Photonic Systems Development

UCL-Cambridge Centre for Doctoral Training

The Reflection Goniophotometer

Measurements using the Imaging Sphere

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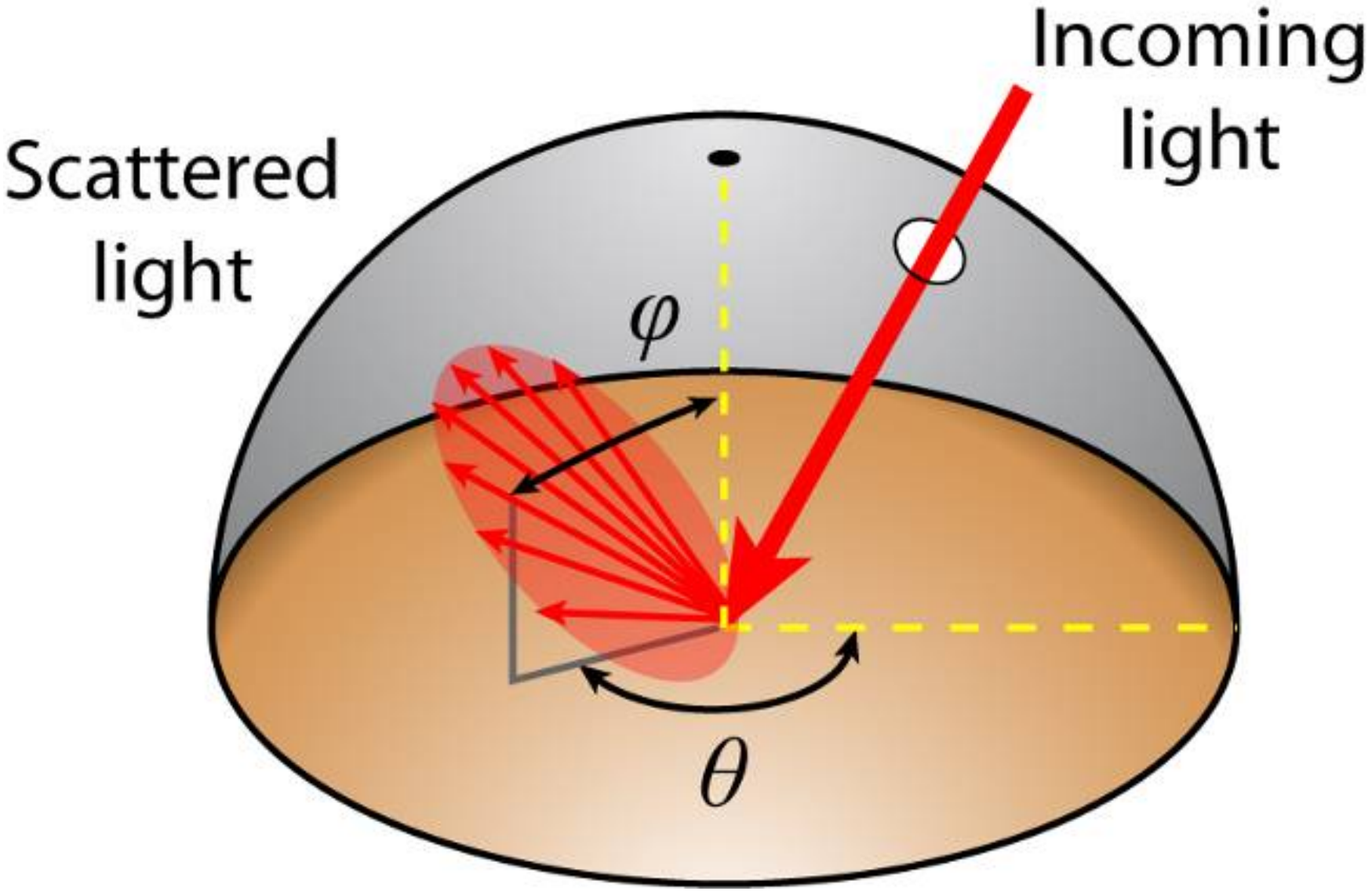
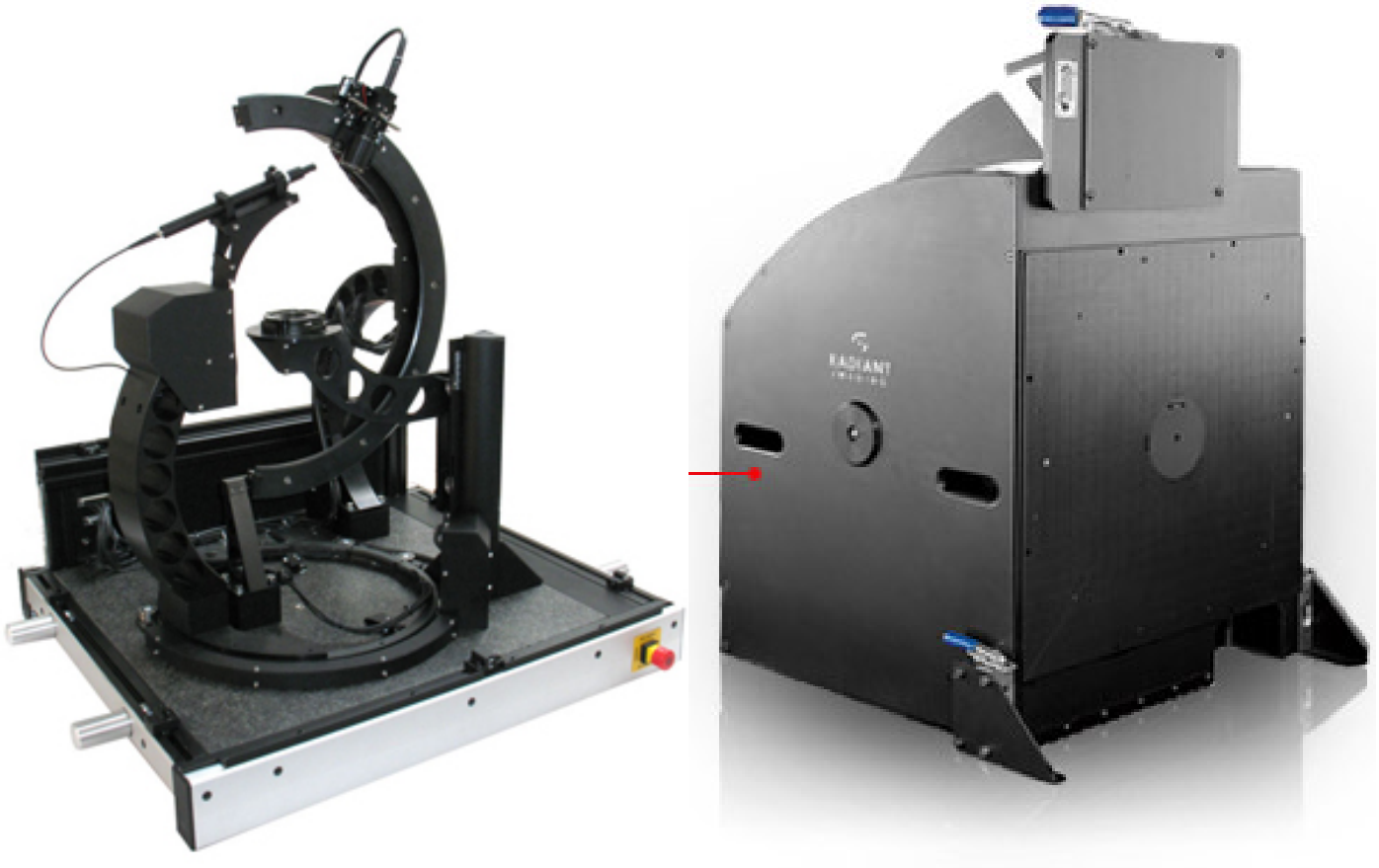
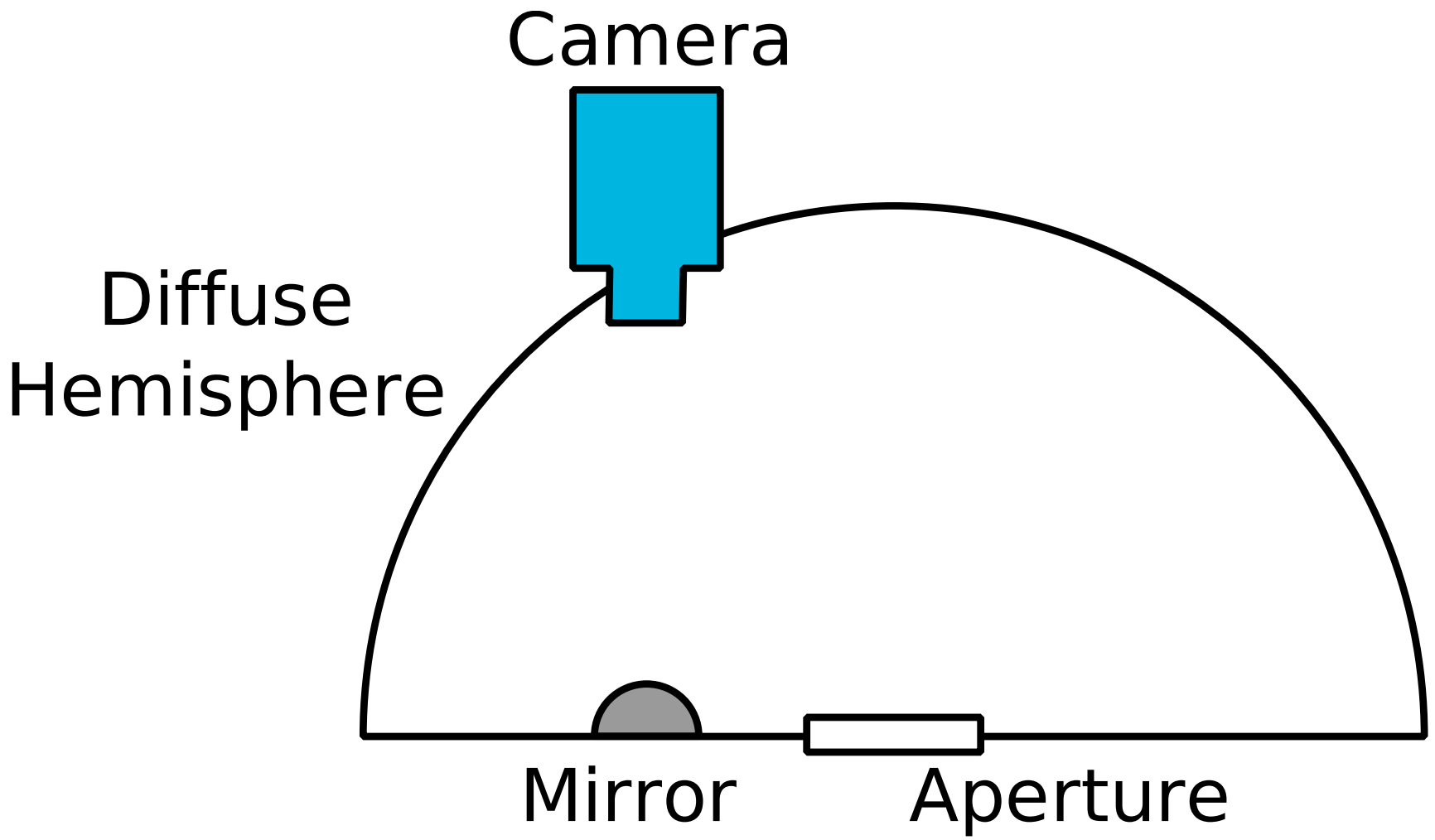
What is a Goniophotometer?



