

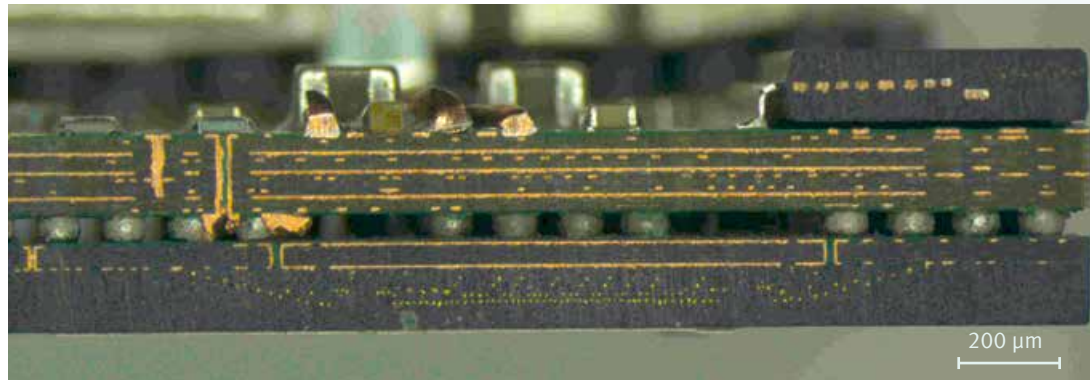
PRECISION SYSTEMS  
FOR SAMPLE  
PREPARATION



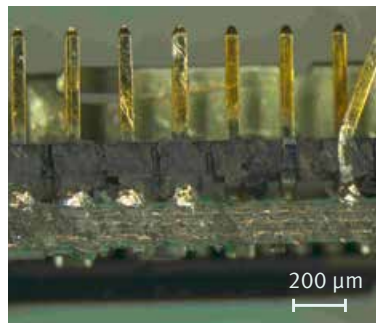
# EXAKT CUTTING & GRINDING SYSTEMS

## ARE YOU TIRED OF DAMAGED SAMPLES?

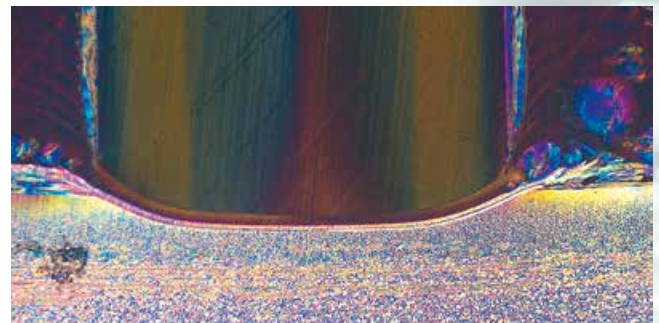
GET THE EXAKT RESULTS!



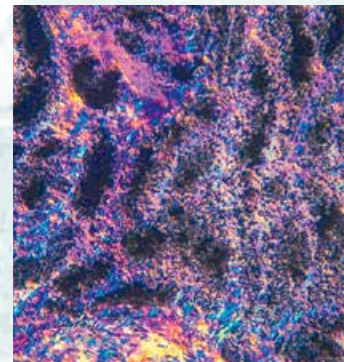
Circuit board cut with EXAKT diamond band saw



