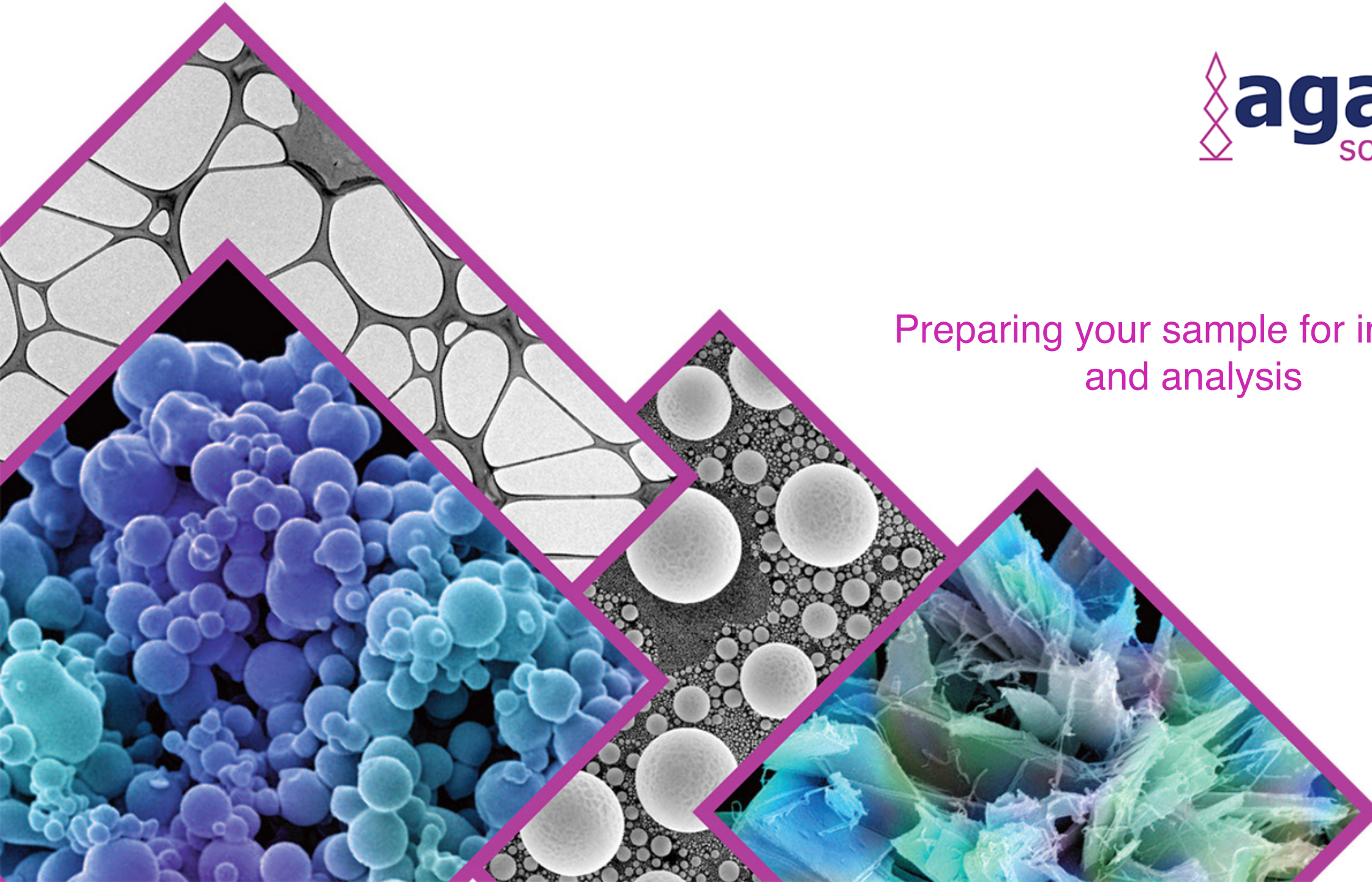
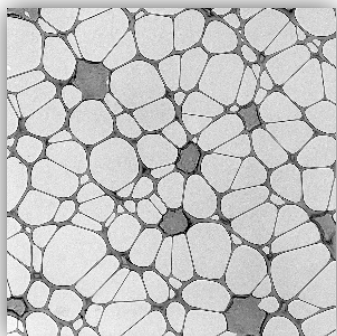


Preparing your sample for imaging  
and analysis

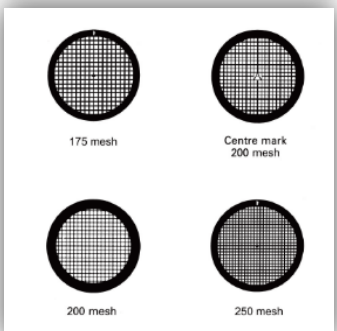


# Agar Scientific's Core Products



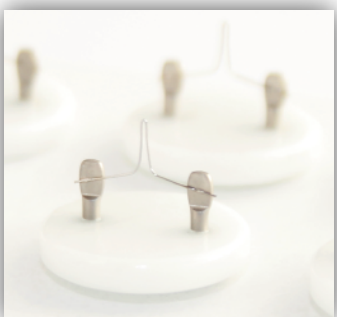
## Holey & Lacey Carbon Films

- ◆ Skilfully manufactured in our own dedicated labs
- ◆ Available on Copper, Nickel, Gold grids
- ◆ Various Mesh sizes



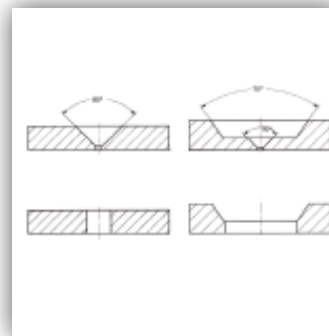
## TEM Grids

- ◆ For a variety of applications, shapes, mesh sizes and materials



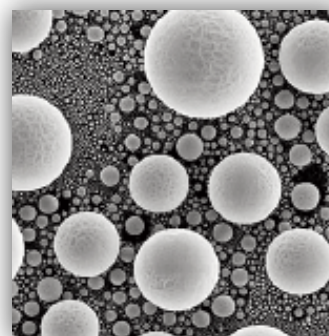
## Tungsten Filaments

- ◆ High quality replacements for Cambridge, LEO, Zeiss, AEI, FEI, JEOL, Siemens, Camscan, ISI Electron & Tescan



## Disc & Thin Foil Apertures

- ◆ Varying outer diameter for SEMs, TEMs, FIBs & Lithography systems



## Calibration Standards for TEM & SEM

- ◆ Specimens where quantification or high-resolution results are required



## SEM Specimen Stubs

- ◆ Wide variety for all microscope types
- ◆ Carbon adhesive discs, tabs, tape and conductive adhesives for specimen mounting also available



## Investment in Infrastructure

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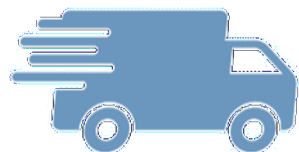
### Facility Refurbishment

- ◆ Higher yields & faster turnaround times.
- ◆ New wet chemistry lab
- ◆ Expanding TEM grid manufacturing



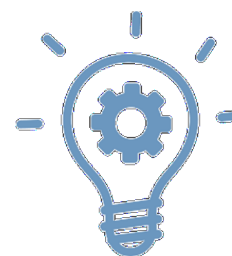
### Quality

- ◆ Full QC check maintained despite the increased throughput



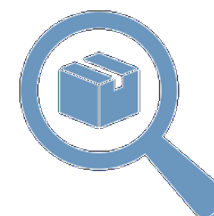
### Logistics Management

- ◆ Order before 1pm and if we have it in stock, you will receive it the next day



### R&D

- ◆ Continual introduction of new product
- ◆ Custom made grids, calibration standards & stubs



### Stock Control

- ◆ Growing stock of 2,000 key product lines



### Meeting Customer Needs

- ◆ You tell us! We have the stock, the staff and a passion to exceed expectations

## Sample sampling for material and life science

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We offer many types of equipment and consumables to suit your application.



