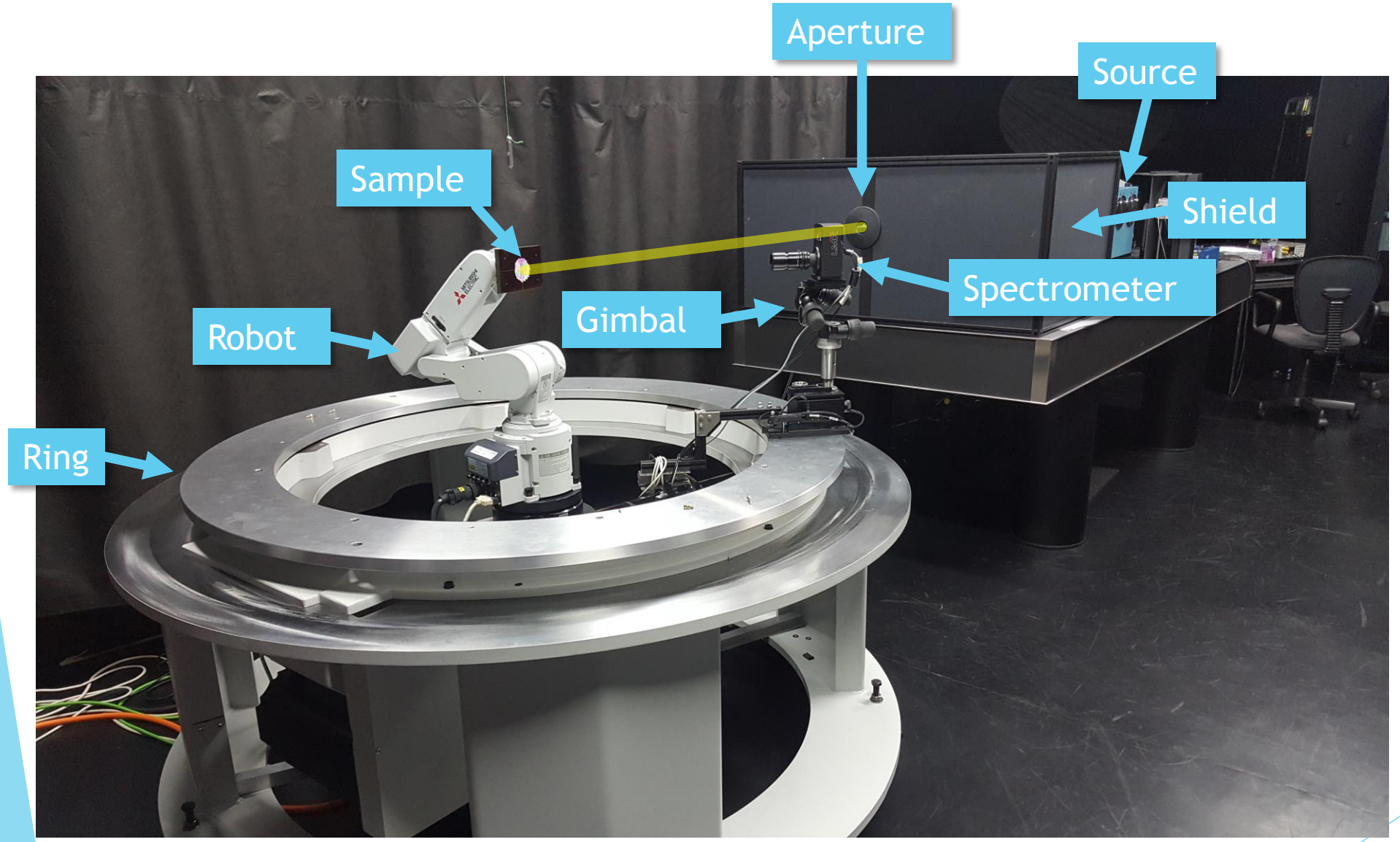
A1.2.3	CMI will measure the BRDF on at least 2 goniochromatic samples based on interference pigments for at least 3 gradual solid angles of detection and 3 gradual convergences of the illumination beam. These samples are available at CMI and if more are necessary, according to the input from A1.1.3, CMI will source more samples, which are commercially available. CMI will perform the measurements at the solid angle of the device used in A1.2.5. CMI will write a summary report on the effect of the convergence and the solid angle on the BRDF values for goniochromatic surfaces based on interference pigments. CMI will then provide at least one sample to PTB for the measurements in A1.2.5.
A1.3.3	CMI will test the effect of the size of the measurement area on BRDF measurements on at least 3 goniochromatic samples with interference pigments from A1.2.3 and in agreement with the input from A1.1.3. CMI will perform the measurements on the size of the measurement area studied in A1.3.5. This activity can be undertaken in parallel with A1.2.3. CMI will then provide at least one sample to PTB for the measurements in A1.3.5 and at least one sample to METAS for the measurements in A1.3.7.

