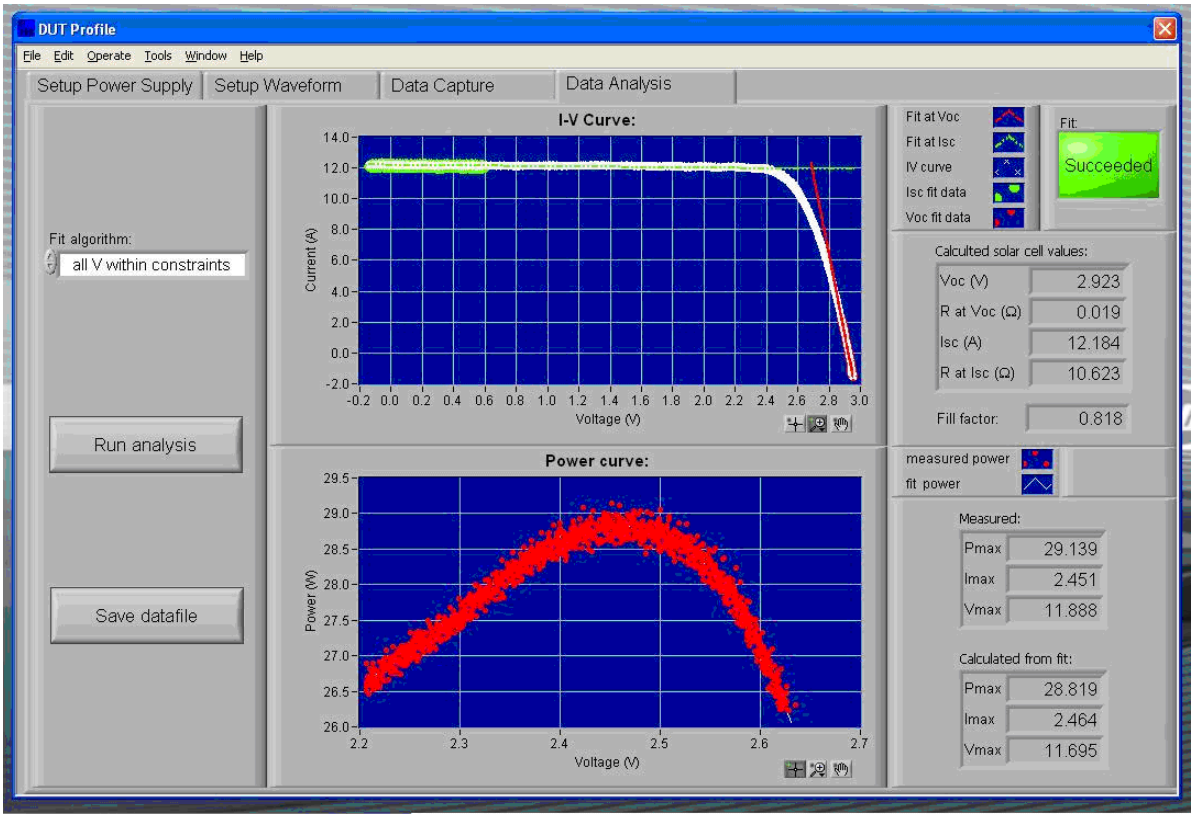
4 Quadrant Power Supply (for true I_{SC} measurements)

IV CURVE DATA

V_{OC}	- Measured	- Calculated
R at V_{OC}	P_{MAX}	P_{MAX}
I_{SC}	I_{MAX}	I_{MAX}
R at I_{SC}	V_{MAX}	V_{MAX}
Fill Factor		
Power Curve		



TEST PLATFORMS SHOWING PLUMBING



TYPICAL IV CURVE DATA

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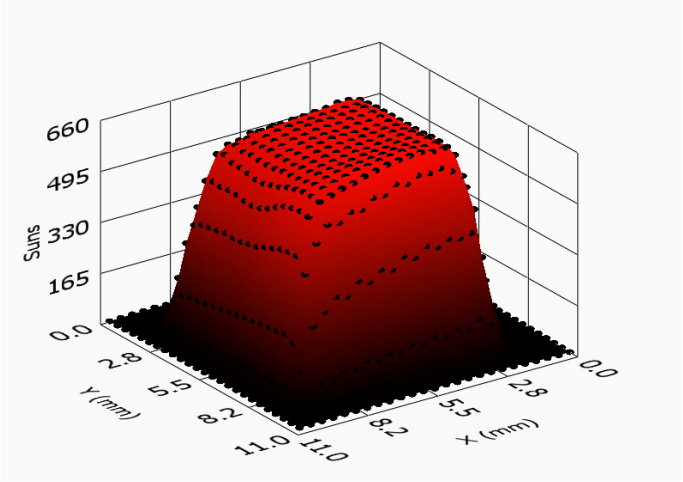
Irradiance Level: XT-20 SIMULATOR[1]