**Cutlam Micro**



**WELL 3400**



**Microslicer DTK**



**Easiglow discharge  
cleaning system**



**Cutlam 4.0**



**WELL 4500**

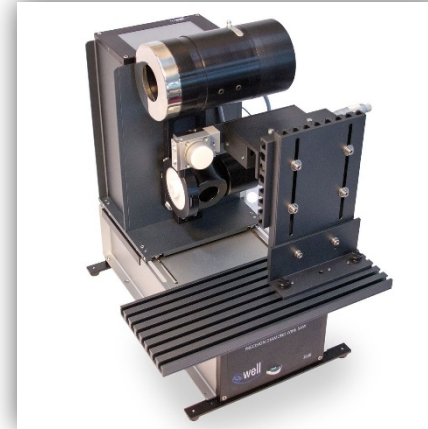


**Pelco EasiSlicer**

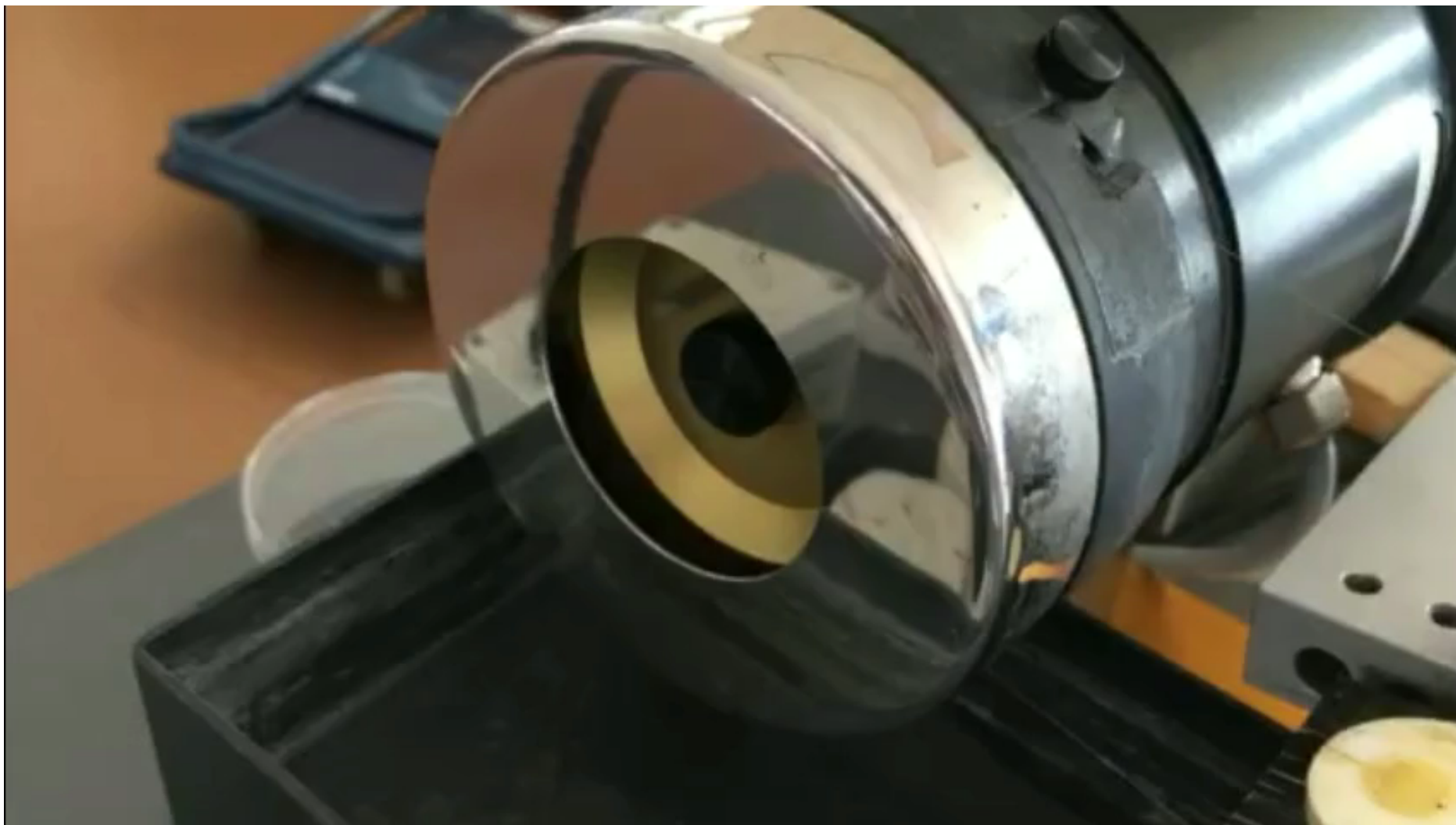


## Diamond Wire Saws – Advantages

- ◆ Minimum modification of material structure on cut surfaces
- ◆ Material temperature during the cutting is the same as the environment or lower
- ◆ Minimal to no further polishing required for the cut surface
- ◆ All materials can be cut except diamond
- ◆ Suitable for various shapes of samples
- ◆ Precise slicing
- ◆ Automatic shutdown of the saw when cutting is finished or if the wire breaks



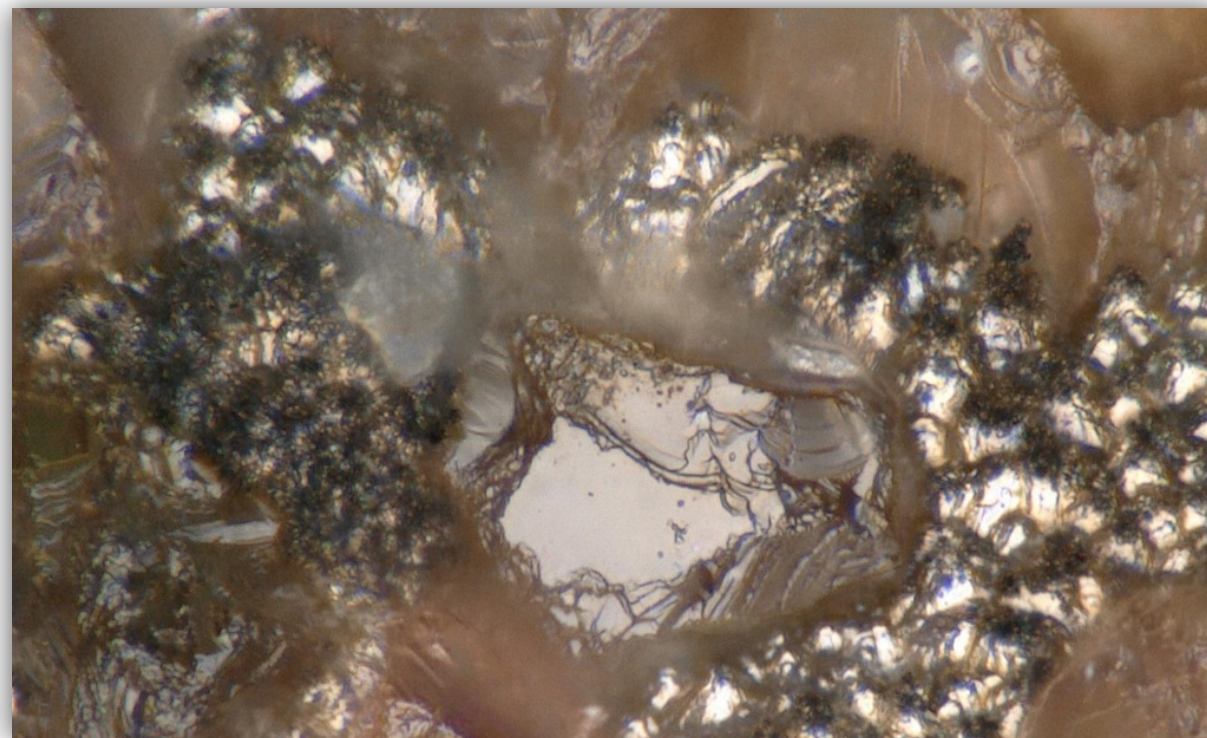
## Diamond Wire Saws – Working Principle



## Well Diamond Wire Saws – Superior Quality



Well diamond wire: diamond grains embedded in the stainless steel wire support



Other diamond wire: grains bonded on the stainless steel wire support



## Well Diamond Wire Saw Models



**AGB8532A-KIT**  
**WELL Precision Horizontal**  
**Diamond Wire Saw**

Max sample dimension:  
50 x 50 x 50 mm – Ø 50 mm



**AGB8500(B)-KIT**  
**WELL Precision Vertical**  
**Diamond Wire Saw**

Max sample dimension:  
50 x 50 x 50 mm – Ø 50 mm



**AGB8580**  
**WELL Precision Vertical**  
**Diamond Wire Saw**

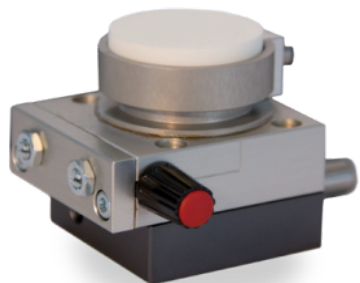
Max sample dimension:  
150 x 150 x 150 mm – Ø 150 mm



