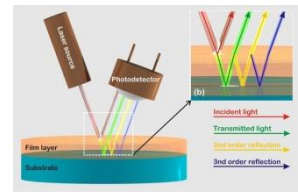


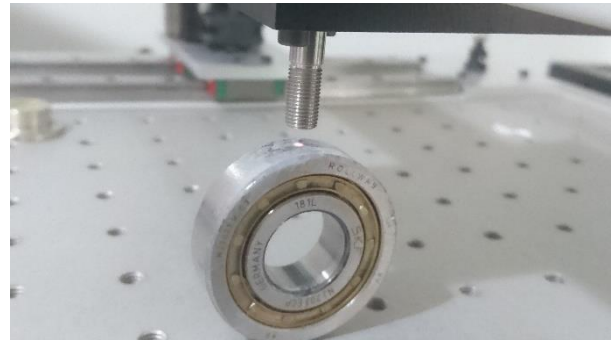
ThetaMetrisis APPLICATION NOTE #019

Thickness measurements of grease on bearings



Goal: The measurement of the thickness of grease layers sprayed on commercial bearings.

Means & Methods: The sample under investigation was a commercial bearing (SKF Rollway) on which a commercially available grease was sprayed. The grease was the presto Chain Spray¹ and it was sprayed by hand with pronounced thickness variations. The tool used for the characterization of the grease was a standard FR-Basic VIS/NIR equipped with a halogen light source and a 3648pixel miniaturized spectrometer operating in the 370nm-1020nm spectral range. The measurement set-up is shown in the image at the right where the measurement point is clearly indicated by the incident light from the reflection probe with 200um core diameter.



Results: Measurements were performed on both the flat surface and on the circular surface of the bearing with the same set-up with equal success. The fitting was applied in the 700-800nm spectral range. The results (fitting of the specular reflectance spectra) and the calculated grease thicknesses are illustrated in the images below. The thickness measured was in the 10-25µm range.

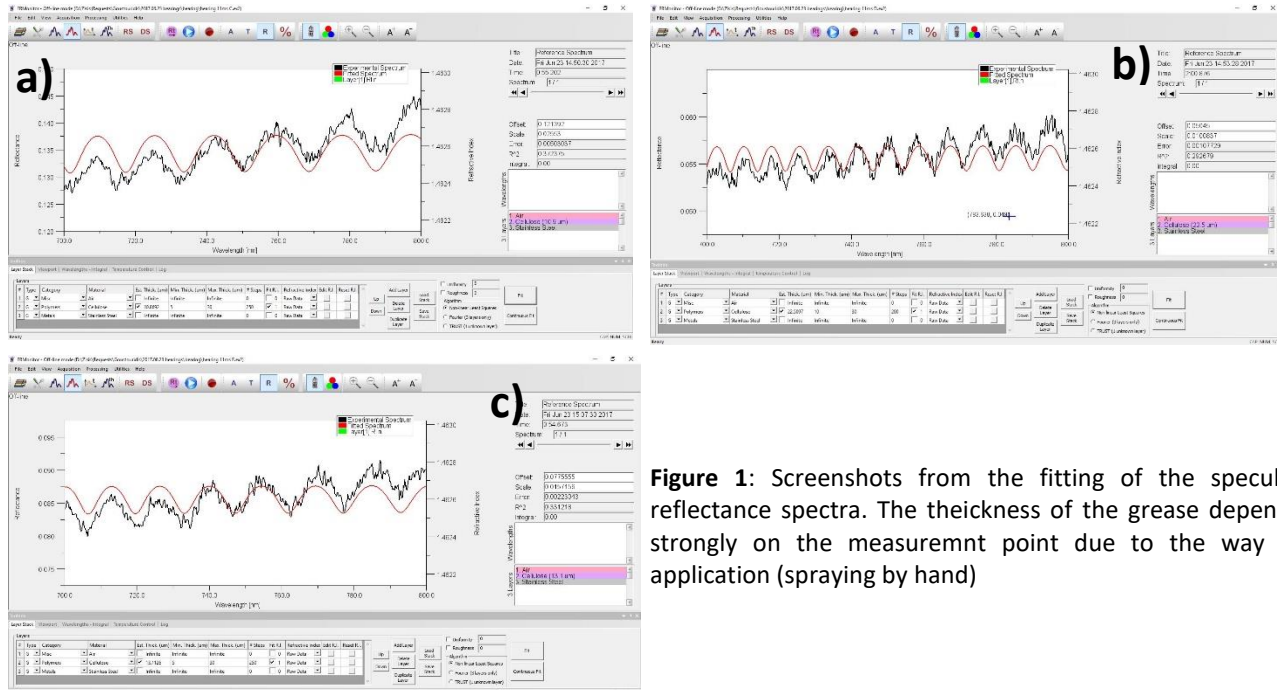


Figure 1: Screenshots from the fitting of the specular reflectance spectra. The thickness of the grease depends strongly on the measurement point due to the way of application (spraying by hand)

Conclusions: The thickness of grease, sprayed by hand, on bearing was successfully measured by FR-Basic VIS/NIR. Any FR-tool operating in VIS/NIR spectral range (e.g. FR-pOrtable) can be also used for the same application with the potential for in-line use (processing lines).

¹ <http://www.motidupli.com/en/products/presto/technical-sprays/special/ipg-1131/tm-1131.html>