Damaged circuit board after crosscut  
with rotary cut-off wheel



Welding seam in polymer 100 µm thickness



< CFRP material:  
25 µm thickness

## THE SOLUTION FOR HIGH QUALITY SAMPLES



EXAKT 300 CP diamond band saw

## PRECISE THIN SECTIONS DOWN TO THE MICRON



EXAKT 400 CS grinding system



# DIAMOND BAND SAWS

## FIRST CLASS SOLUTIONS FOR EFFICIENT SAMPLE CUTTING

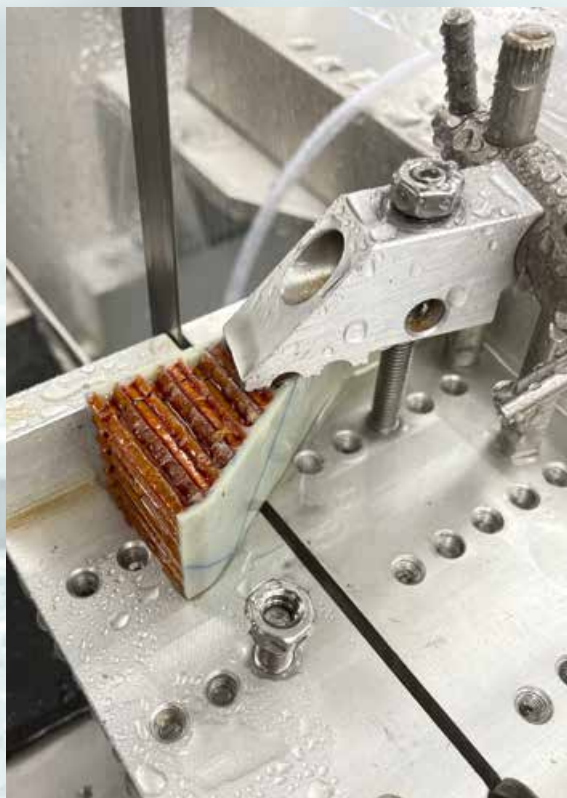
- › Maximum operator safety
- › Maximum sample utilisation with minimal kerf-loss
- › Efficient process creates perfect cutting surfaces & excellent roughness values
- › Flexible sample mounting solutions for efficient work processes
- › Variety of diamond and boron nitride cutting bands for different fineness



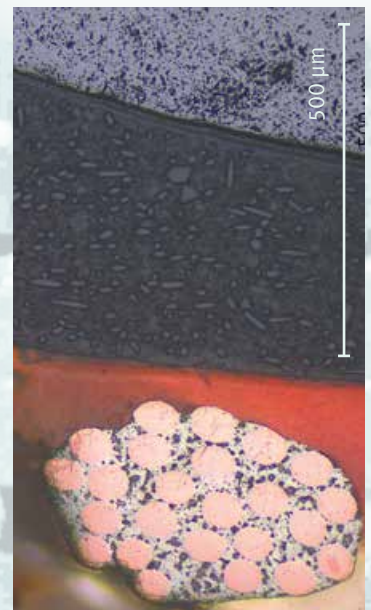
Precise cut through a circuit board



Cutting process – syringe



Cutting of complex components



Circuit board: metal – ceramics – polymer



Cut through a smartphone

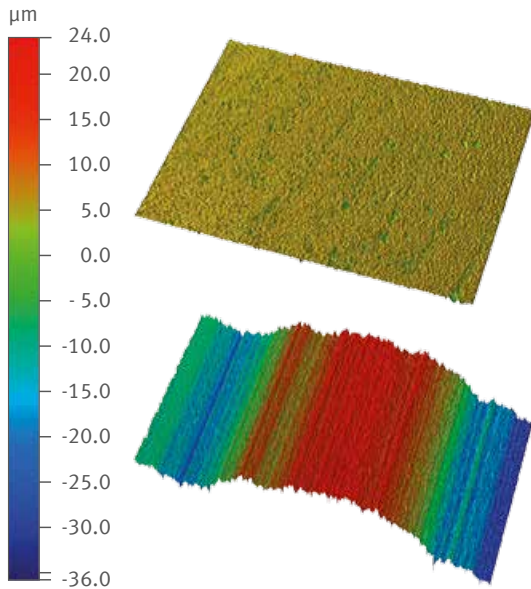


Glass-fibre reinforced polymer



# DIAMOND BAND SAWS

## THE QUICKEST WAY TO PRODUCE PERFECT CUTS – EVERY TIME



- › Oscillating sample movement in CP mode reduces deformations
- › Maintains perfect surface quality while reducing cutting time
- › Reduces burrs, fraying and tears of the cutting surface
- › No grinding of separation deformations necessary

Precision parallel guide

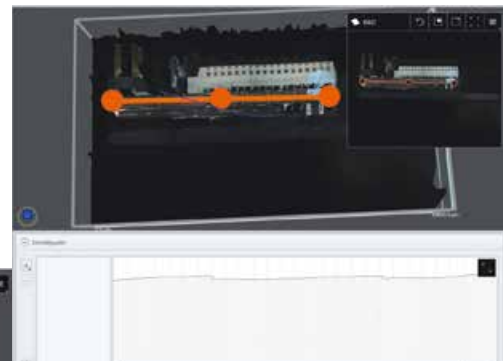
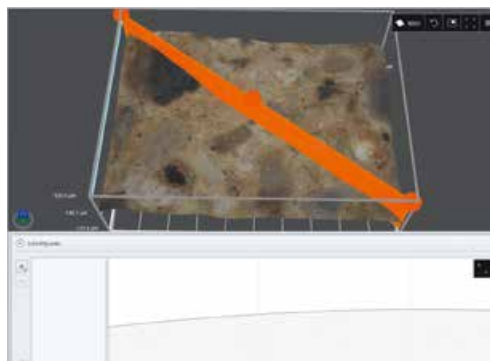


Variable sample fixation

## EXAKT CONTACT POINT PROCESS

- › The EXAKT CP cutting process uses targeted energy input for precise and gentle cuts
- › Precisely guided cuts even for complex material samples
- › Ideal for cutting material compounds with different degrees of hardness
- › Very few topographic fluctuations