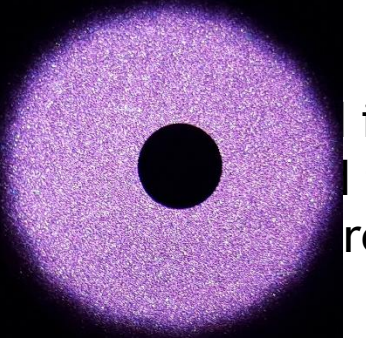
Niel Swift, Geiland Porrovecchio, Marek Smid


Aperture
Source
Sample
Shield
Spectrometer
Gimbal
Robot
Ring

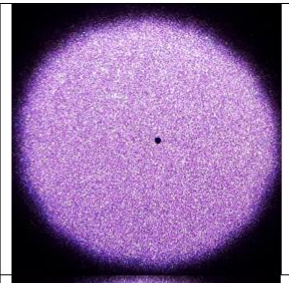
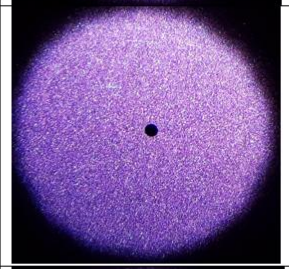
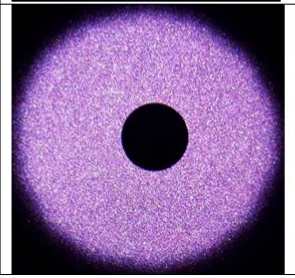
Broadband illumination

- Measurements completed in June 2019
- Illuminating sample with Broadband LDLS source, with KG3 filter in front.
- Detector: Minolta CS-2000 spectroradiometer.

Theta i	Phi i	Theta r	Phi r	Comment
45	0	20	0	PTB suggested geometry
45	0	20	22.5	PTB suggested geometry
45	0	20	45	PTB suggested geometry
45	0	20	67.5	PTB suggested geometry
45	0	20	90	PTB suggested geometry
45	0	20	112.5	PTB suggested geometry
45	0	20	135	PTB suggested geometry
45	0	20	157.5	PTB suggested geometry
45	0	20	180	PTB suggested geometry
15	0	0	0	Alejandro suggested geometry
45	0	-30	0	Alejandro suggested geometry
45	0	0	0	Common colour geometry
65	0	-15	0	Alejandro suggested geometry