Approximately 600 Suns* on a .5cm x .5cm Cell (with coarse filter, focused for best uniformity)[2]

Approximately 300 Suns* on a 1.0cm x 1.0cm Cell (with coarse filter, focused for best uniformity)[2]

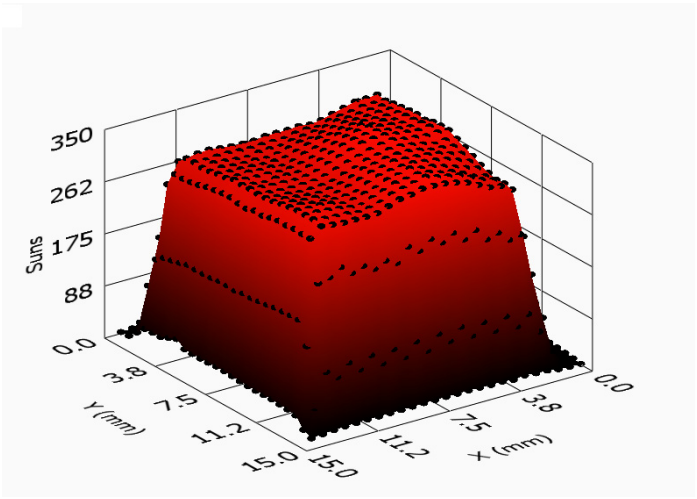
* Note: 1 Sun = 900 w/m²



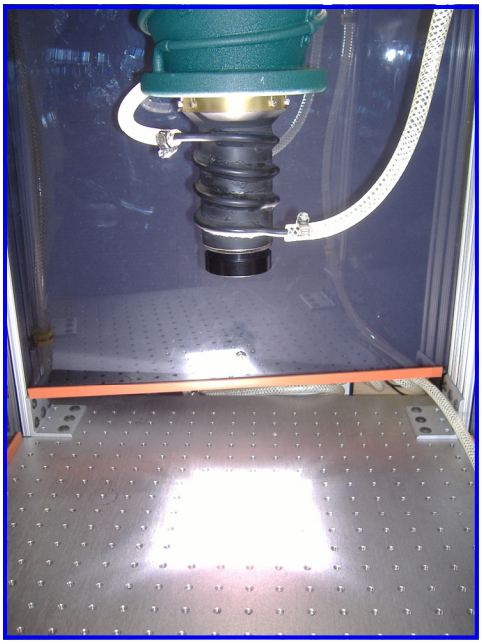
0.5cm x 0.5cm HOMOGENIZER FOCUSED FOR BEST UNIFORMITY, TAKEN WITH HOMOGENIZER 2mm AWAY FROM TEST PLANE

Homogenizers are used to create a more uniform output beam. Four homogenizer sizes are available for testing various geometries.

Note: Illumination geometry and "Suns" level change as a function of separation between homogenizer and cell surface.



1.0cm x 1.0cm HOMOGENIZER FOCUSED FOR BEST UNIFORMITY, TAKEN WITH HOMOGENIZER 2mm AWAY FROM TEST PLANE



AST ADAPTER WITH 1.0cm X 1.0cm HOMOGENIZER, EXPANDING BEAM TO ~6.0cm x 6.0 cm.

The AST adapter allows the optical output of the homogenizer to be re-imaged to larger sizes

Allows larger illumination beam area

Up to ~6cm x 6cm

Reduces illumination levels by a factor of Magnification Squared

Provides improved collimation of beam

[1] Current Simulator will be upgraded to XT-30 (3kW Lamp) with higher irradiance levels.

[2] Higher Irradiance Level (Suns Level) available with raw xenon spectrum.

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Product Configuration:

For regular testing, even on proprietary cells, YOUR engineers are the only ones viewing the test data. Spectrolab personnel are present during operations, but your personnel are the only ones accessing the computer while data is present.**

Computer is a stand alone system NOT attached to the Internet or to any LAN

All data can be erased when tests are complete

All data can be stored to a USB Flash Device

No Spectrolab personnel have access to your data.

Non-Disclosure Agreements (NDA) available upon request.

****NOTE: Customer must provide all identification prior to visit to our SITAC facility. Spectrolab is a controlled access facility and approval from Security must be received before testing day.**

Customer must be able to provide Commercial General Liability Insurance with limits of not less than Two Million dollars ($2,000,000.00) per occurrence for bodily injury, including death and property damage combined AND

Physical Damage Insurance covering loss or destruction of, or damage to, the component being used for characterization in an amount equal to the full replacement value.

We will be happy to work with you on your testing requirements. For rental prices and scheduling, please contact the Spectrolab Illumination Department, Customer Service Department

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