**AGB8570**  
**WELL Precision Vertical**  
**Diamond Wire Saw**

Max sample dimension:  
300 x 300 x 300 mm – Ø 300 mm

## Well Diamond Wire Saw Accessories



**Turntable**



**Micrometric holder**



**USB & WiFi microscope for  
precise sample positioning**



**Goniometer holder  
triple axes**

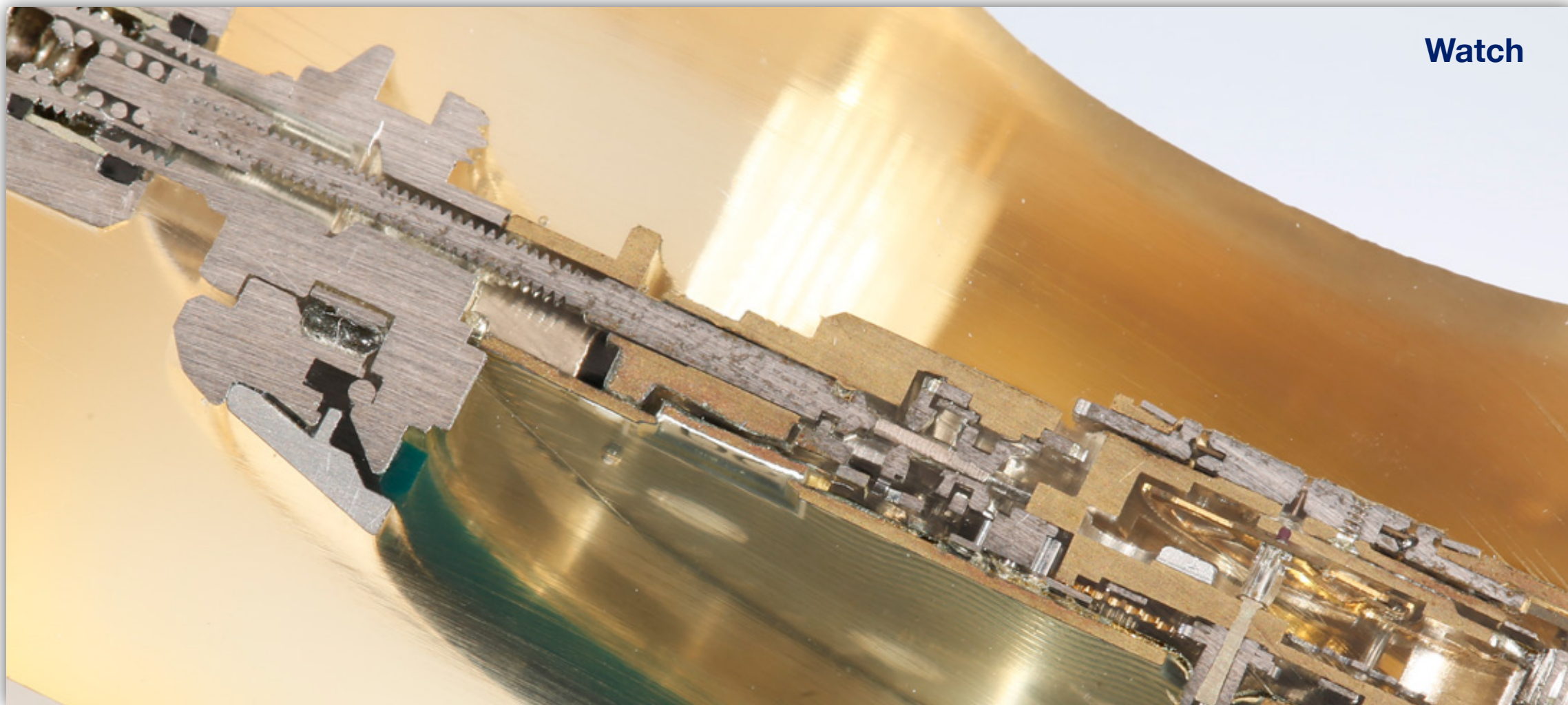


**Re-winding device**



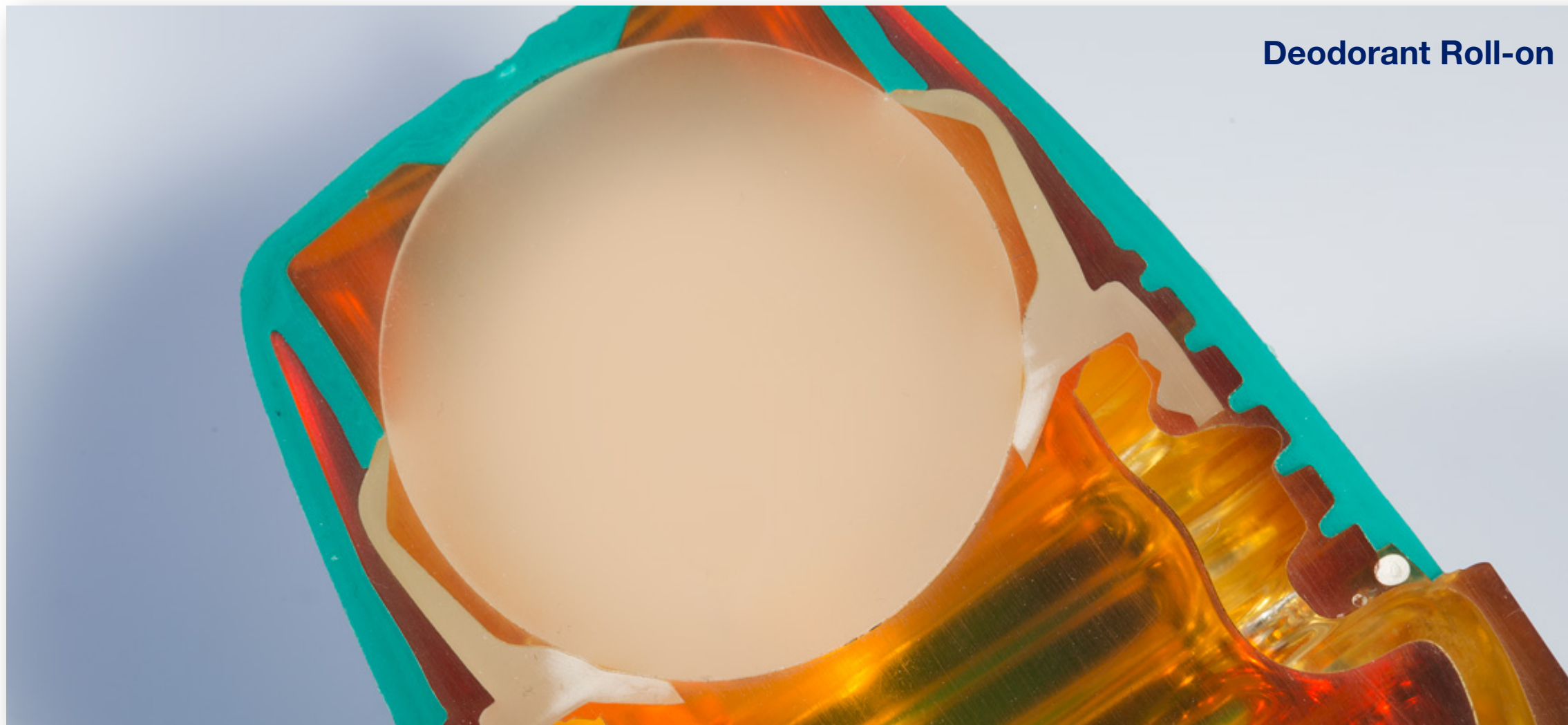
**Vertical vice and vice  
for round samples**

