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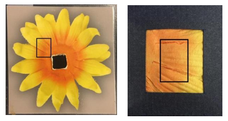
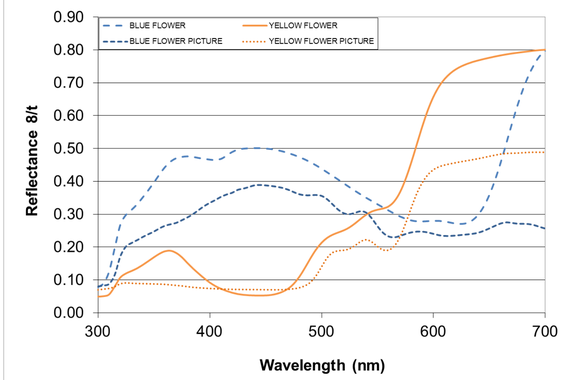
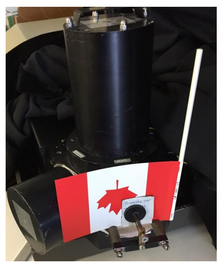
What we do with NON-STANDARD samples in NRC Spectrophotometry Team

Diffuse reflectance measurement of colourful samples

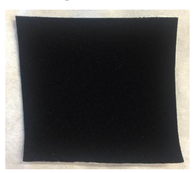


- Artificial flowers vs. photos of them
- Total (regular + diffuse) reflectance
- 8° incidence
- hemispherical collection
- VIS spectral range
- Non-uniform – Irradiated area
- Non-opaque – sample preparation

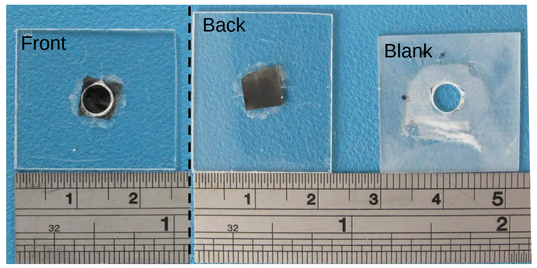




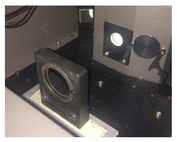
- One-event-only-use flags
- Diffuse-only reflectance
- Colorimetric quantities in D65/2°
- 8° incidence
- hemispherical collection
- VIS spectral range
- Non-opaque – Kubelka-Munk method of using white and black backing

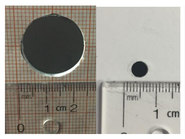


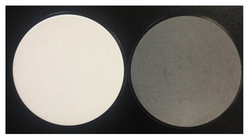
Diffuse reflectance measurement of low reflectance samples

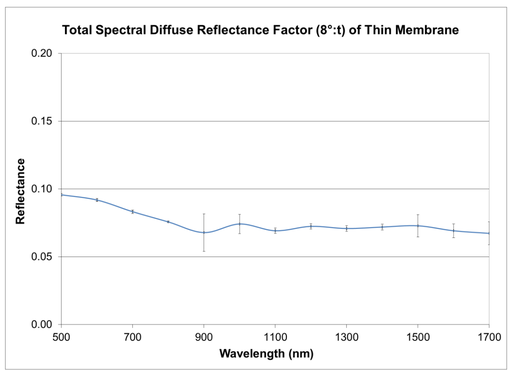


- Thin polymer membrane mounted in a holder
- Client provided a blank holder
- Total (regular + diffuse) reflectance
- 8° incidence
- hemispherical collection
- UV/VIS/NIR spectral range
- Small – reduce the size of beam using quartz focusing lens & an aperture on sample port
- Low reflectance – enhance the sensitivity by using 20% grey scale reflectance standard as a reference
- Non-opaque – using black backing

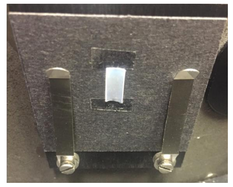




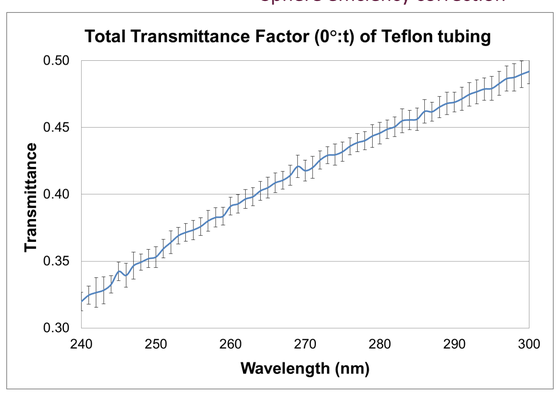


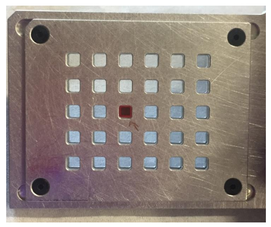


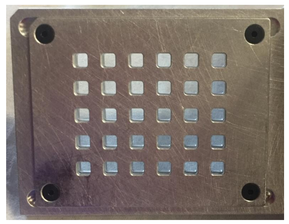
Diffuse transmittance measurement of very small or non-flat samples

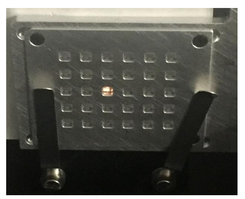


- 5 mm X 10 mm Teflon tubing
- Total transmittance
- 0° incidence
- hemispherical collection
- UV spectral range
- Small – reduce the size of beam using UV fused silica lens
- Sphere efficiency correction





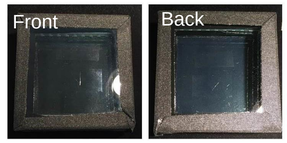




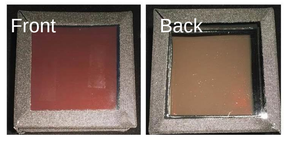
- 3 mm X 3 mm coated film
- Client provided a blank holder
- Total transmittance
- 0° incidence
- hemispherical collection
- UV/VIS/NIR spectral range
- Small – reduce the size of beam using UV fused silica lens

Solar absorptance calculation of glass samples

Clear sample



Tinted sample



- Clear and tinted two-layered glass samples
- Solar absorptance
- Spectral normal absorptance
- UV/VIS/NIR spectral range
- Regular transmittance
- Total (regular + diffuse) reflectance
- Diffuse-only reflectance
- ASTM G173-03 (2012)
- Calculation validated using NRC standard Suprasil®