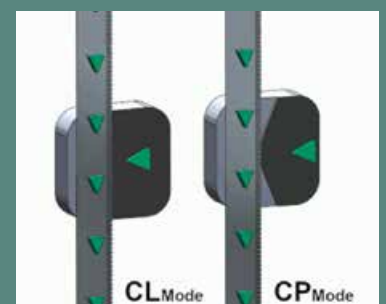
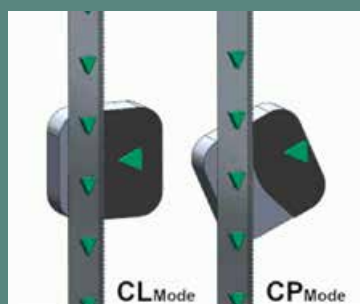
- › Surface measurement of circuit board: homogeneous cut of varied materials with no burrs or breaks on cavities



- › Surface measurement of high-temperature ceramics: consistent and fast sample cut using Contact Point process. The surface quality is maintained.

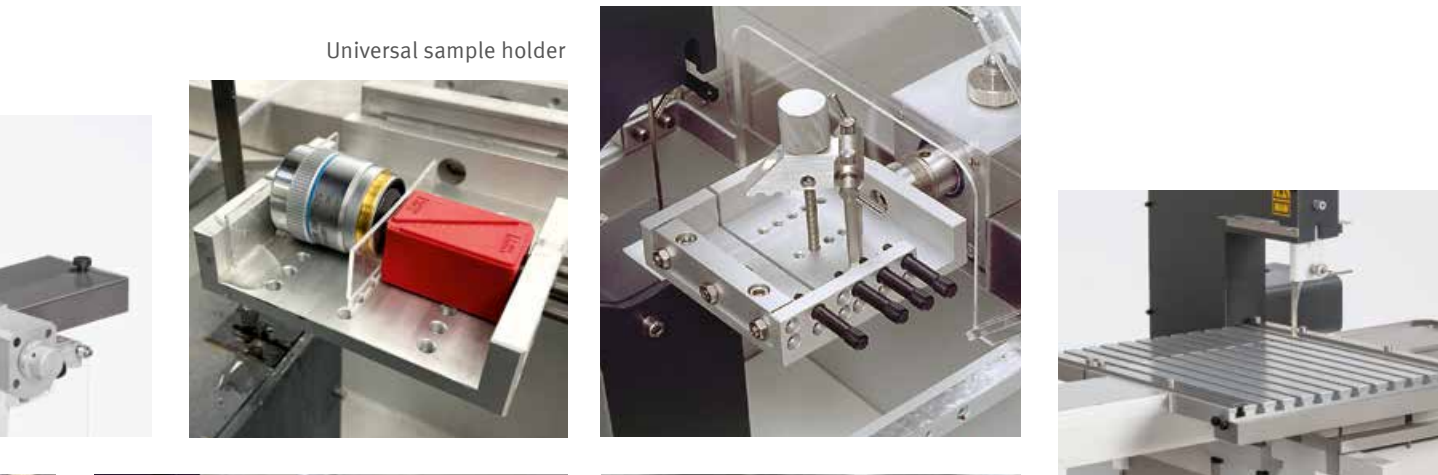
## CONTACT POINT PROCESS (CP-MODE)

In CP-mode the sample rotates in an oscillating motion. The sample is cut gently at a specific point and not across the entire cut surface, as is the case in CL-Mode.





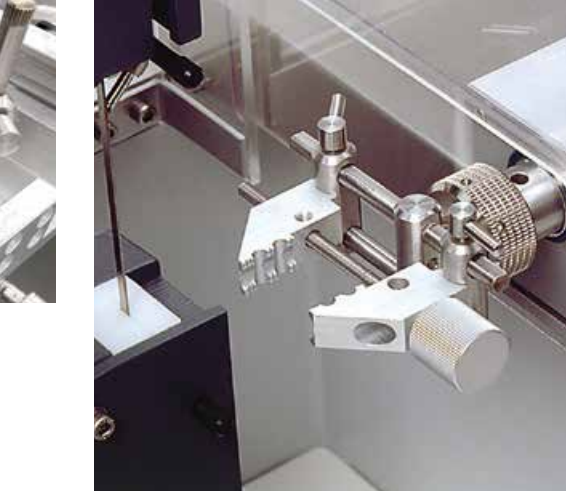
SAMPLE HOLDERS – WE OFFER THE SOLUTION TO YOUR PROBLEM



Universal sample holder



Working table



Clamp sample holder



Vacuum plate



Universal clamping device

EXAKT sample holders  
easily accommodate  
our clients' needs – contact  
us for the perfect solution.