Typical Goniophotometer



Key Components of the Imaging Sphere



Reflection Goniophotometer

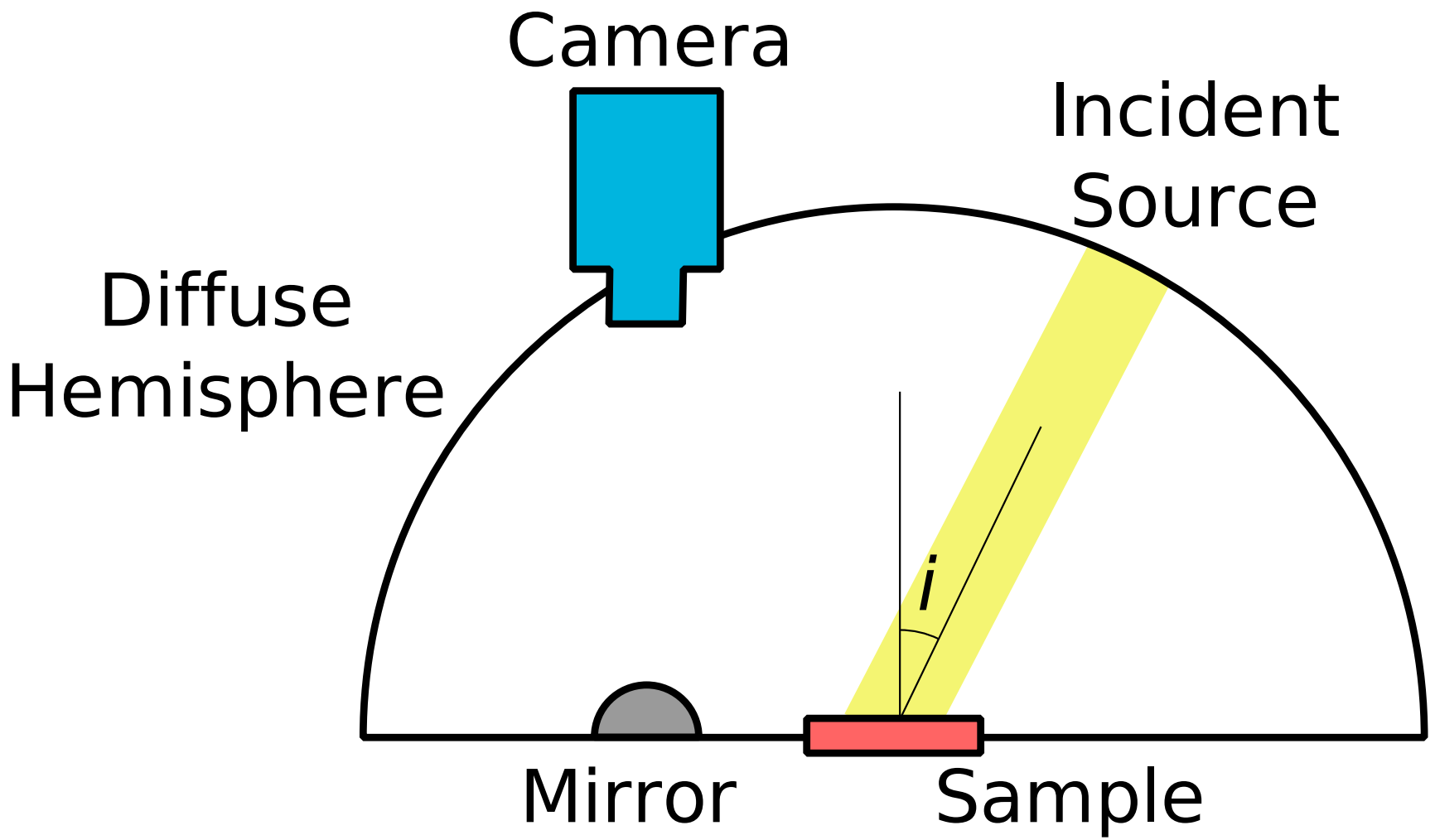
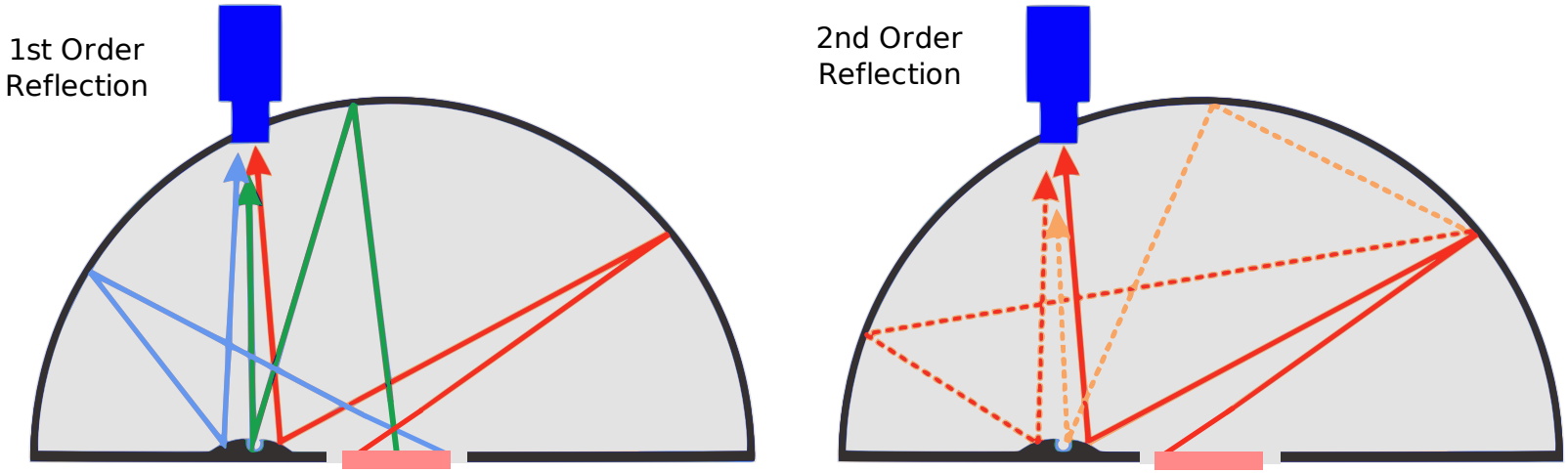
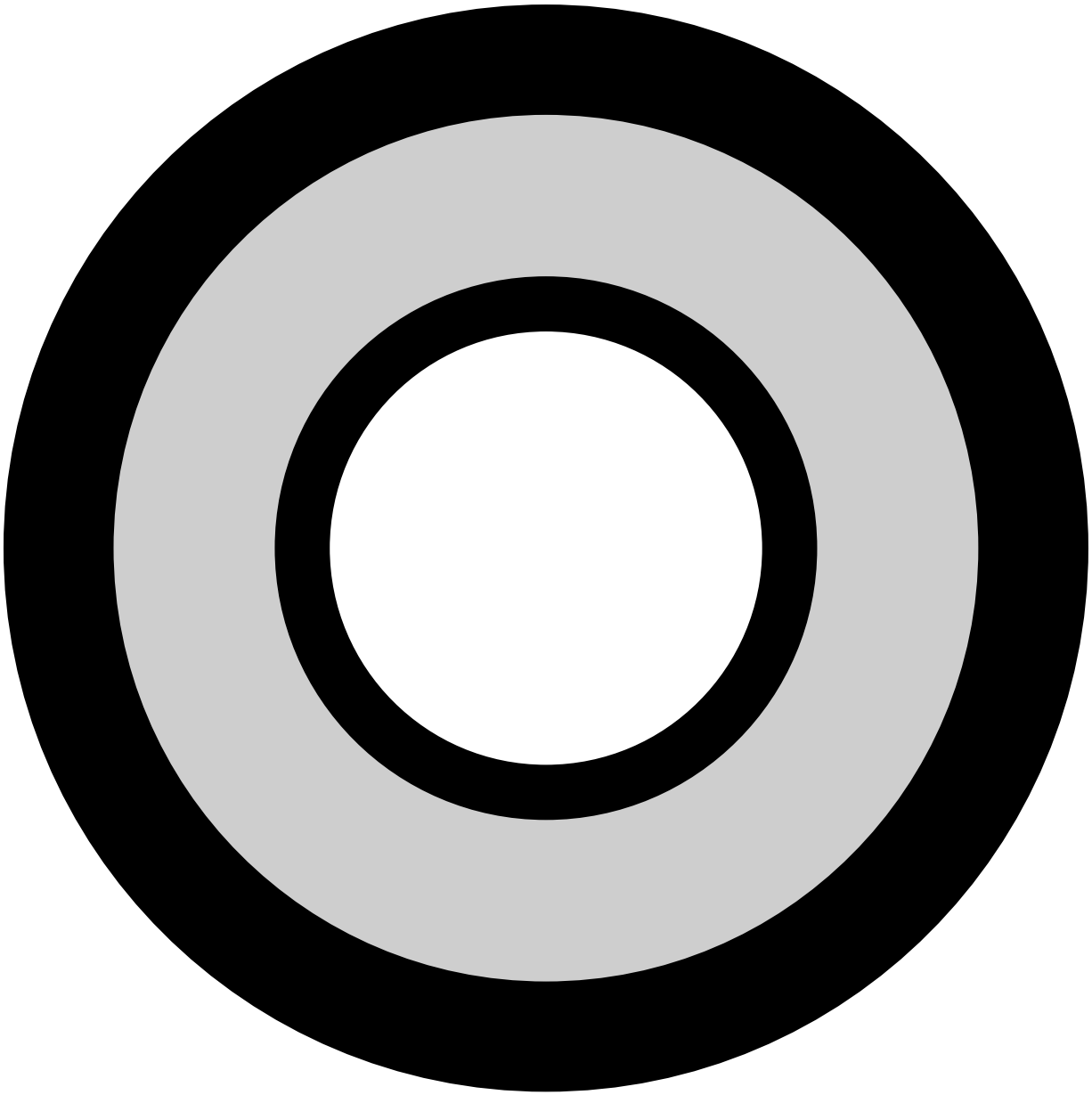