## Well Diamond Wire Saw Cutting Examples

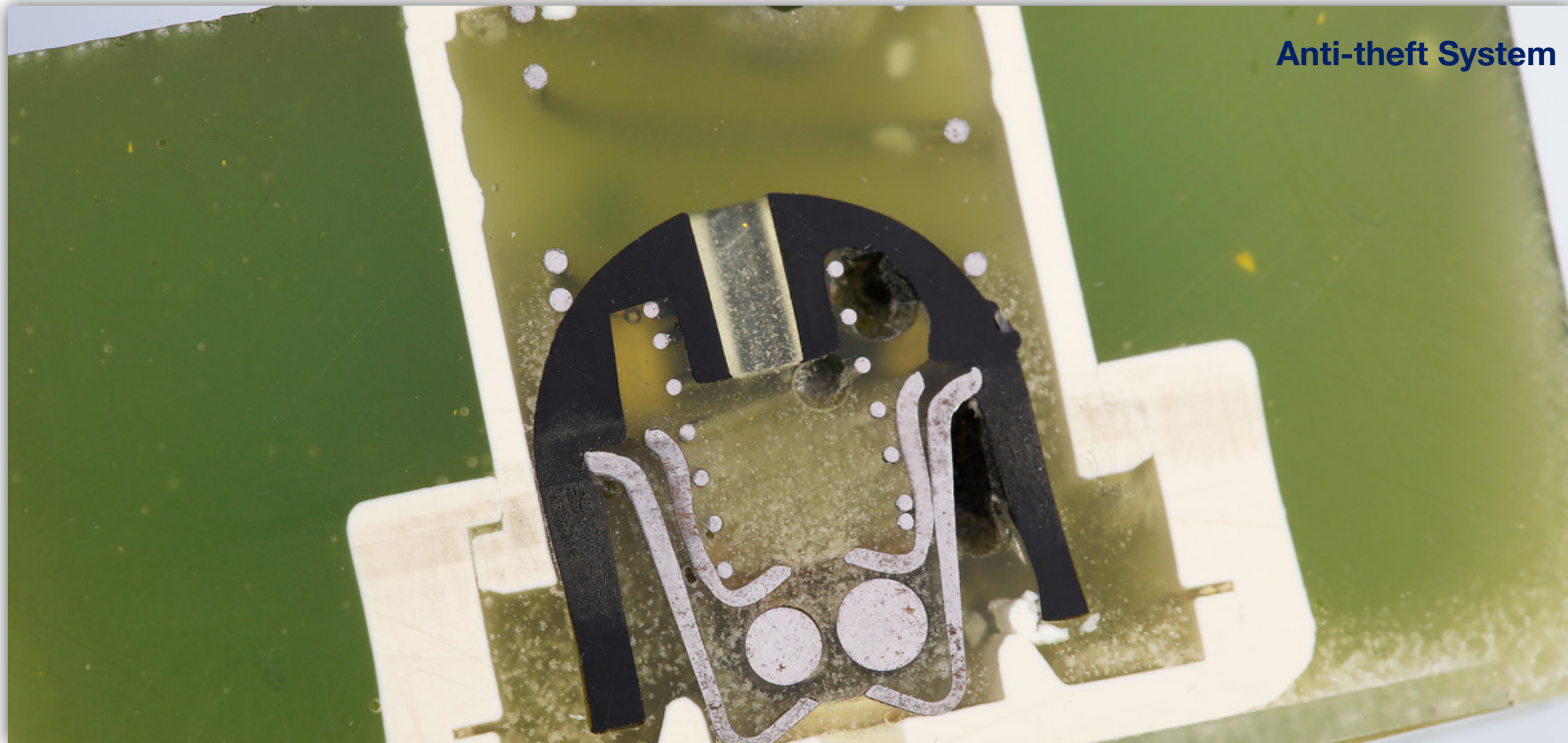




## Well Diamond Wire Saw Cutting Examples



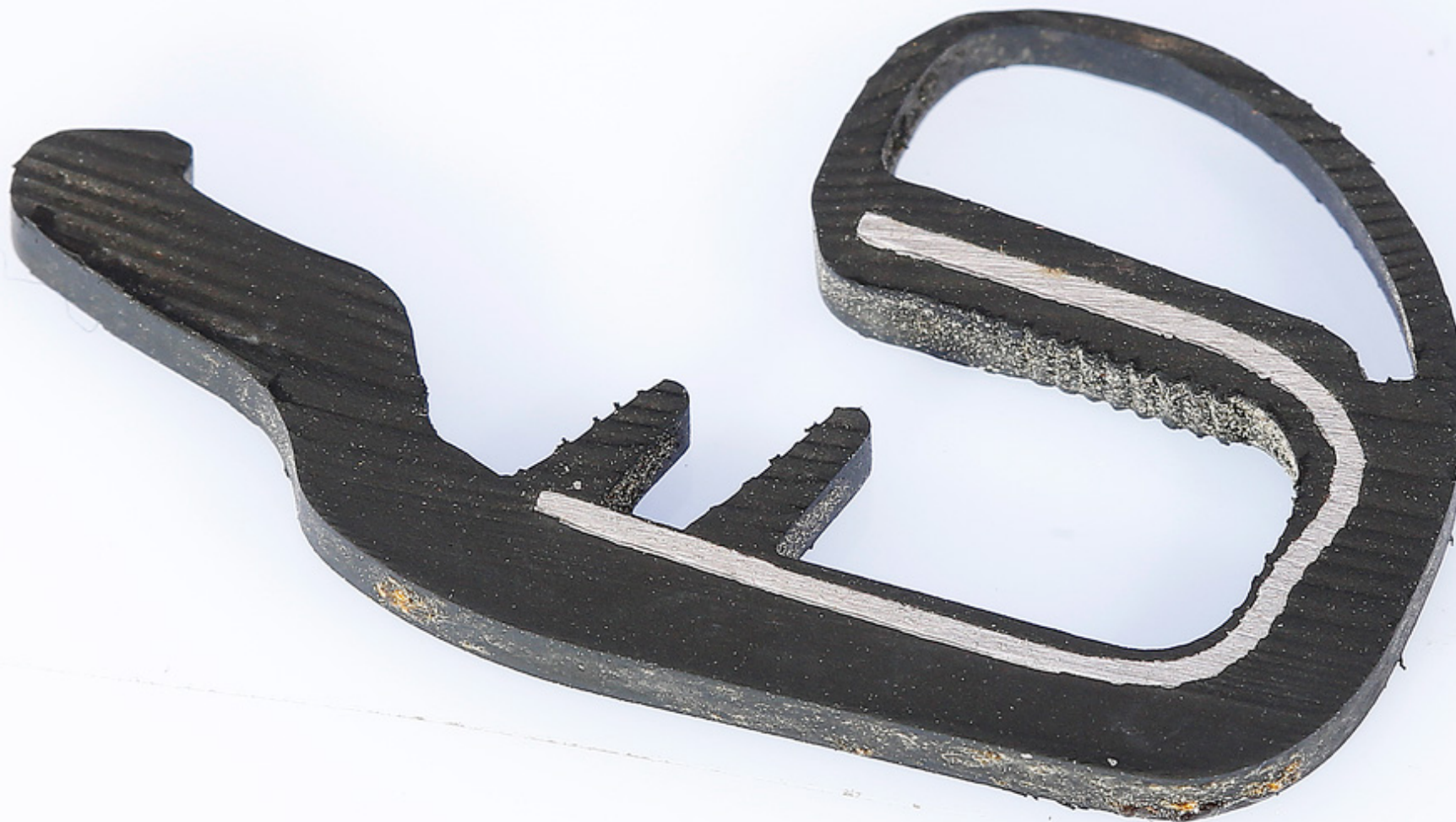
## Well Diamond Wire Saw Cutting Examples





## Well Diamond Wire Saw Cutting Examples

Car Seal



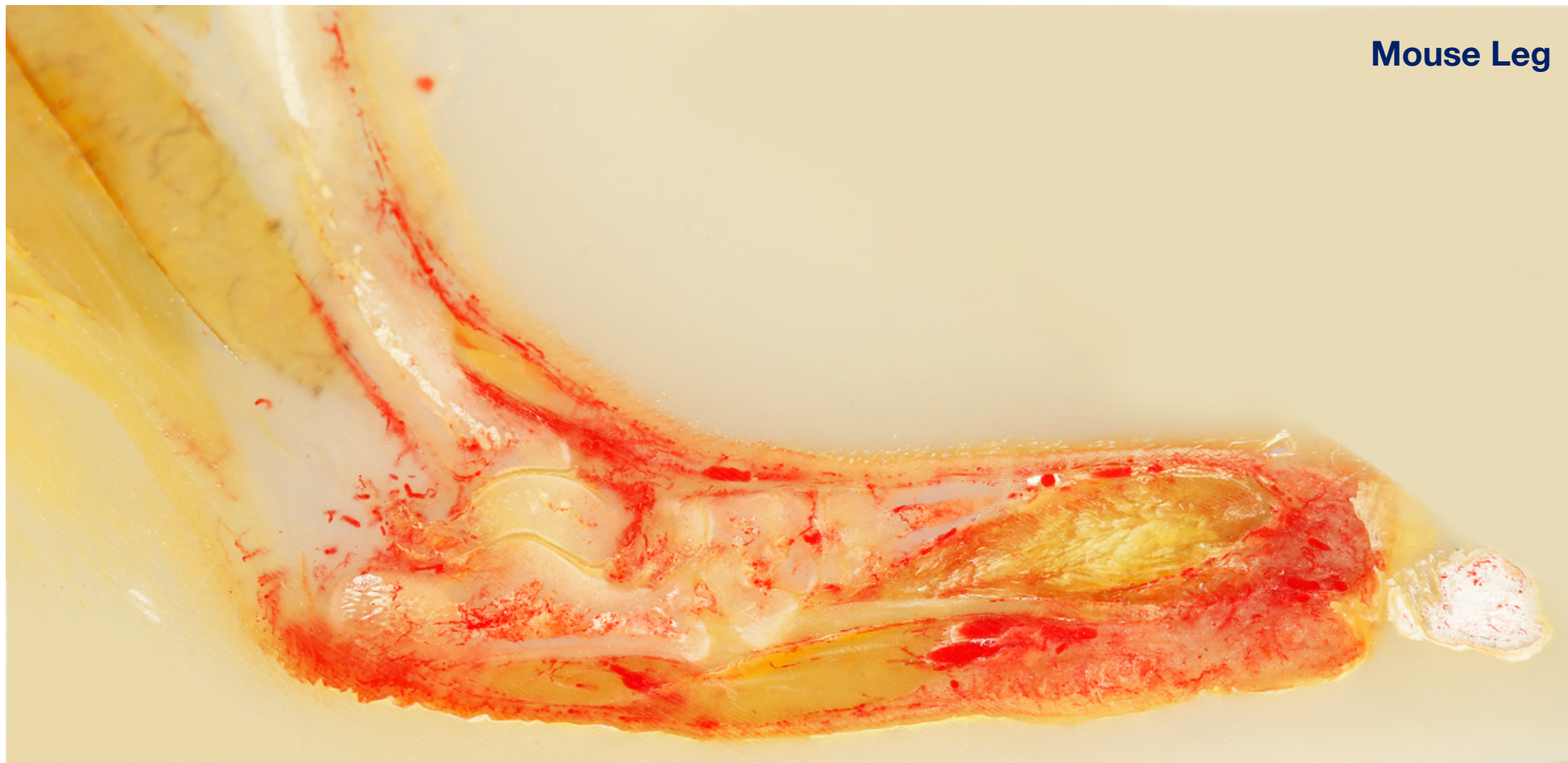


## Well Diamond Wire Saw Cutting Examples

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## Well Diamond Wire Saw Cutting Examples



