

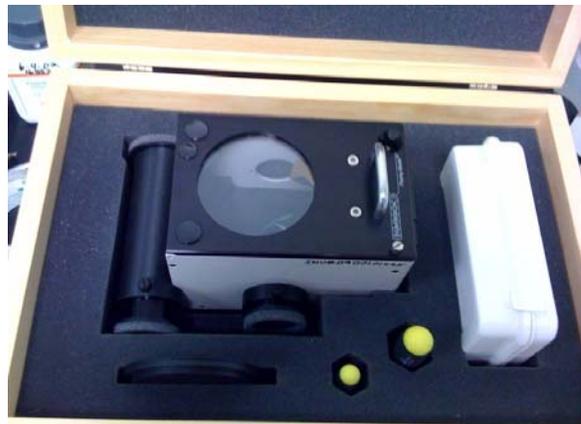
Praying Mantis for Diffuse Reflectance UV-Vis-NIR Spectra

Installation

- 1) Remove cuvette holder by loosening screw directly in center of cuvette holders and lifting metal pan straight out. Ensure that the screw and washers remain in place when this holder is out of the spectrometer as they are very difficult to manipulate back into place.



- 2) Re-zero transmission/absorbance/reflectance with **nothing** in the sample compartment (Absorbance should read "0" and Transmission/Reflectance 100%)
- 3) Install Praying Mantis into the spectrometer sample compartment





- 4) Transmission/Absorbance/Reflectance readings will significantly change once the Praying Mantis is installed (Transmission/Reflectance will go down; Absorbance will go up)

Measurement setup

- 1) In method, under general tab, select “**liquid**” for system
- 2) In the instrument tab, choose desired measurement type (by default, the Praying Mantis measures **REFLECTANCE** and the signal will be converted into transmittance/absorbance/etc. by the detector)
- 3) Select “User2” for baseline
- 4) Choose a **slow scan speed in the NIR** (150 nm/min or slower) because the Praying Mantis creates a weaker signal in the NIR

Preparing your sample

- 1) Samples will have better spectra if they are ground to ~50 microns or smaller; visible crystallinity decreases diffuse reflectance signal
- 2) Fill the desired sample cup **COMPLETELY FULL**; with the micro sampling cup, failure to do so could result in the beam hitting the rim of the cup instead of your sample.
- 3) Flatten the top by pressing with a flat spatula or with a razor blade
- 4) Remove any excess powder that is not inside the sample cup in order to keep the inside of the sample compartment clean

Acquiring spectra

- 1) Insert the angled mirror into the sampling position (flat mirror goes in first) for baseline measurement; baseline accounts for the reflectance contributions from the mirrors inside the Praying Mantis.
- 2) Adjust height with micrometer until signal is at its maximum. Take baseline. *****Take the baseline using the largest scan range you plan to measure; leave the lamp/detector transition wavelengths the same throughout your measurements.*****
- 3) Remove the mirror and insert into the Praying Mantis sample compartment with the dimple in the sample cup facing outwards *****Do not spill your powder inside the Praying Mantis!*****
- 4) Adjust the height of the sampling cup with the micrometer screw until you achieve the maximum signal possible
- 5) After data is collected, remove sample holder and all particulates from Praying Mantis
- 6) Remove Praying Mantis when finished and place gently into storage case; replace cuvette holder; clean and return sampling cups to storage box