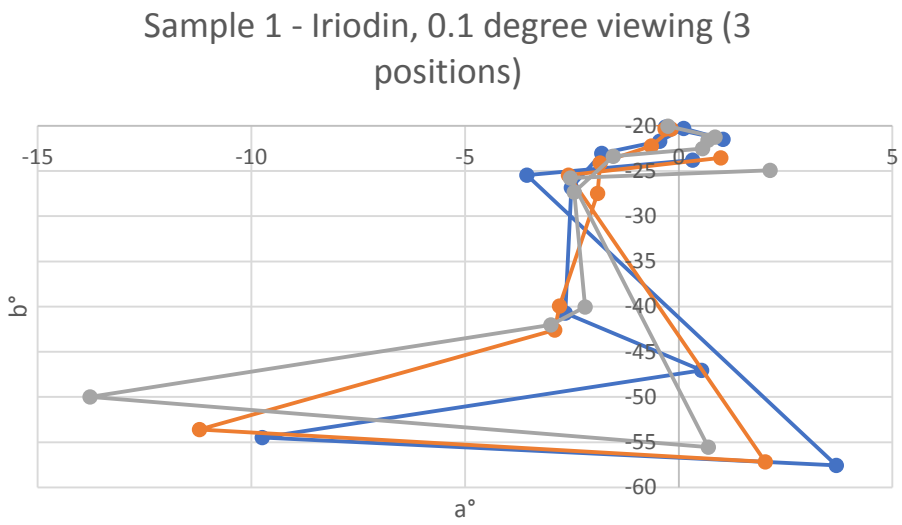


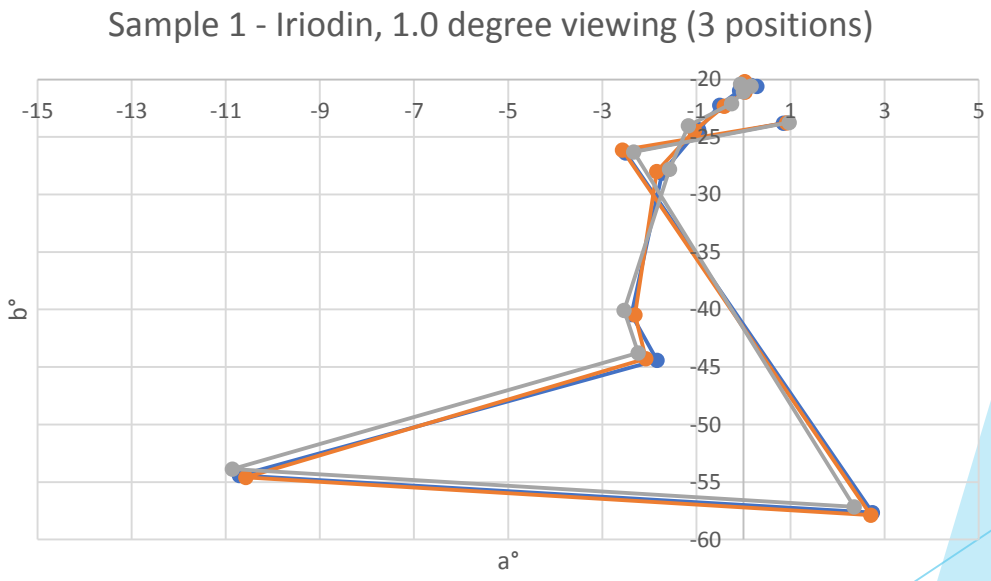
illumination. Observation angles: 0.1°, 0.2° and 1°, full angle. These
to approximate viewing areas on the sample of 1 mm, 2 mm and 10 mm
respectively.

SAMPLE 3 0.1° observation angle, 1 mm diameter measurement area.	
SAMPLE 3 0.2° observation angle, 2 mm diameter measurement area.	
SAMPLE 3 1.0° observation angle, 10 mm diameter measurement area.	

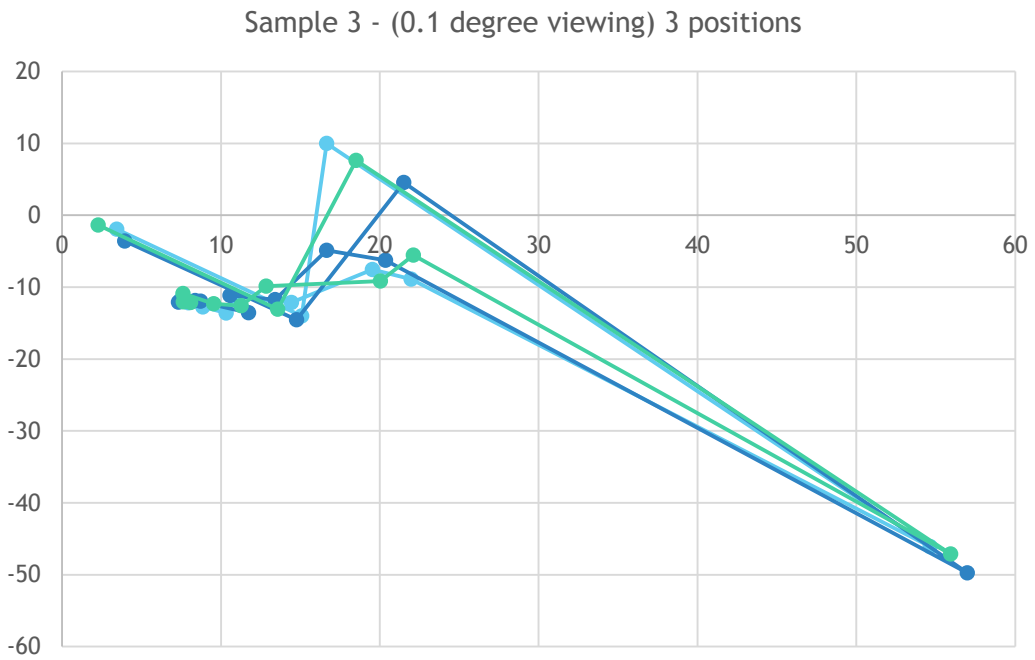
We measured the sample in 3 different positions

