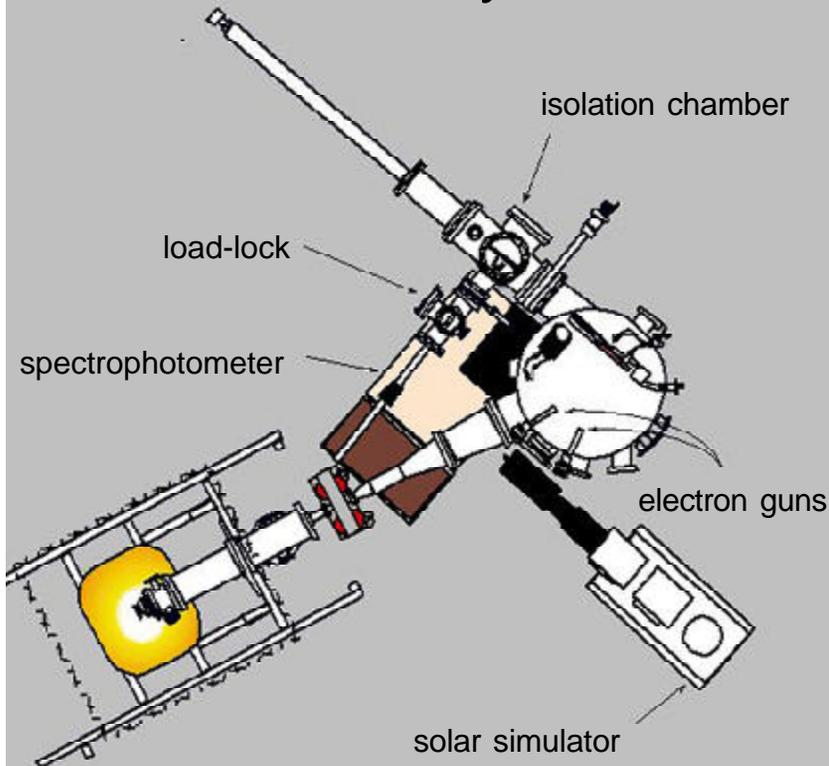


Research Laboratory
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In 1997 the SCEPTRE Facility was upgraded by replacing the vacuum chamber and sample handling mechanisms with a much larger chamber and a two stage specimen load-lock system for both individual and group specimen introduction to the main chamber.

Testing opportunities exist for both commercial and Government sponsored programs. Cooperative Research & Development Agreements (CRDAs) are welcomed.

SCEPTRE Facility Schematic



FACILITY

AFRL/MLBT
Wright-Patterson Air Force Base
Ohio
(937)255-2465
DSN 785-2465
FAX (937)255-2176

University of Dayton Research Institute
300 College Park
Dayton, OH 45469-0168
(937)255-7379
FAX (937)258-8075



www.ml.wpafb.af.mil/facilities/labs/fac_127.htm

SCEPTRE FACILITY

Space Comb
Primary Test

MATERIALS TEST
IN
SIMULATED
SPACE
ENVIRONMENT

Air Force Research
Materials and Manu

Key Features

Space Environment

(Geosynchronous Orbits)

UV, & Electron Radiation

Reflectance Measurements

Specimen Temperature

Diameter. Specimens Per Test

Environment Monitoring

Testing Parameters

Testing

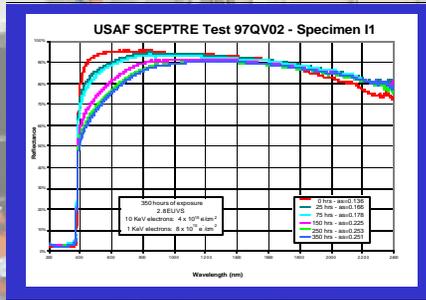
PMMA
Hydride,
dianiline,
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of a film

PMMA
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of a film



Data



The in vacuo total hemispherical spectral reflectance of a specimen at various intervals throughout the duration of a test.

Chamber Pressure

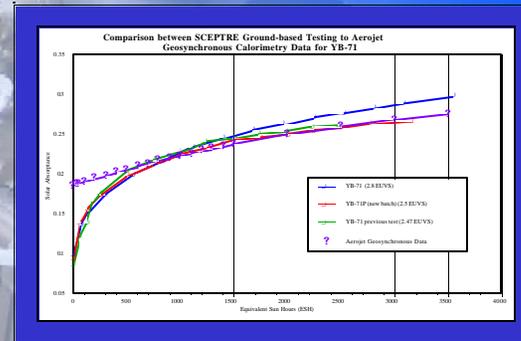
Target Area

8-inch Diameter

Solar Simulator Spectral Irradiance

Electron Radiation

Validation



Compares the results from two different tests of Illinois Institute of Technology Research Institute's (IITRI's) YB-71 and YB-71P materials (performed in 1993) to spaceflight calorimeter data of the same YB-71 material (performed in 1985) onboard a geosynchronous satellite. This comparison shows that the SCEPTRE Facility testing parameters and procedures accurately reproduce both the rate and extent of degradation of this material.



Inside view of SCEPTRE's 30-inch diameter chamber.

SCEPTRE is available for testing in the following areas of research:

- Charging studies
- Space stability studies
- Space stability studies
- Degradation mechanisms

The facility is designed to test the stability of thermal control systems. In addition, the 30-inch diameter chamber can be utilized to test any area of a spacecraft material, component, or subsystem. The chamber can accommodate a wide variety of flange orientations which can be tested with additional test equipment.

The United States Air Force Research Laboratory Materials & Processes Directorate (AFRL/ML) and the University of Dayton (UDRI) have a Memorandum of Understanding (MOU) with AFRL/ML and the University of Dayton (UDRI) have a Research & Development Agreement (RDA) allowing UDRI to perform degradation testing for AFRL/ML sponsors.