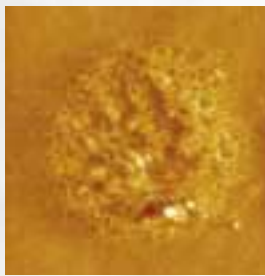


Service with solutions

If you work on the development of new products, you know how many analyses have to be performed before the product can be brought to market. The surface of the finished material does not only have an influence on its appearance, it also decisively determines its chemical and physical characteristics, and whether it is up to the expected loading for the application.

Fries Research and Technology possesses unique and extensive knowledge in the field of understanding material surfaces. We invite you to use our contract measurement service, consult with our specialists and gain from their expertise and experience. Not only do we determine topography, roughness, hardness and chemical composition using the most efficient, state-of-the-art measuring methods, but also more importantly, provide you with concrete solutions for your materials and applications. This is a service of invaluable use, not only for new developments but for process optimization and damage analysis as well.

The scanning probe methods (SPM) are one of our main fields, with a major focus on scanning force microscopy (AFM). These methods allow the determination of topography, roughness, magnetic and mechanical properties with a very high lateral resolution of a few nm.

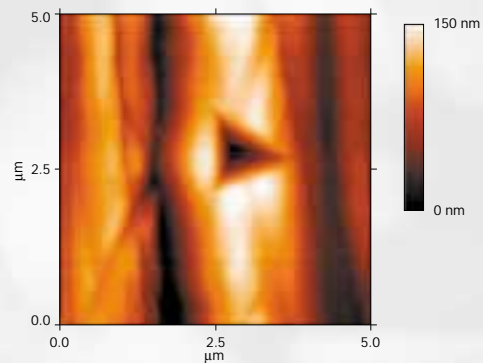


Galvanic coating
AFM image of a corrosion attacked galvanic coating, image size 15 x 15 μm^2

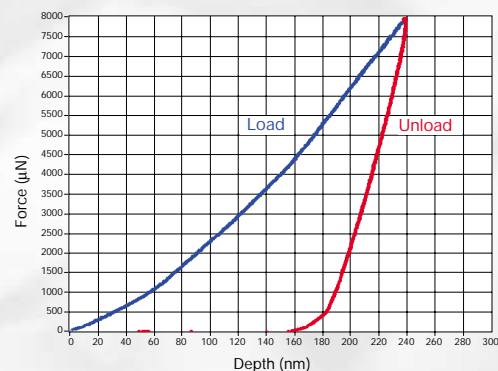
Surface analysis with concept

Upon request, our "Contract Measurement" department can apply all surface-related analysis methods. A custom-designed concept, involving the process of the different measurements required, would be worked-out with you, so that the resulting conclusions have meaning upon which you can act.

The Hysitron TriboScope™ in combination with the AFM allows very precise, high local resolution and high force, nano-/micro-hardness hardness measurements.



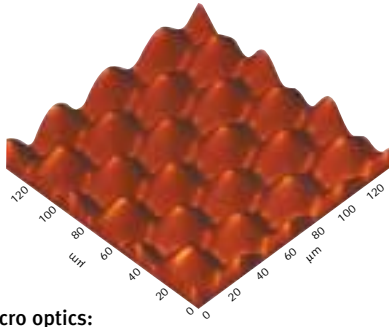
Steel sample (bolt):
Nano-/micro-hardness test
on tool steel
above: indentation in steel bolt
below: force-depth-curve



Measurement

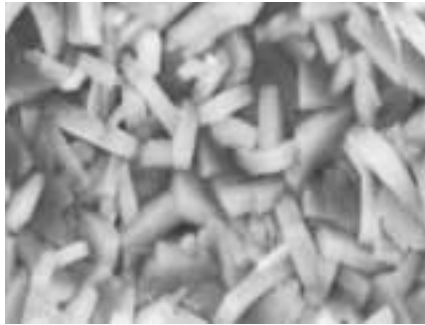
Services

Complementing the above mentioned methods, the FRT MicroProf® and the FRT MicroGlider® are used for the measurement of larger sample areas.



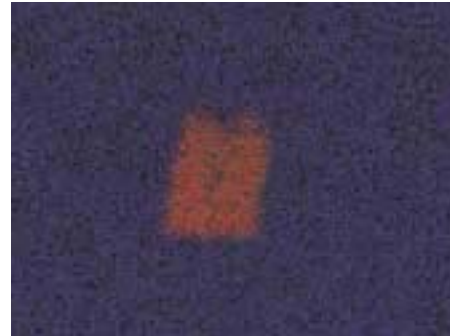
Micro optics:
MicroProf® topography measurement

In many cases, in addition to topography, the surface composition is of particular interest. REM/EDX allows the local and point determination of element composition of almost any sample.



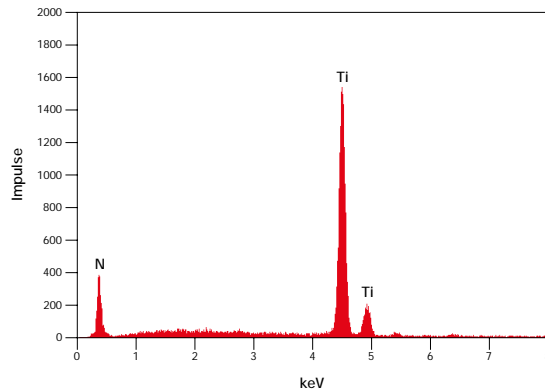
Phosphate layer:
REM image of a manufactured phosphate layer

These methods used in combination with chemical surface analyses (e.g. GDOS, XPS, TOF-SIMS) offer all the possibilities of optimal process control, comprehensive damage analysis or R&D, particularly in the areas of corrosion prevention, thin film technology, micro system technology and advanced materials.



Ti: red Fe: blue | 6 µm

TiN in steel:
EDX element distribution of titanium nitride in steel



TiN in steel:
EDX spectrum of titanium nitride in steel



Fries Research & Technology
Roughness Contour Topography

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