Image Formation

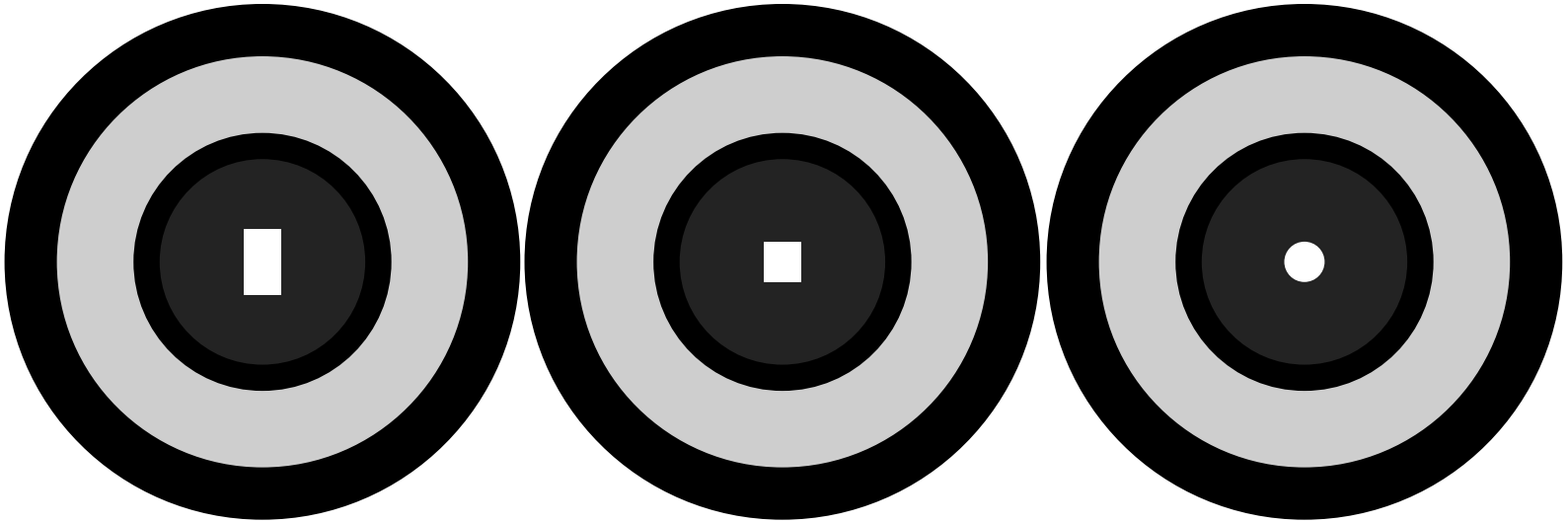


Method

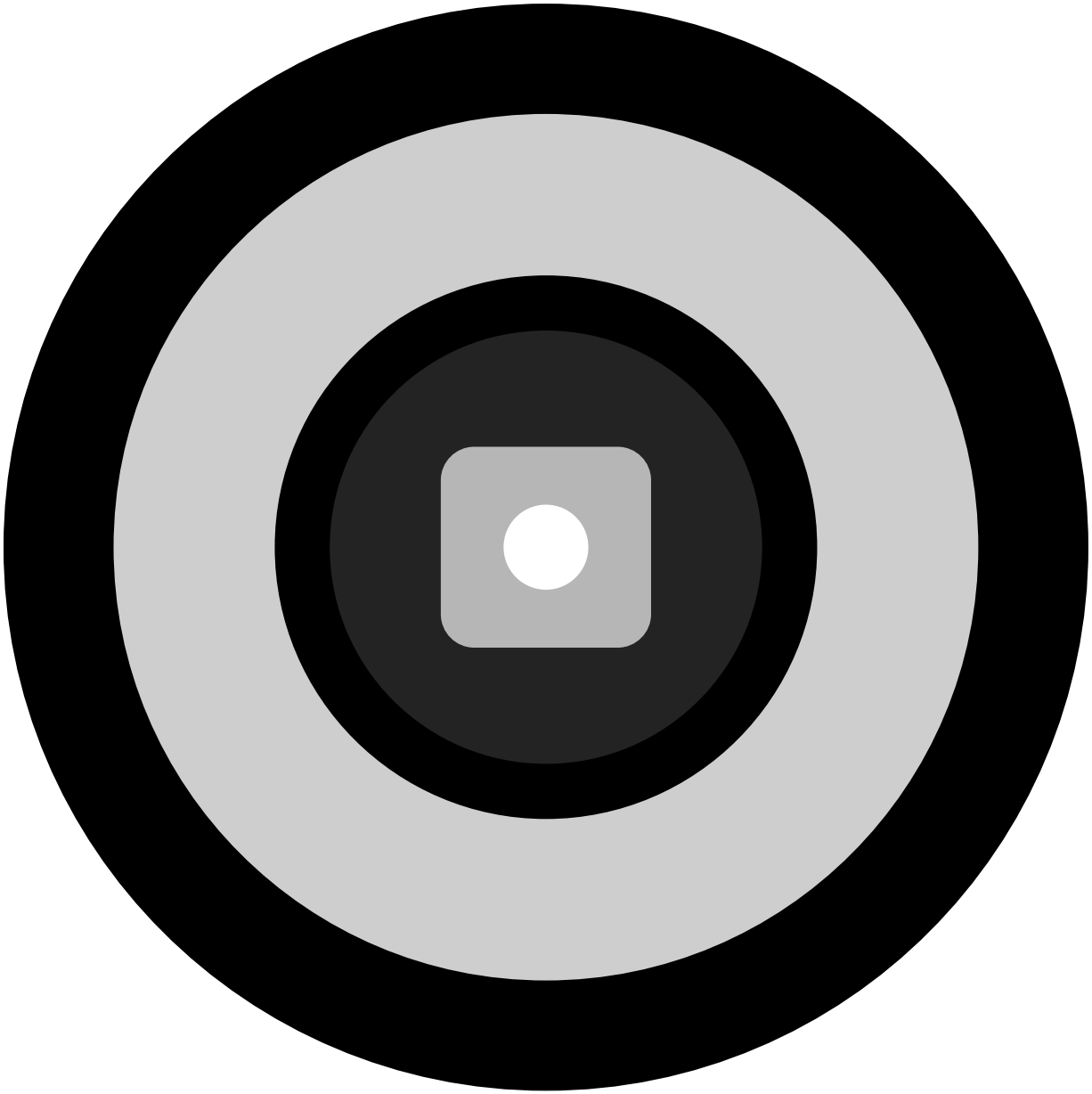
The Aperture



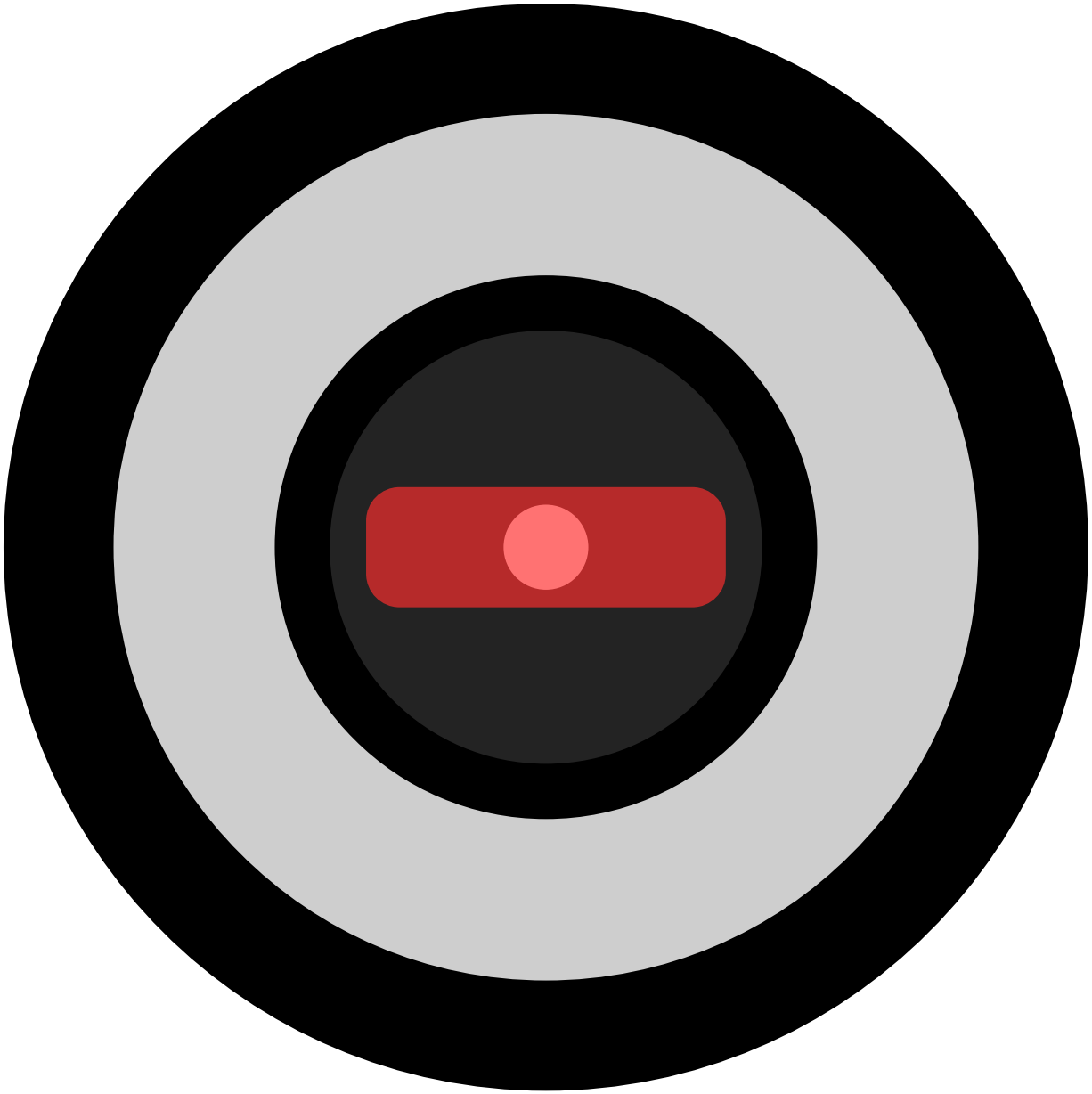
Step 1) Aperture Mask Calibration



Step 2) Standard Sample Calibration

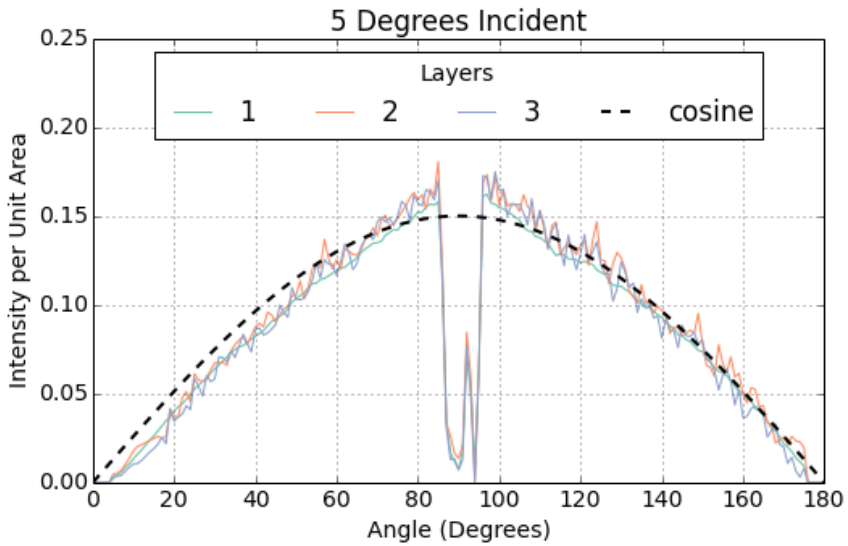