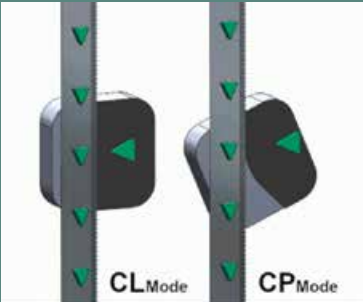
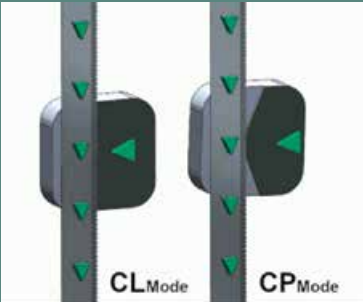
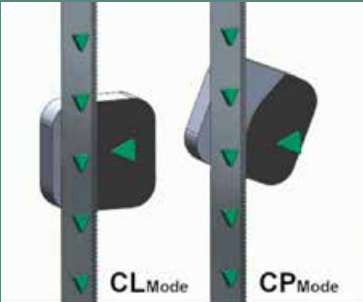
Clamp for round objects



Tailstock



Customised  
solutions





# DIAMOND BAND SAWS

## EXPERIENCE THE EXAKT

universal

Sapphire Wafer:  
separating the second  
hardest mineral  
after the diamond –  
not a problem for EXAKT



Precisely separate  
a wide variety  
of metals & metal  
composites –  
here: hardened  
steel with boron  
nitride cutting  
band



gentle

Glass, metal, ceramics:  
separate composites without  
embedding – surprisingly easy



Glass bodies: flat parallel cutting panes of  
hard and brittle materials – no breakage

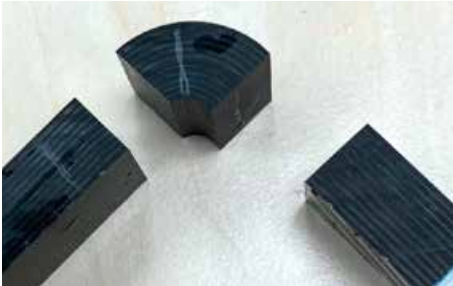
## CUTTING PROCESS: HIGH-PERFORMANCE CERAMICS





# WOW! FACTOR

Metal-Carbon composite



Cross-section of lens

time saving

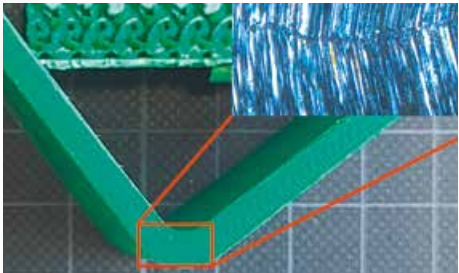
reliable



Ceramics cube



Separation of biological materials  
Here: cut through wood



Additive component: targeted preparation  
successfully processed

practical

Rubber gasket with metal components:  
no smearing





# THIN SECTION SYSTEM

## EXPERIENCE

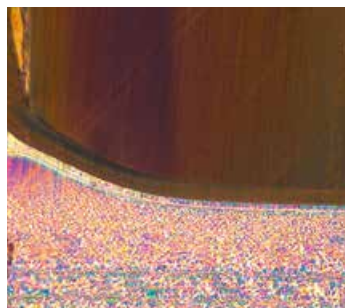
variable

precise

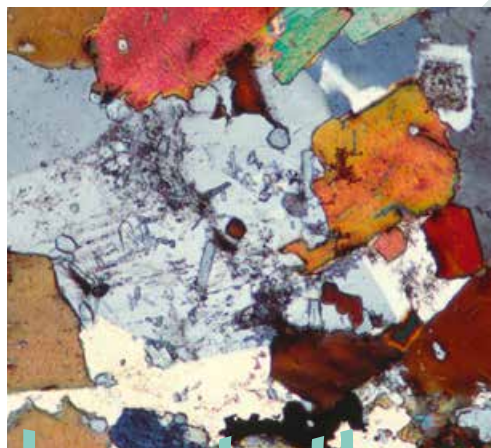


High-temperature ceramics

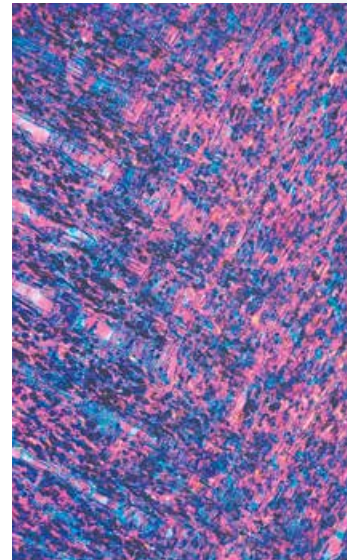
Polymer weld seam:  
weld transition  
zones made visible  
by precisely setting  
target thickness