**Mouse Leg**



## Well Diamond Wire Saw Cutting Examples

Meteorite





# Sample Preparation for Metallography

## Cutting



## Mounting



## Pre-Polishing & Polishing



# Lam Plan Consumables

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Hot mounting resins



Cut-off wheels



Cold mounting resins



Diamond suspensions

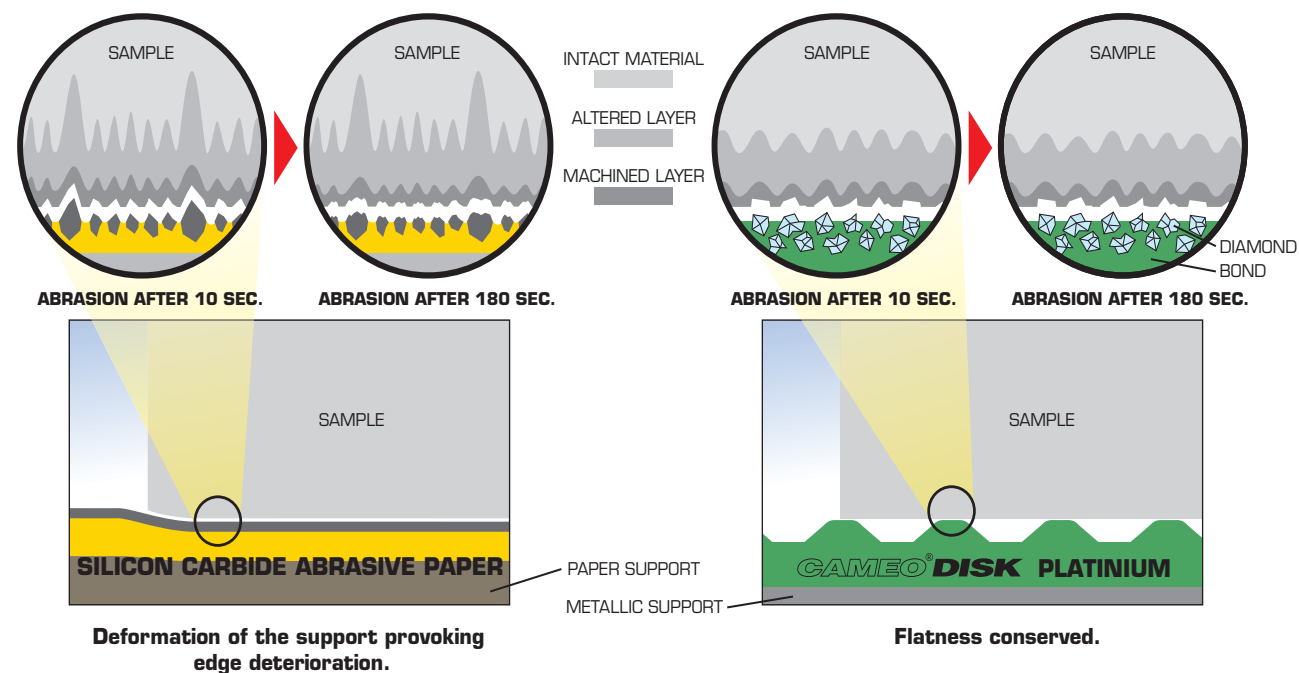
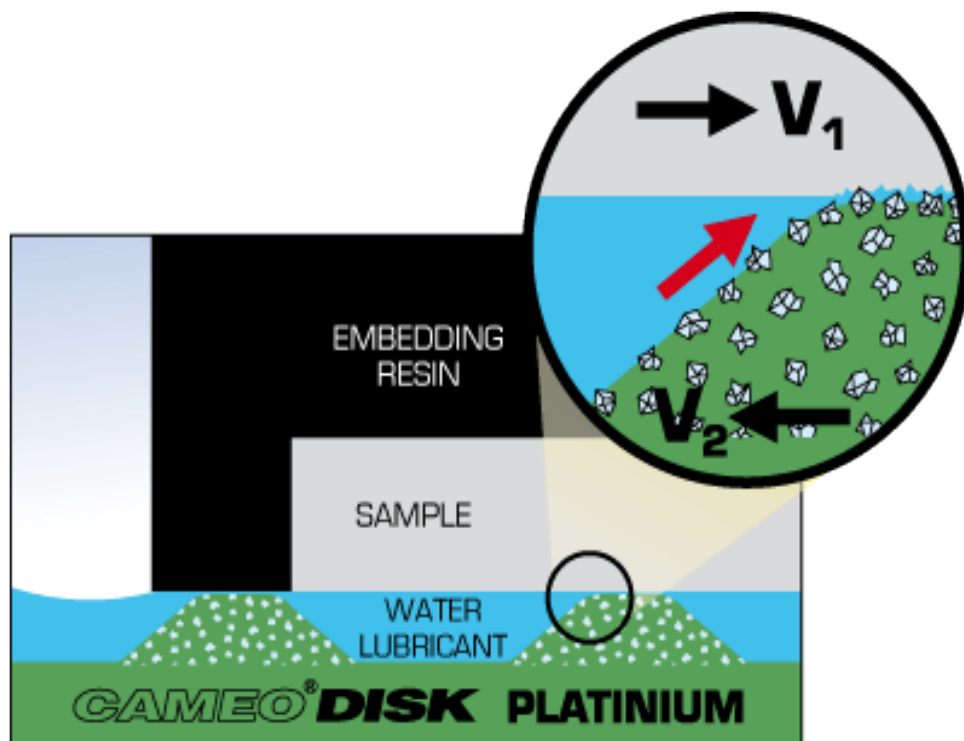


Diamond pastes

# Lam Plan Pre-Polishing Cameo Disk®

## vs SiC papers

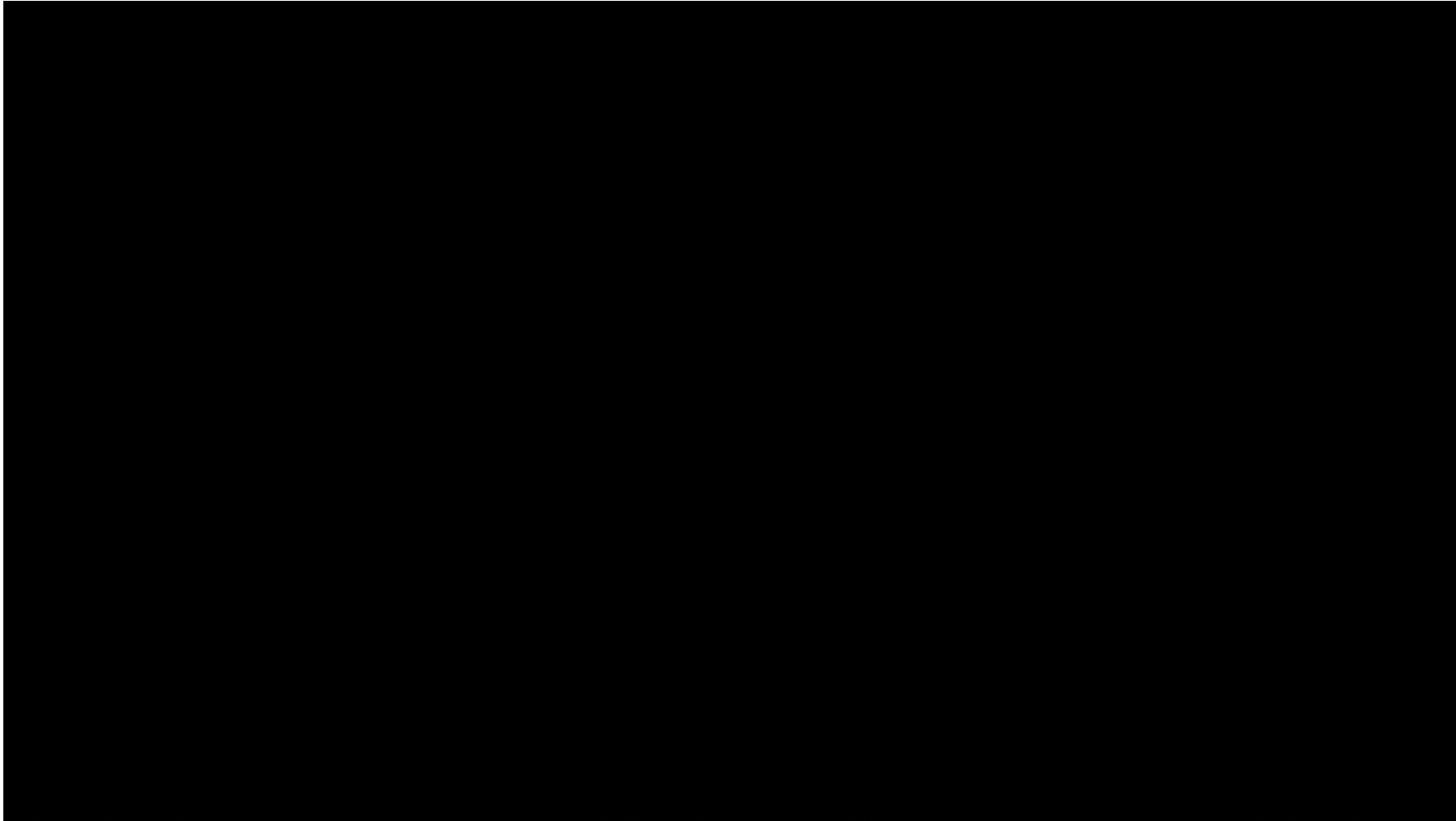
- ◆ Increased pressure/cm<sup>2</sup> on the sample
- ◆ Patented honeycomb structure (V-shape)
- ◆ Reproducible results
- ◆ Better preservation of the sample's structure
- ◆ Maintain full flatness





# Sample Preparation for Metallography

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## New PELCO® Tripod Polisher™ 590



# Cryo Fixation

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## Plunge freezing

The method involves ultra-rapid cooling of small tissue or cell samples to the temperature of liquid nitrogen ( $-196^{\circ}\text{C}$ ) or below, stopping all motion and metabolic activity and preserving the internal structure by freezing all fluid phases solid (vitrification).