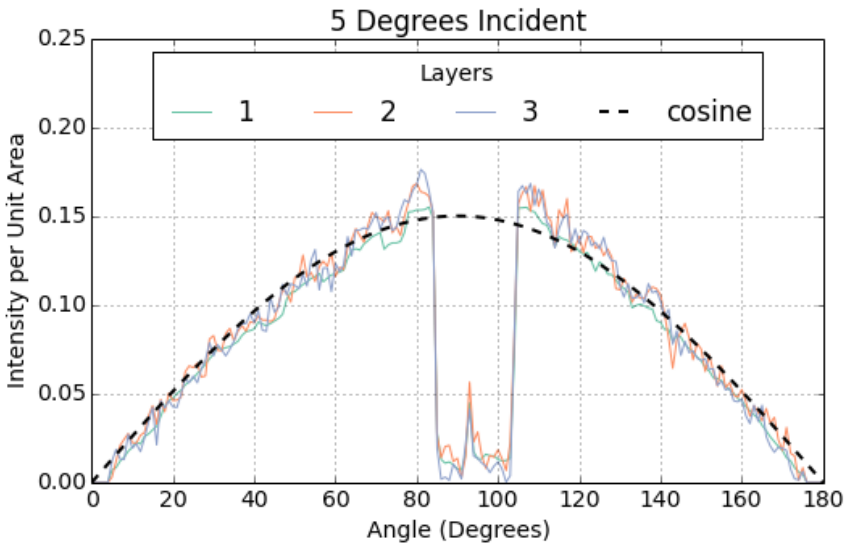
Step 3) Measurement

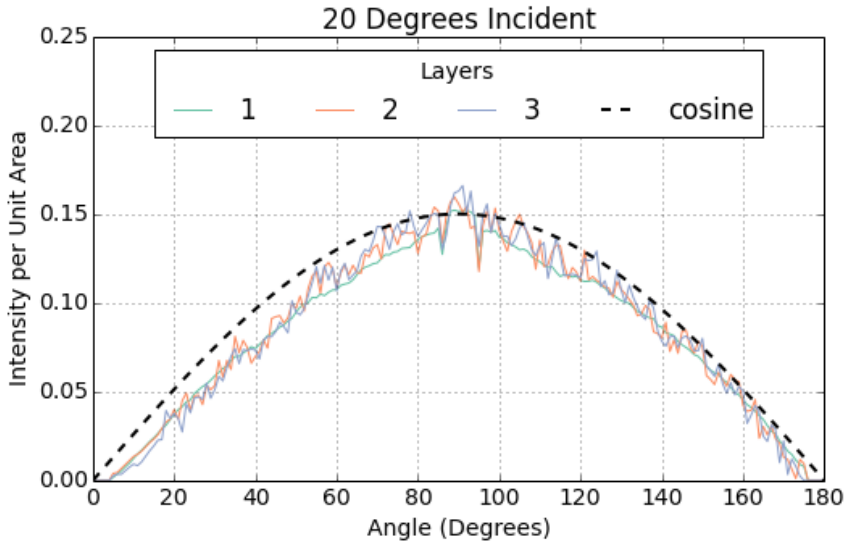


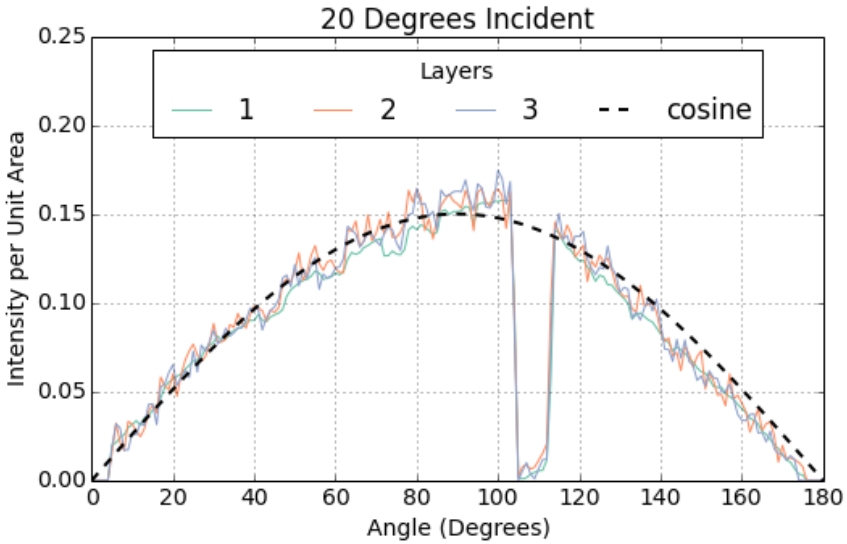
Example Measurement - *PTFE*

PTFE Results

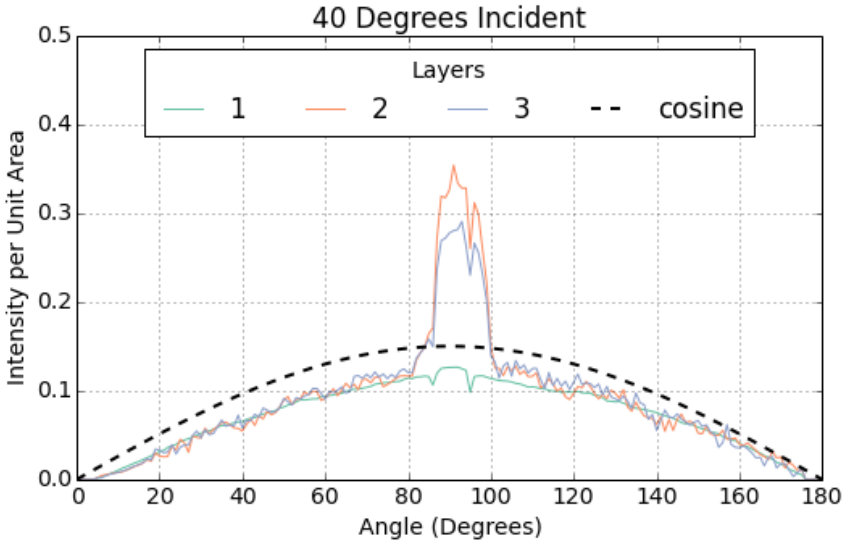


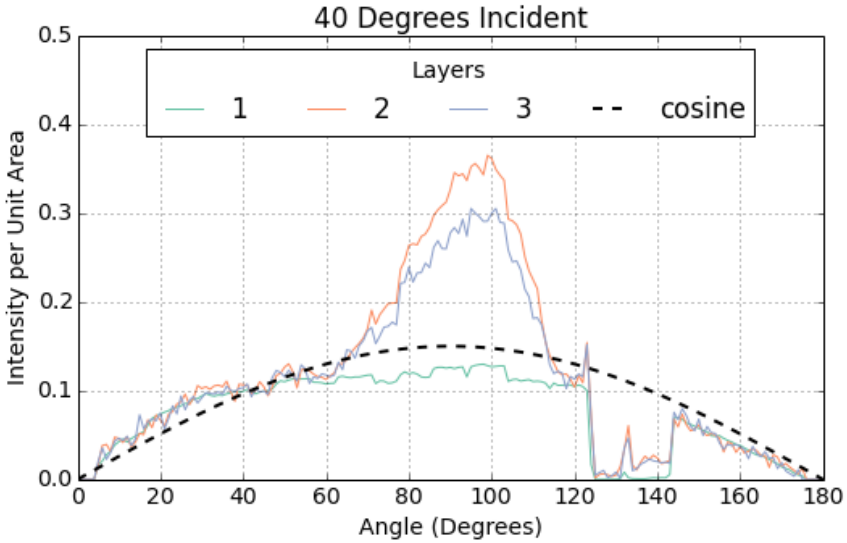