Natural stone granite: defined  
ground thickness (27 µm)  
for mineral analysis is possible  
without much effort

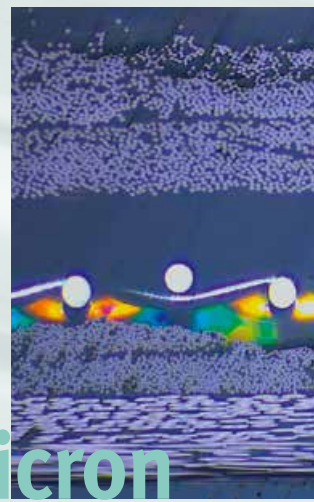


Rock salt with fluid inclusions:  
micron accurate cuts made possible  
with an anhydrous preparation



Plastic 3D  
printing:  
samples with  
the same  
grinding  
thickness  
are required  
in product  
development

down to the micron



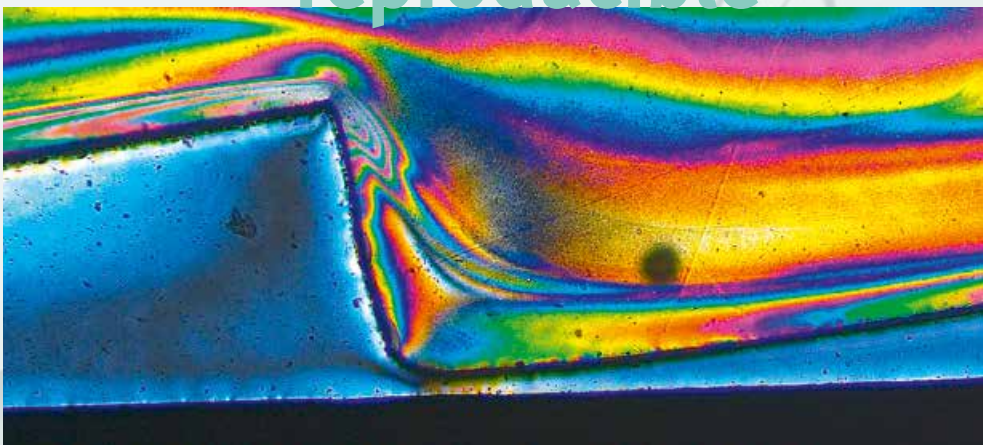
## GRINDING PROCESS: POLYMER COMPOUND





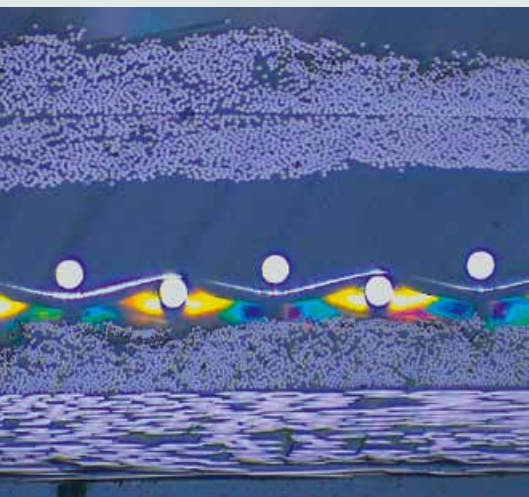
# THE EXAKT WOW! FACTOR

reproducible

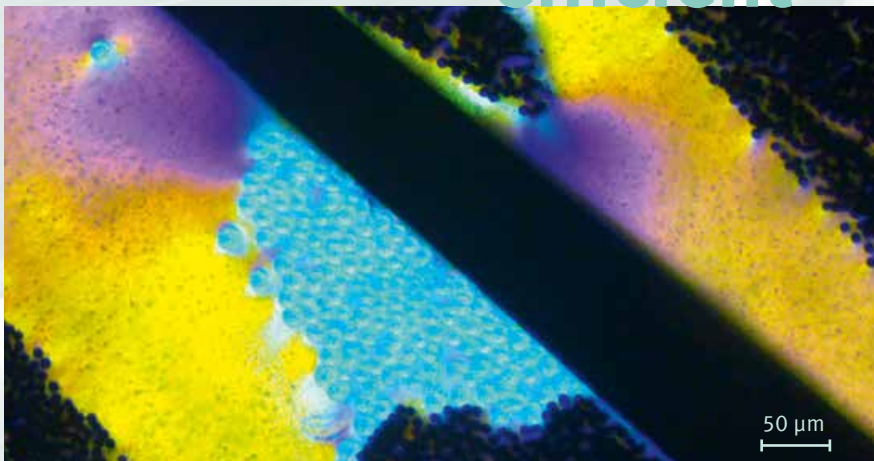


Thermoset: Anisotropies

efficient



Grinding CFRP: polished, with metal components



GRP-CFRP material: preparation of composites with hard and soft components without artifacts



