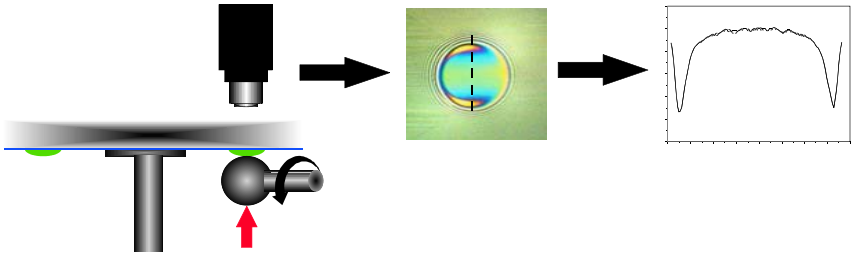
Applying Spacer Layer Imaging Method (SLIM) to Map EHD Contacts

Development of Work recently carried out with the Tribology Group at Imperial College

SLIM - the Spacer Layer Imaging Method - is a natural development of the EHL Thin Film Measurement System. Instead of using a spectrometer to determine the wavelength of the light returned from the image of the EHL contact, SLIM uses a high resolution, high fidelity CCD colour camera to grab an image of the contact. The SLIM software uses a previously determined colourspace calibration to match the colours in the image to oil film thicknesses. The system can thus produce a film thickness map of the whole EHL contact in a few seconds. This makes it a unique tool for examining conditions such as parched or starved lubrication, grease lubrication, rough surface EHL and additive boundary film formation.

Publication: **The Development of SLIM for Mapping Elastohydrodynamic Contacts** Tribology Transactions, 39, 1996.

Three Stages of SLIM Analysis



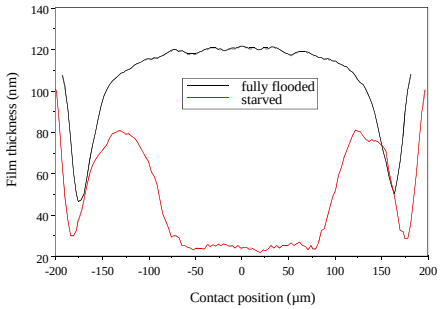
STAGE 1
Produce high resolution image using SLIM.

STAGE 2
Acquire high resolution digital image of contact.

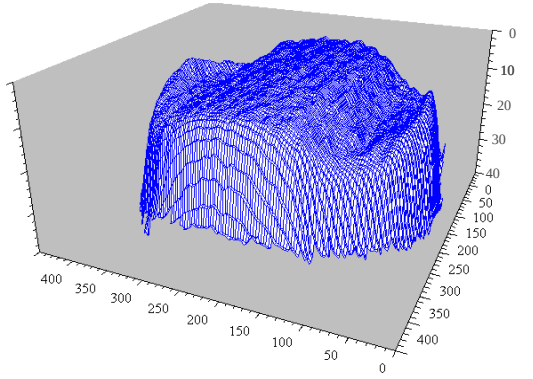
STAGE 3
Use colour information to determine film thickness within contact.

Application of SLIM to produce 2D profile through centre of contact under different lubrication conditions.

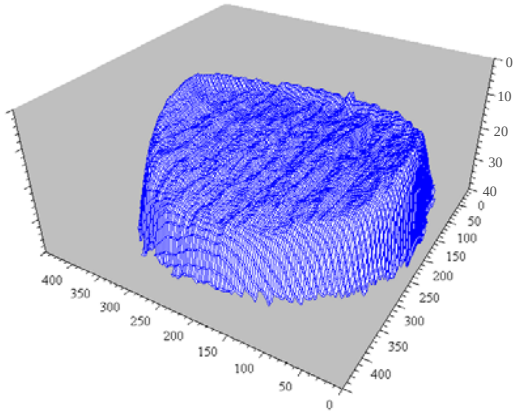
Base oil, 0.1 m/s



3D film thickness map within contact during parched fluid film lubrication.



3D film thickness map within contact during fully flooded lubrication.



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