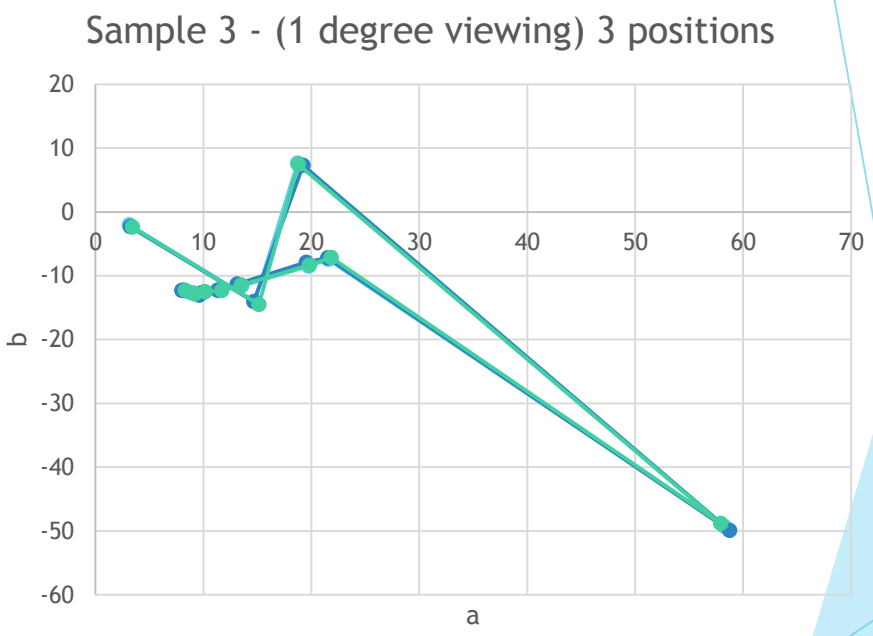
Effect of measurement area: sample 3



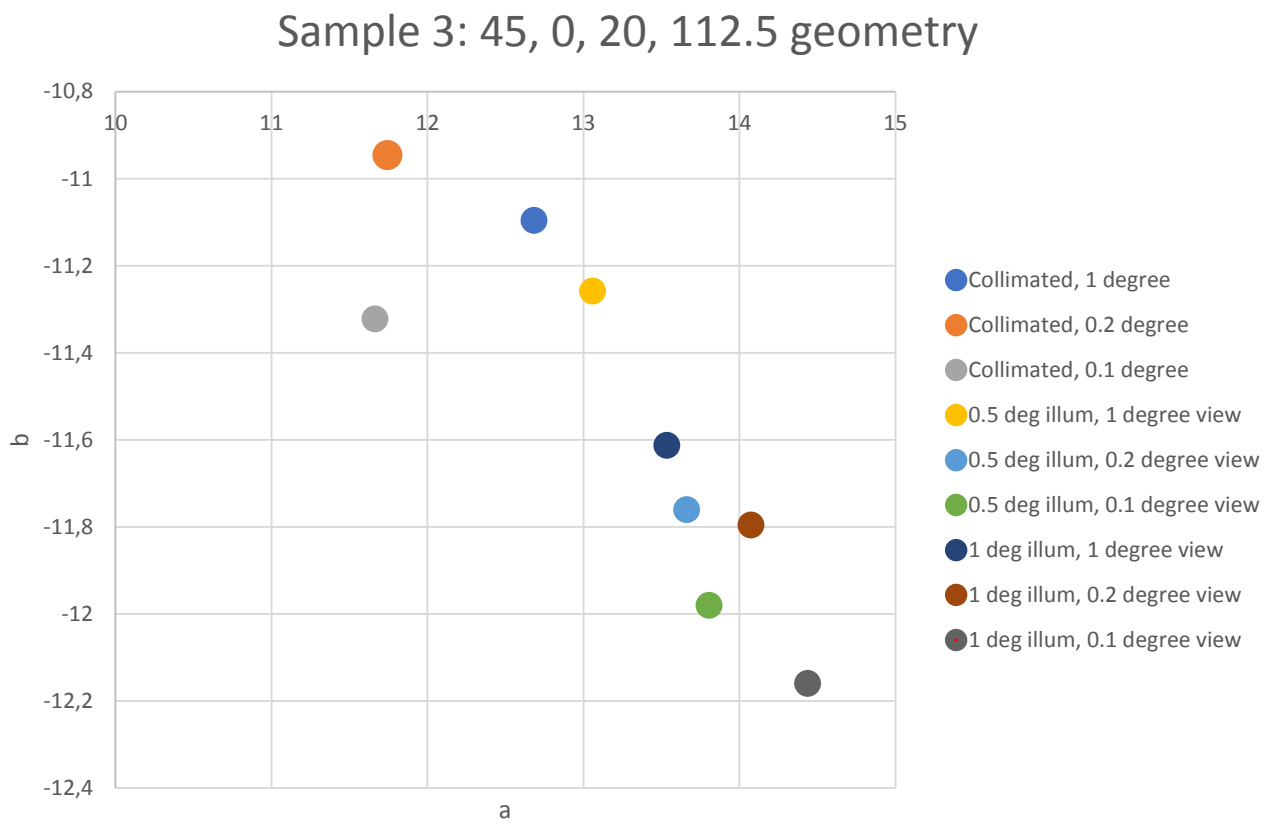


Effect of measurement area: sample 3





Illumination : collimated, 0.5 and 1 degree



- The above chart shows good agreement for the 1 degree viewing angles.
- The narrower angle measurements are likely influenced by the issue with the measurement area.