## Products from Agar Scientific used for cryo work

- ◆ Dewar vessel
- ◆ Cryo TEM grid boxes
- ◆ Cryo-EM Pucks and Cryo-EM Full Kit
- ◆ Handling protection
- ◆ Tweezers

**NEW!**

New design tweezer assembly by NanoSoft, for plunge-freezing with Thermo Fisher Scientific's VITROBOT.





## Fixation at room temperature



**Manufactured by Agar Scientific:**  
**Glutaraldehyde in 0.1M Phosphate Buffer**



**Potassium Permanganate**



**Lanthanum Nitrate**

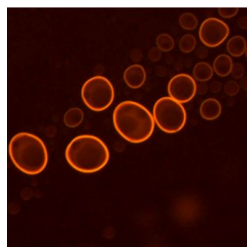


**CytoFix**

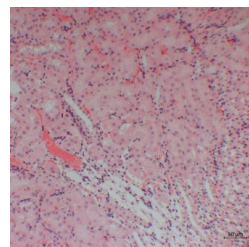


**Paraformaldehyde 16% Solution (methanol-free)**

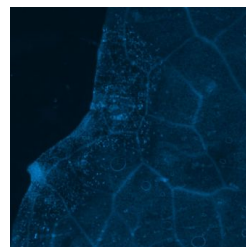
# Imaging Optimisation – Light Microscopy Stains



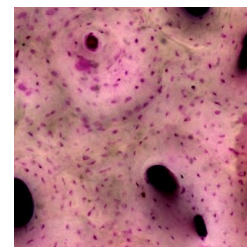
**Acridine Orange**



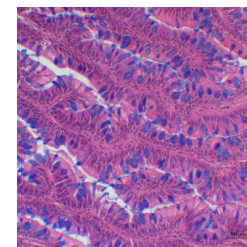
**Eosin**



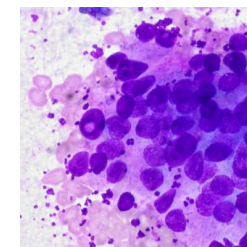
**Aniline Blue**



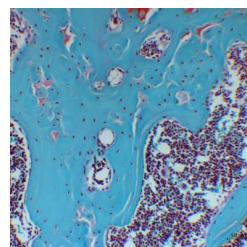
**Acid Fuchsin**



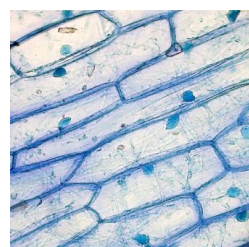
**Alcian Blue 8GX**



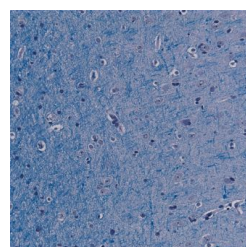
**Giemsa's Stain**



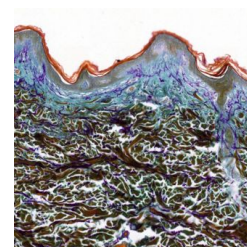
**Fast Green FCF**



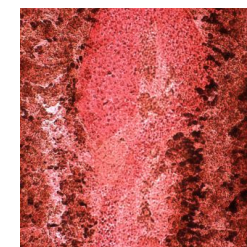
**Methylene Blue**



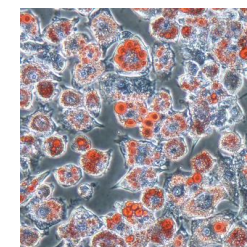
**Luxol Fast Blue**



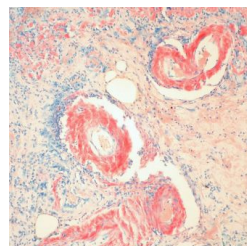
**Orange G**



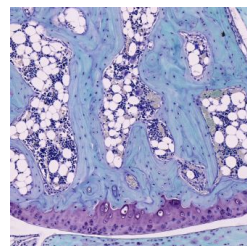
**Carmine**



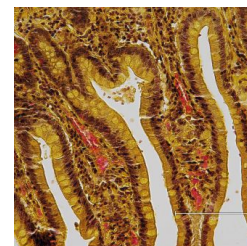
**Oil Red O**



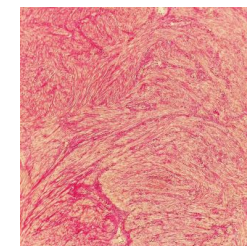
**Congo Red**



**Safranin O**



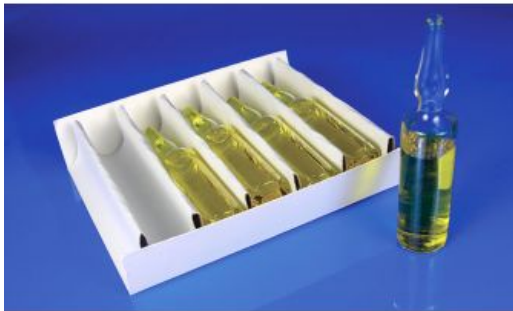
**Tartrazine**



**Van Gieson's Stain**



# Imaging Optimisation – TEM Sample Staining



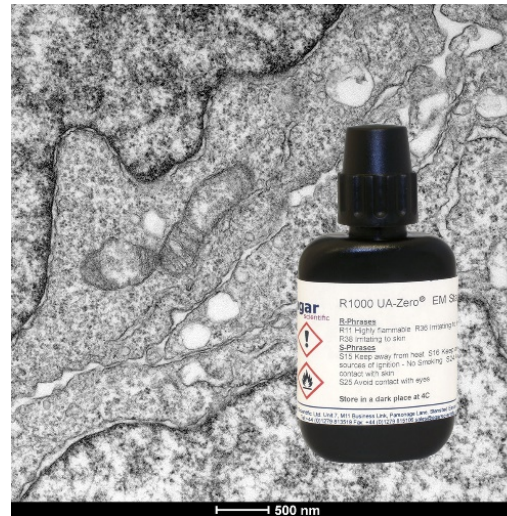
**Ruthenium Tetroxide**



**Ammonium Molybdate**



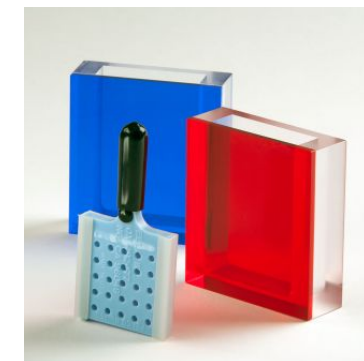
**PTFE  
Immunostaining Pad**



**UA-Zero:**  
patented  
solution, direct  
substitute for  
Uranyl Acetate



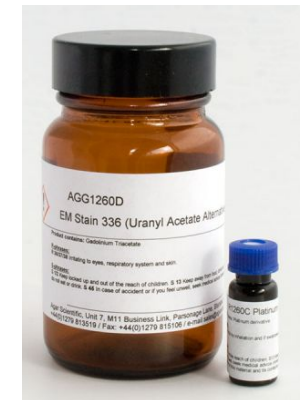
**CHiEN Silicon  
Staining Pad**



**Grid Staining System**



**Osmium Tetroxide**



**Uranyl Acetate**



# Imaging Optimisation – TEM Sample Staining

- ◆ Grids cleaning
- ◆ Support film wettability
- ◆ Hydrophilic and hydrophobic surface
- ◆ Positive and negative charging

SURFACE	CHARGE	ATMOSPHERE
Hydrophilic	Positive	Air (with subsequent treatment Mg acetate)
	Negative	Air
Hydrophobic	Positive	Amylamine
	Negative	Methanol



**PELCO easiGlow™  
Glow Discharge Cleaning System**



**ELMO Glow Discharge System**

## Imaging Enhancing

- ◆ Optimized for cleaning TEM grids
- ◆ Precise and easy vacuum setting
- ◆ Short cycle times
- ◆ Consistent results
- ◆ Auto, programmed and manual mode
- ◆ Intuitive touch screen for display and operation
- ◆ Supports hydrophilic/hydrophobic and negative/positive modes
- ◆ Affordable, compact, standalone system



