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EFFECT OF THE SIZE AND SHAPE OF THE MEASUREMENT AREA ON BRDF MEASUREMENTS ON GLOSSY SAMPLES

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Abstract

This work is about optical measurements of the BRDF on glossy surfaces, with a focus on the values in the specular area. It is composed by two studies: the first is the measurement of the BRDF with variations of the size of the measurement area and the second is the measurement of the BRDF with modifications of the shape of the measurement area. Both studies, size and shape, have been done for three levels of gloss and using our goniospectrophotometer ConDOR for data acquisition. Results in the first study show that the specular peak does not change when the size of the illuminated area varies, whatever the gloss of the sample is. Results in the second study show that the specular peak does not change when the shape of the illumination area varies, except for high gloss samples.



Experiments



Size study

- Angular configuration : 30° (Specular direction)
 Angular resolution : 0.7°
- Size illuminated area: 10 mm, 8 mm, 6 mm, 4 mm

ConDOR

Conoscopic **D**evice for **O**ptical **R**eflectometry





Shape study

- Angular configuration : 30° (Specular direction)
 Angular resolution : 0.14°
- Size illuminated area: 10 mm
- Shape illuminated area: Disc, Ring, Cross

Results



Conclusion

Acknowledgement



For the variation of the size, the specular peak does not change when the size of the illumination area varies from 10 mm to 4 mm, whatever the gloss of the sample is. This conclusion might not be valid for smaller beams and higher angular resolution. Further investigations are carried on at this moment in our lab to reach submillimeter illumination sizes and to observe the behavior of the BRDF.

For the variation of the shape, the specular peak does not change when the shape of the illumination area varies, except for high gloss samples. No clear explanation could be formulated at the moment to explain this behavior.





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