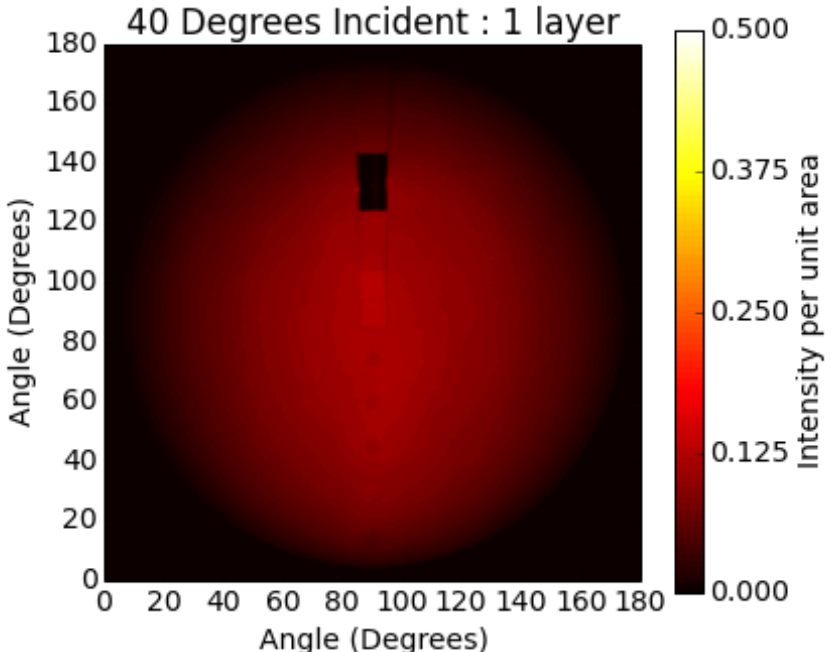


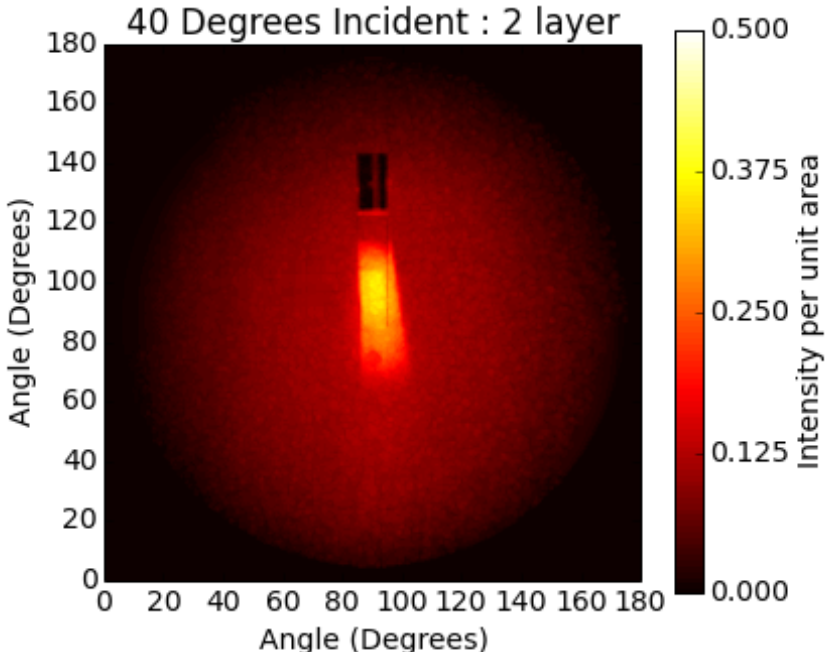


PTFE Results (2) : Oddity


40 Degrees Incident
Layers
1
2
3
cosine
Intensity per Unit Area
Angle (Degrees)
0.0
0.1
0.2
0.3
0.4
0.5
0
20
40
60
80
100
120
140
160
180

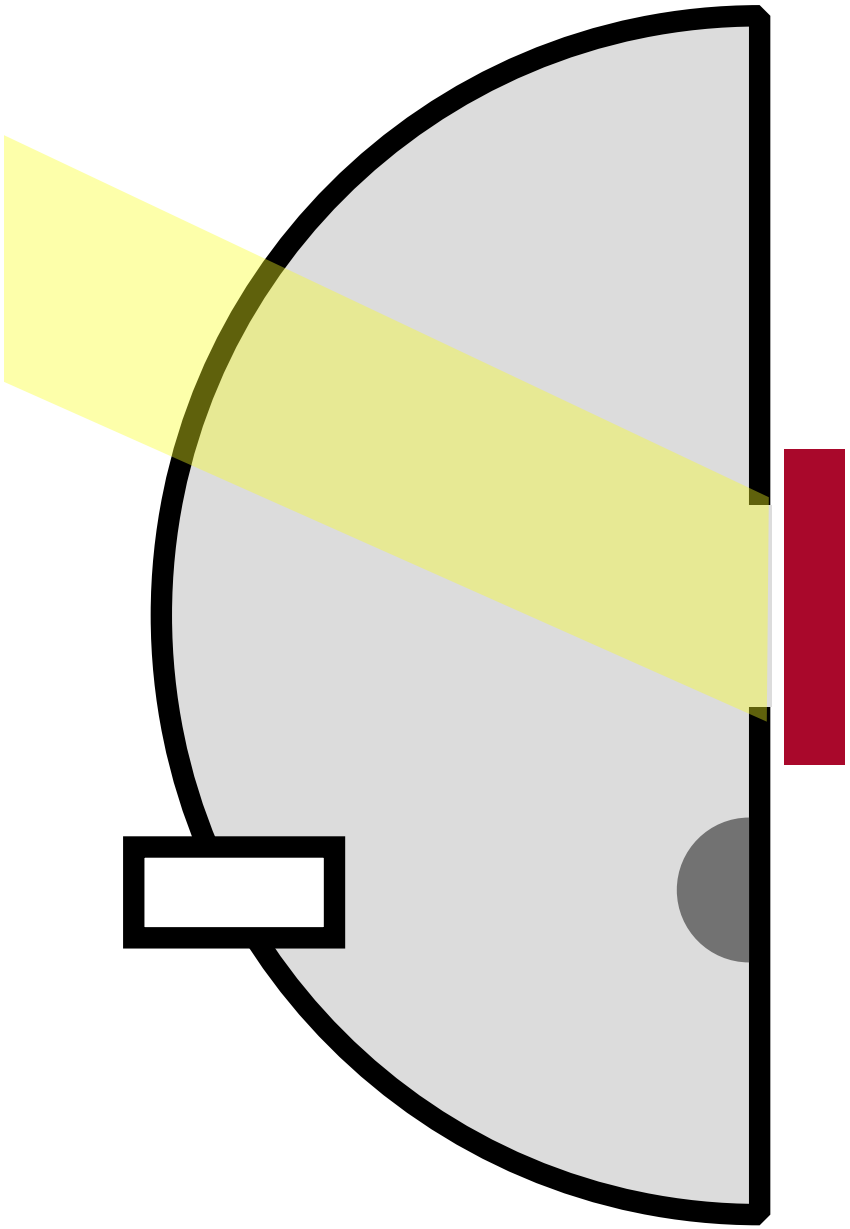

40 Degrees Incident
Layers
1
2
3
cosine
Intensity per Unit Area
Angle (Degrees)
0.0
0.1
0.2
0.3
0.4
0.5
0
20
40
60
80
100
120
140
160
180


40 Degrees Incident : 1 layer
Angle (Degrees)
Angle (Degrees)
Intensity per unit area
0
20
40
60
80
100
120
140
160
180
0.000
0.125
0.250
0.375
0.500