## Nikalyte: NL50

### Benchtop nanoparticle deposition system

*'Ultra pure nanoparticles at the touch of a button'*

#### Key features

- Easy to use
- No previous vacuum/nanoparticle experience required
- Automatic control of vacuum functions
- Quick cycle time – typically 30mins
- Wide choice of material; Ag, Au, Ti, Pt, Cu and more
- Real time control over coating – loading or deposition time
- Control over nanoparticle size (typically 2 – 20nm)
- Plasma cleaning

#### Nanoparticle generation zone

#### Flip top lid

- Fast and easy target material exchange

#### Touch screen

- Simple user interface
- Preset conditions for common elements



#### Glass Sample loading door

- Flexible substrate loading (max 50mm diam)
- View nanoparticle deposition and plasma clean

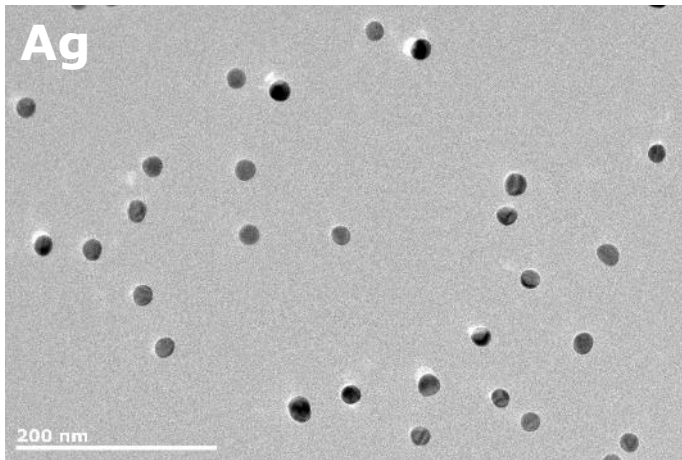


## NL50: Product Video

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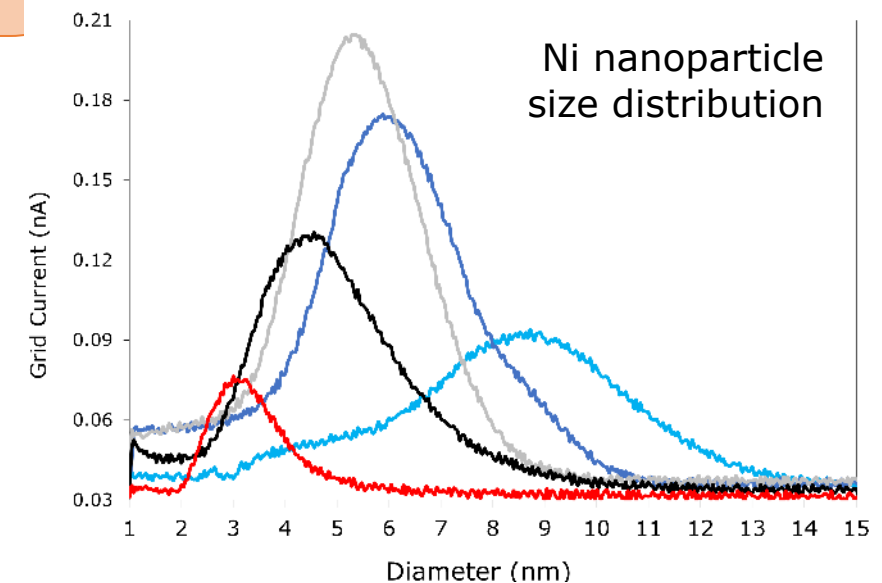
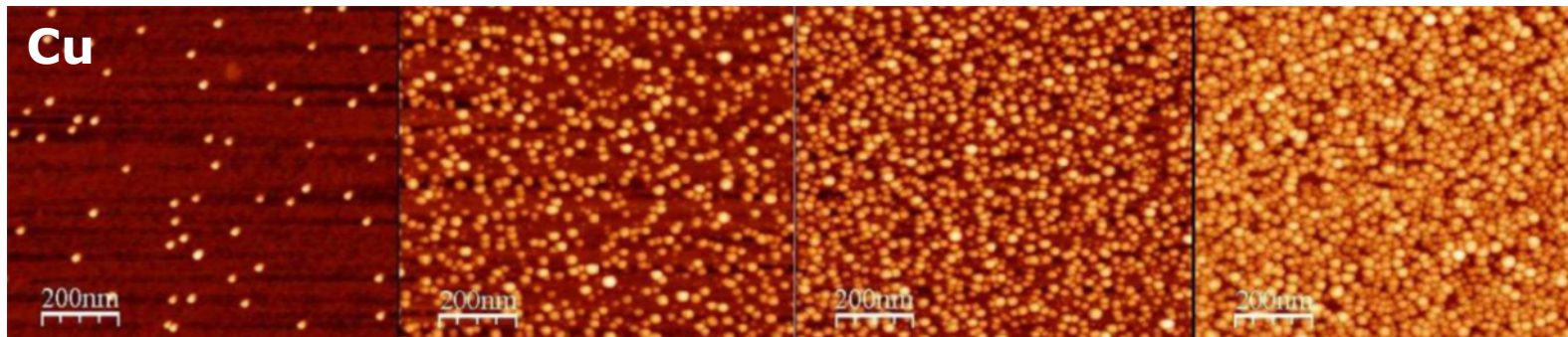
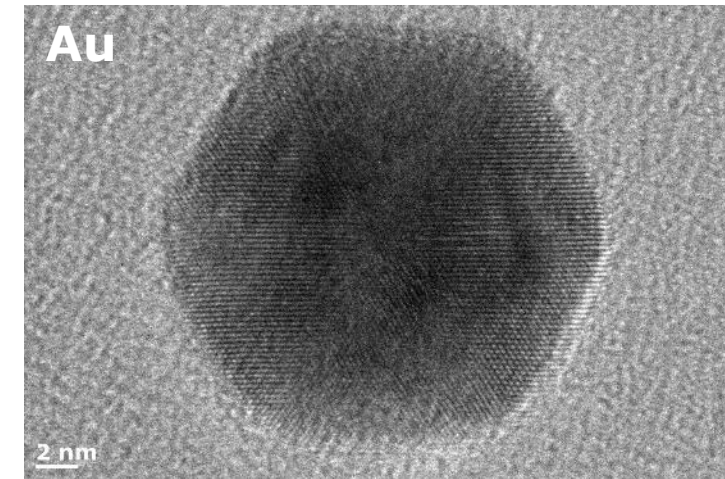


## NL50: Nanoparticle Properties



### Properties of NL50 Nanoparticles

- ❖ Monodisperse and non-clumping
- ❖ Crystalline
- ❖ Ultra-pure & contamination free
- ❖ Precise & repeatable control over coverage
- ❖ Nanoparticle size 2-25nm