Thin section K320-105µm-02DL

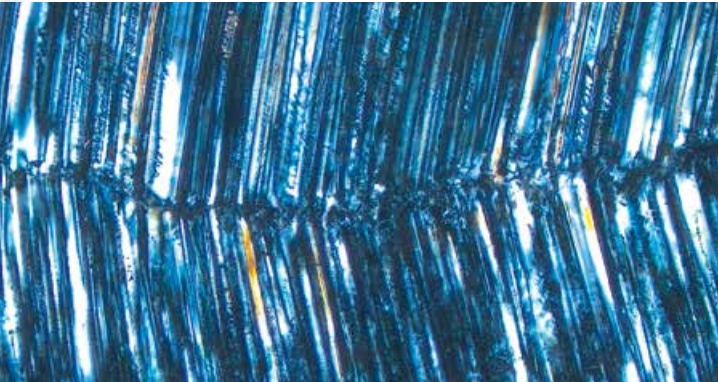


Thin section K4000-24µm-01DLP



# THIN SECTION SYSTEM

## RELIABLE SAMPLE GRINDING PROCESSES

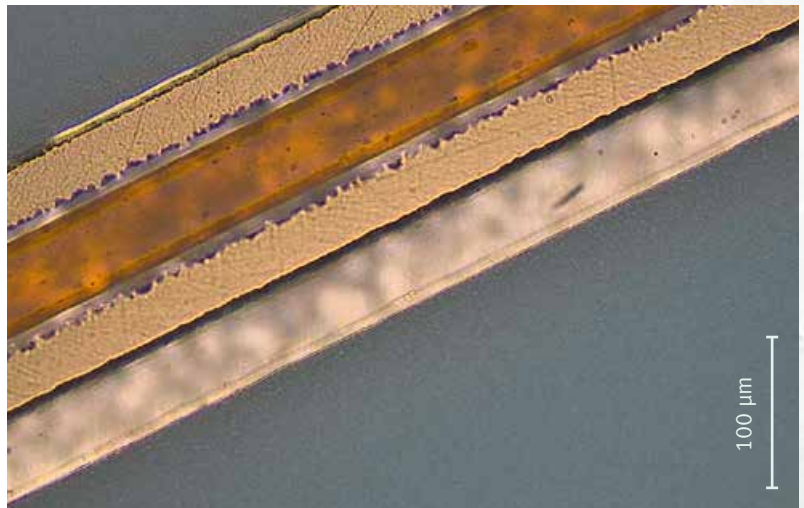


Glass fibre reinforced polymer, additively manufactured:  
contact zone between layers in thin section (25 µm thickness)



Ceramics, filter system: thin section of hard  
and brittle materials

- › Continuous real-time control  
of grinding removal in micron steps
- › Gentle and controlled removal due to  
gravimetric adjustment of the grinding force
- › Homogeneous & reproducible grinding pattern



Copper-plastic foil: polished thin section for inspection in reflected  
and transmitted light (simultaneously)



EXAKT 400 CS grinding system

*"However, this sophisticated technology continues to surprise. Despite being a single-cut process, the reproducibility, which is extremely important for serial preparation, needs mentioning in addition to the outstanding quality of the cut samples. This technique is ideal for the described examinations. It is particularly suited for components and materials that have been additively manufactured and show significant differences, e.g. in hardness or other special qualities."*

Translated quote from book "Präparation und Mikroskopie für nichtmetallische Werkstoffe und Verbund"; author: Martin Kern.



## PRECISE ANALYSIS THROUGH MAXIMUM CONSISTENCY



Oscillation plate

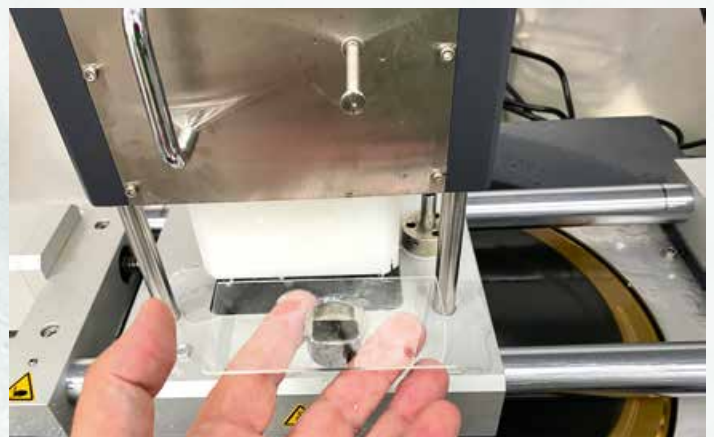
- › Easily adaptable due to vacuum plate fixation for a variety of slide sizes
- › User-friendly operation
- › Minimises grinding paper wear