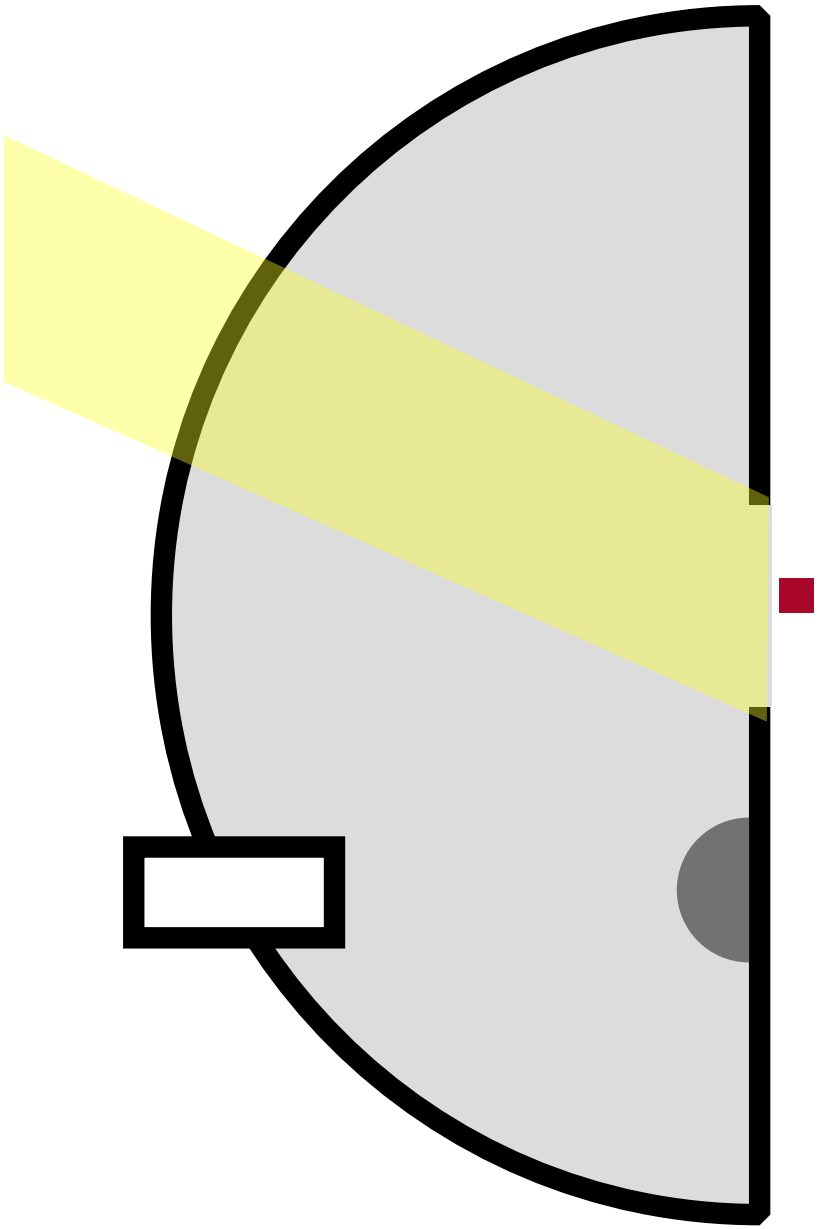

40 Degrees Incident : 2 layer
Angle (Degrees)
Angle (Degrees)
Intensity per unit area
0
20
40
60
80
100
120
140
160
180
0.000
0.125
0.250
0.375
0.500

Current Work

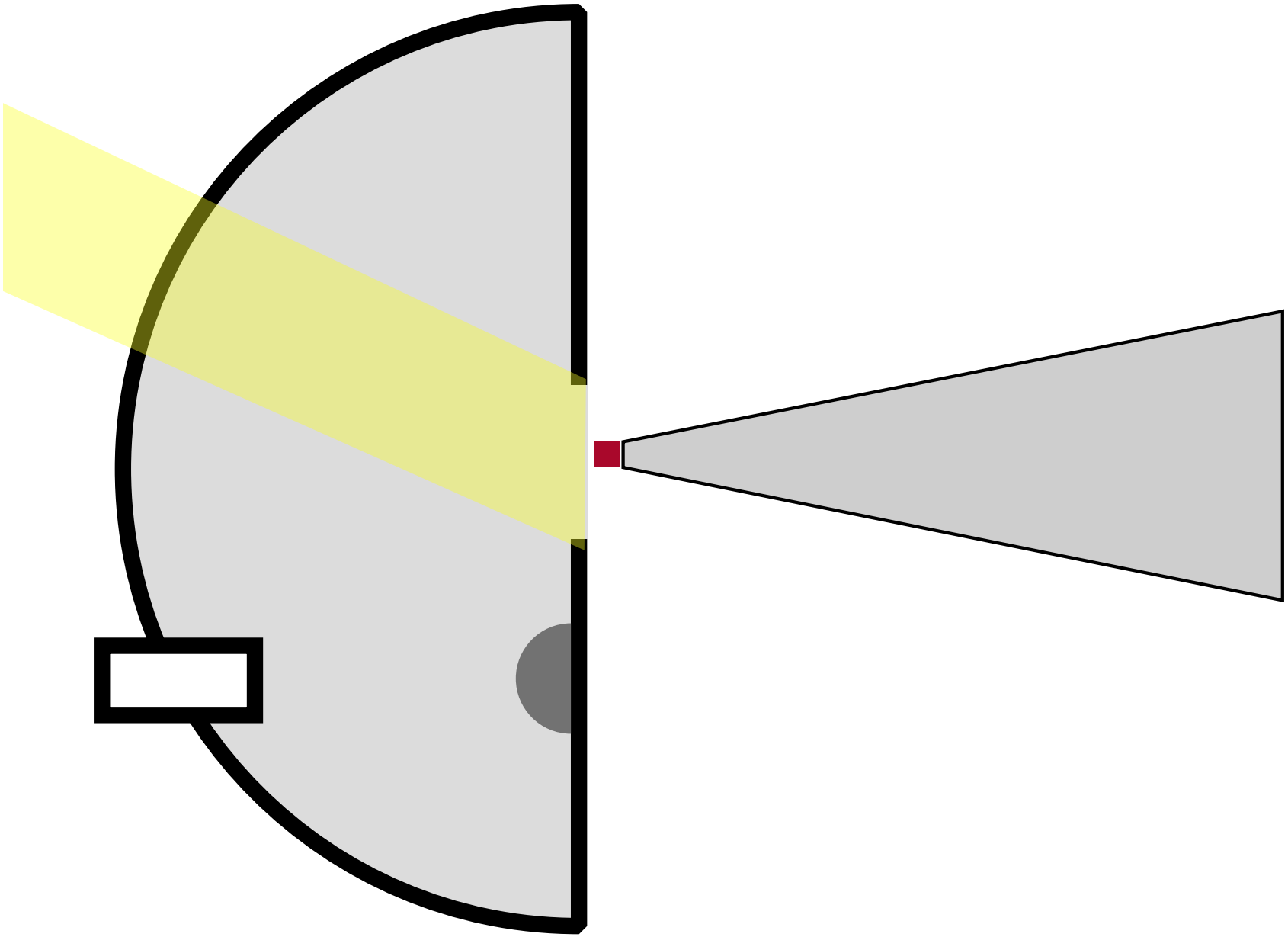
Typical Measurement



Issue : Small Samples



One Potential Solution?



Summary

- Initial Results Collected of PTFE
- Potential methods for measuring small samples being explored

Thanks for listening!