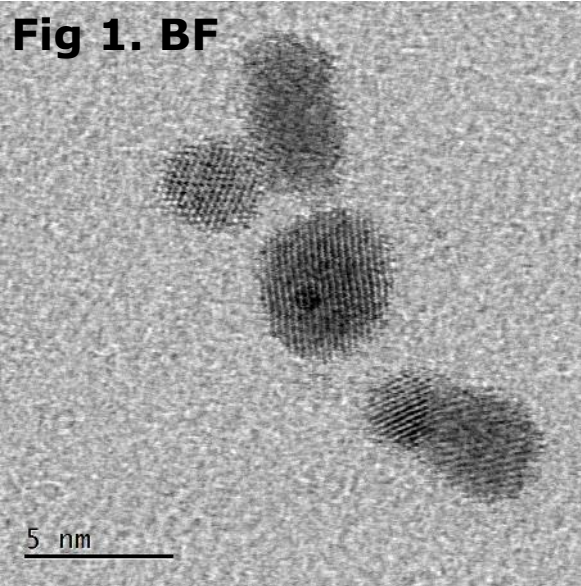




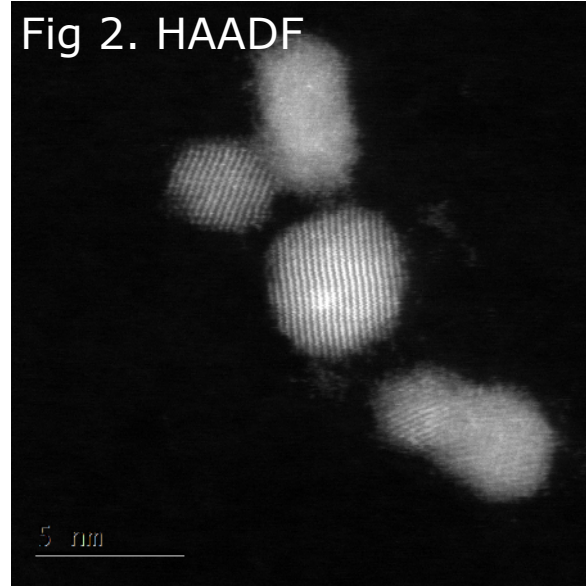
## NL50: Applications of the NL50

### CATALYSIS

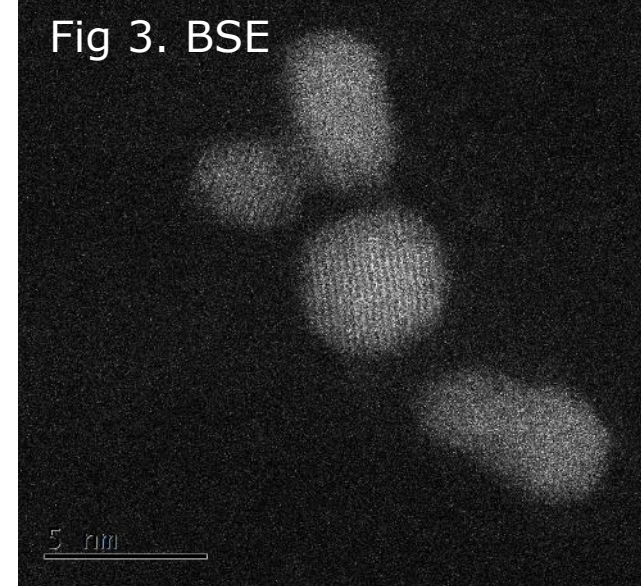
- Boost catalytic activity with up to 1000x larger active surface area than 2D surface.
- Reduce cost for expensive precious metals
- NL50 ideal for heavy elements such as Platinum, Palladium, Gold and Ruthenium



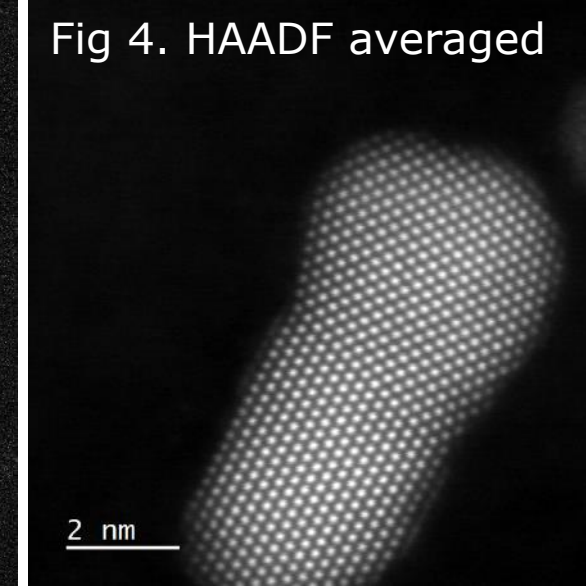
*Shows crystalline spherical Pt nanoparticles*



*Shows bright contrast for high density Pt atoms*



*Backscattered electron image shows crystalline structure indicating clean surface*



*Shows grain boundary where 2 crystalline Pt NPs have coalesced.*

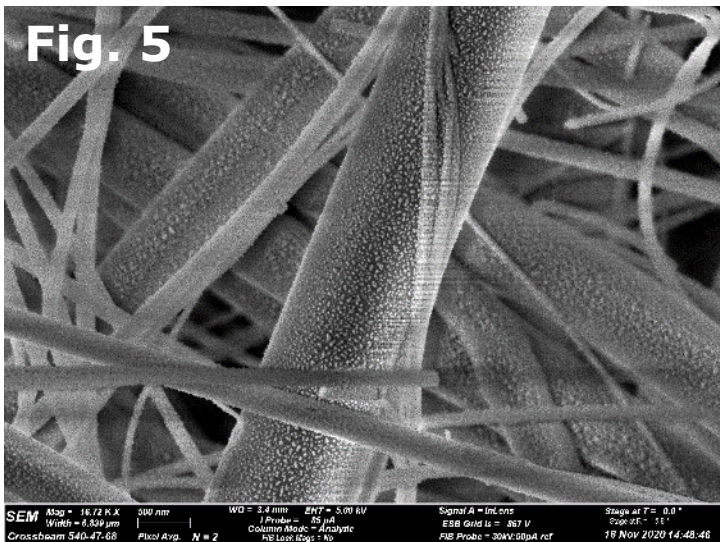
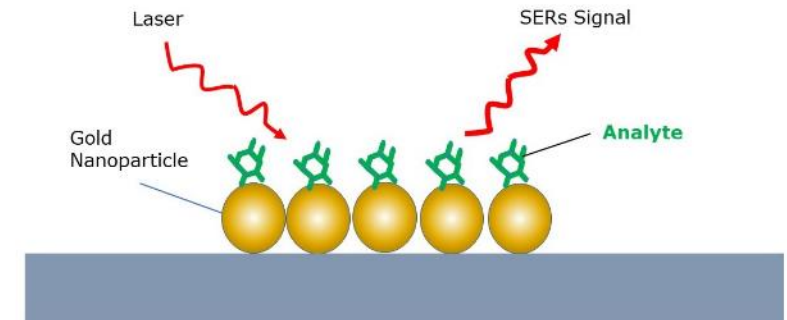


## NL50: Applications of the NL50

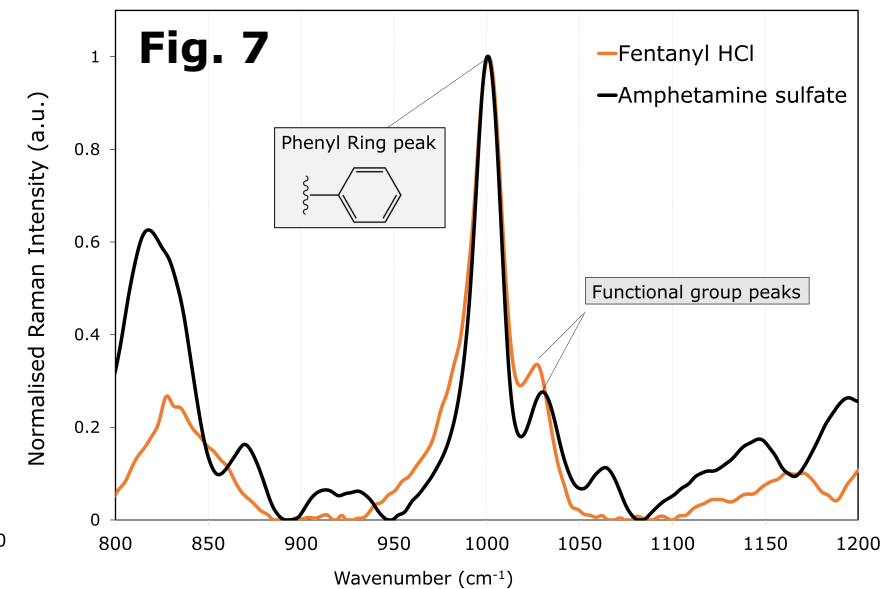
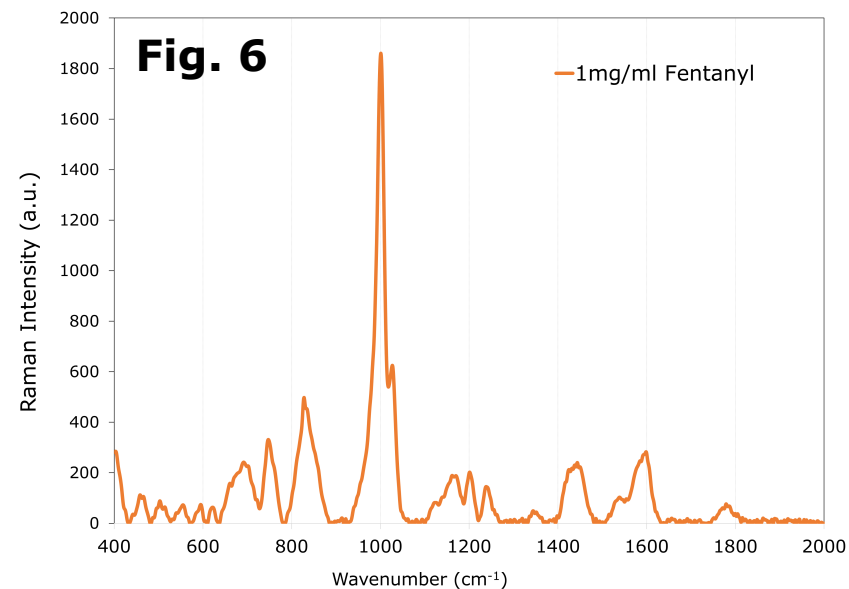
### SERS - Surface Enhanced Raman Sensors

- Utilize plasmonic properties of gold nanoparticles
- High sensitivity biosensors for lab and field use.
- Used to detect narcotics, pathogens, proteins, antibodies, pollution...

NL50 produces cheap high-performance Au NP SERS substrates



Glass fibre paper substrate with Au NPs



**If you have any questions regarding this powerpoint and our products, or are interested in booking a demo, please contact us at [sales@agarscientific.com](mailto:sales@agarscientific.com)**

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Unit 7, M11 Business Link,  
Parsonage Lane,  
Stansted,  
Essex, CM24 8GF  
[www.agarscientific.com](http://www.agarscientific.com)