Vacuum head with slide



Setting and measurement of grinding removal down to the micron



User-friendly mounting of the slide with sample



Specifically developed microscope slides

WE ARE CONVINCED:  
WE CAN CREATE THE  
THINNEST SAMPLES  
POSSIBLE BY HAND!



# EXAKT TECHNICAL CENTRE

## CUSTOMISED PROCESSES FOR CUTTING AND GRINDING YOUR SAMPLES



The EXAKT team supports you in the development of tailor-made solutions for your application. We are happy to share our in-depth expertise and experience in our in-house laboratory.



First class equipment



Collaborative  
approach



Precision is our passion



## ENSURE QUALITY AND PRODUCTIVITY IN THE LONG-TERM

- › Education and training – get best results quickly
- › Skilled and on site – benefit from our qualified service
- › Reliable and precise – limit machine downtime through regular maintenance
- › Original EXAKT spare parts and consumables – quality and reliability guaranteed



Professional support



The application examples were processed and documented by the company MicroKern, Berlin. We recommend Micro Kern regarding thin section production and microscopy.

Our partner is happy to advise you on your applications and problems.



# EXAKT CUTTING & GRINDING SYSTEMS



EXAKT 300 CL/CP

## EXAKT 300 CL/CP

Max. cutting height	100 mm
Max. cutting width	70 mm
Cutting band speed	10–560 m/min
Footprint (W x D x H)	1000 x 800 x 850 mm
Weight base unit	approx. 50 kg
Electrical connection	Option 1: 1 x 220–240 (50–60 Hz) Option 2: 1 x 100–110 (50–60 Hz)



EXAKT 302

## EXAKT 302

Max. cutting height	110 mm
Max. cutting width	180 mm
Cutting band speed	1000–1200 m/min (depending on AC frequency)
Footprint (W x D)	600 x 580 mm
Height	720–740 mm
Weight	approx. 40 kg
Electrical connection	Option 1: 1 x 220–240 (50–60 Hz) Option 2: 1 x 100–110 (50–60 Hz) Option 3: 1 x 100–115 (60 Hz)



EXAKT 310 CP

## EXAKT 310 CP

Max. cutting height	205 mm
Max. cutting width	165 mm
Cutting band speed	10 m/min
Footprint (W x D x H)	1000 x 1200 x 1350 mm
Weight	approx. 160 kg
Electrical connection	Option 1: 1 x 220–240 (50–60 Hz) Option 2: 1 x 100–110 (50–60 Hz)



EXAKT 311

## EXAKT 311

Max. cutting height	160 mm
Max. cutting width	165 mm
Cutting band speed	10 m/min
Footprint (W x D x H)	1100 x 1400 x 1350 mm
Weight	approx. 180 kg
Electrical connection	Option 1: 1 x 220–240 (50–60 Hz) Option 2: 1 x 100–110 (50–60 Hz)





## EXAKT 400 CS

Max. sample size

Footprint (W x D x H)

Weight

Electrical connection

50 x 100 mm for planar objects

1000 x 800 x 700 mm

approx. 90 kg

Option 1: 1 x 220–240 (50–60 Hz)

Option 2: 1 x 100–110 (50–60 Hz)

