BBMS-2000 汽车材料反射/透射空间分布测量系统
BBMS-2000 Measuring System for Spatial Distribution of Reflection/ Transmission of Automotive Materials

- BBMS-2000双向反射/透射空间分布测量系统可全方位分析测量材料表面的反射、透射特性，可测参数包括材料的双向透射分布（BTDF）、双向反射分布（BRDF）、反射比分布、透射比分布、总反射（TIR）、总散射（TIS）等，可广泛应用于测试汽车材料（挡风玻璃、膜等）在任意光照方向下的半球反射/投射分布。

The BBMS-2000 bidirectional reflection/transmission spatial distribution measurement system can comprehensively analyze and measure the reflection and transmission characteristics of the material surface. The measurable parameters include bidirectional transmission distribution (BTDF), bidirectional reflection distribution (BRDF), reflectance distribution, transmittance distribution, total reflection (TIR), total scattering (TIS), etc, It can be widely used to test the hemispherical reflection/projection distribution of automotive materials (windshield, film, etc.) in any light direction.

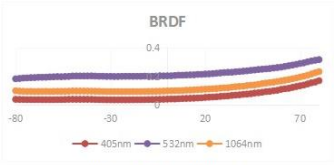
特点与优势 Characteristics and advantage

- 系统通过四轴精密旋转配合，可以实现空间内任意光照方向下的半球反射/透射分布测试;
  The system can realize hemispherical reflection/transmission distribution test in any light direction in space through four axis precision rotation and coordination;
- 绝对法测试，不受样品的形态、光学性质的约束;
  Absolute method test, which is not restricted by the shape and optical properties of the sample;
- 测试光路及计算方法，完全符合ASTM E2387等标准要求;
  The test light path and calculation method fully comply with ASTM E2387 and other standards;
- 测试的BRDF/BTDF数据可以导出至Tracepro等光学设计软件中，用于辅助光学材料或系统的模拟、设计;
  The BRDF/BTDF data tested can be exported to optical design software such as Tracepro to assist in the simulation and design of optical materials or systems;
- 高精度，高稳定度：
  High precision and stability:
- 接收光路长，接收立体角小，测量不确定度小;
  The receiving optical path is long, the receiving solid angle is small, and the measurement uncertainty is small;
- 激光光源，能量高、单色性好、准直度高;
  Laser light source, high energy, good monochromaticity and high collimation;
- 配备监视探测器，消除光源波动对测量的影响;
  Equipped with monitoring detector to eliminate the influence of light source fluctuation on measurement;
- 探测器动态范围大，测试准确度高;
  The detector has large dynamic range and high test accuracy;
- 机械转轴转动精度高，角度分辨率、重复性好;
  The mechanical shaft has high rotation accuracy, good angle resolution and repeatability;
- 综合分析表面散射性能：
  Comprehensive analysis of surface scattering performance:
  双向反射分布函数BRDF;
  Bidirectional reflection distribution function BRDF;
  双向透射分布函数BTDF;
  Bidirectional transmission distribution function BTDF;
  反射比分布;
  Reflectance distribution;
  透射比分布;
  Transmittance distribution;
  总反射率TIR;
  Total reflectivity TIR;
  总散射率TIS;
  Total scattering rate TIS;
- 光源自由切换，波长覆盖紫外-可见-近红外范围，实现不同颜色光照下材料表面散射特性的测试，适用于有光谱选择性的样品;
  The light source can be switched freely, and the wavelength covers the ultraviolet visible near-infrared range, so as to realize the test of the scattering characteristics of the material surface under different colors of light, which is applicable to samples with spectral selectivity;

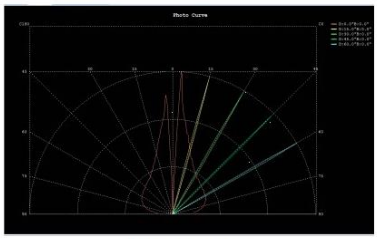
技术参数 Specifications

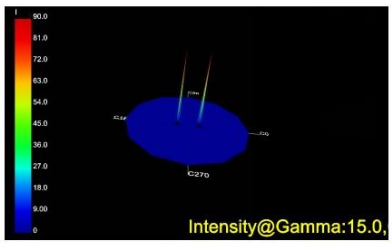
型号	BBMS-2000
测试类型	In-plane/Out-of-plane BSDF
测试参数	BRDF、BTDF、反射比、透射比、TIS、TIS
光源	激光，覆盖可见-近红外范围（特殊可定制）
光源天顶角	0°~80°
光源方位角	0°~360°
探测器天顶角	-85°~85°
探测器方位角	0°~180°
角度分辨率	0.01°
角度重复精度	0.1°
动范测量范围	>10^8

- **界面测试**



BRDF二维剖面分布和极坐标分布


BRDF二维极坐标多面分布



特征面三维坐标分布