## VARIETY OF SAMPLES

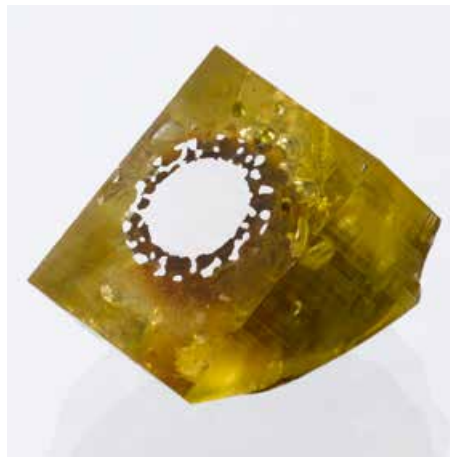


◀ Cut of a delicate shell



Rubber seal

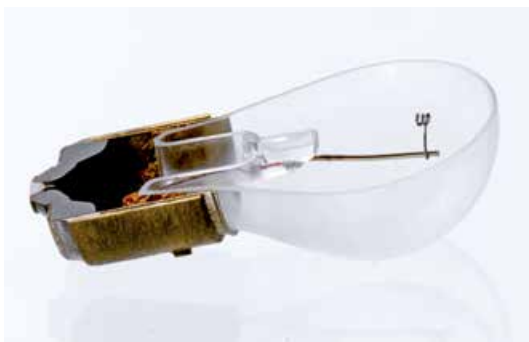
Copper cable



Cut of embedded hip implant



Anchor motor



Cut through bulb

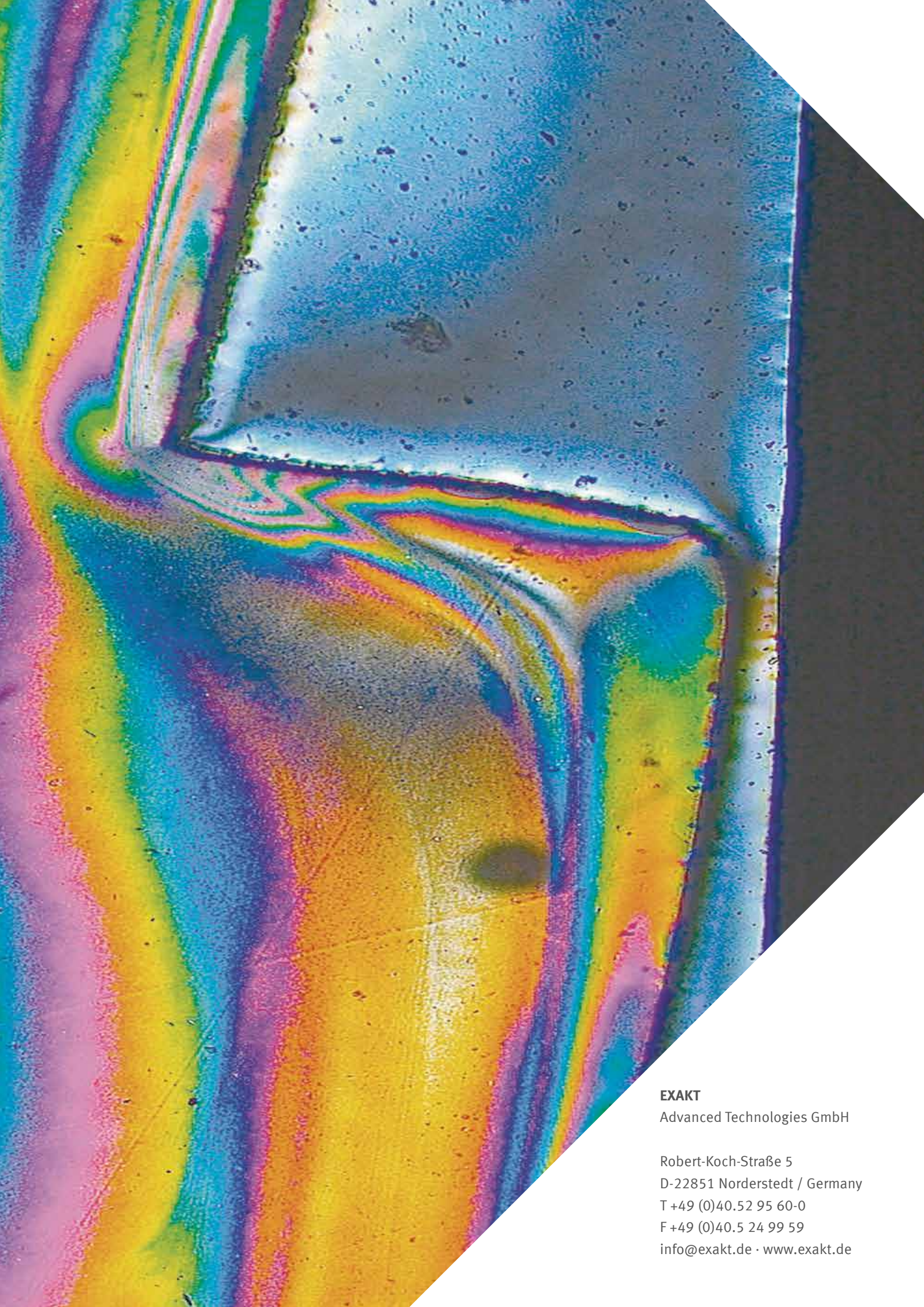


Cut of a camera lense



Valve





**EXAKT**

Advanced Technologies GmbH

Robert-Koch-Straße 5  
D-22851 Norderstedt / Germany  
T +49 (0)40.52 95 60-0  
F +49 (0)40.5 24 99 59  
info@exakt.de · www.exakt.de