COVALENT METROLOGY

Welcome

UPGRADING METROLOGY SERVICES WITH MOUNTAINS™ 9: IMPROVED AUTOMATION, VISUALIZATION, AND ANALYSIS

Cyrille Charles
Key Account Manager
Digital Surf

October 21, 2021 | 11am PT



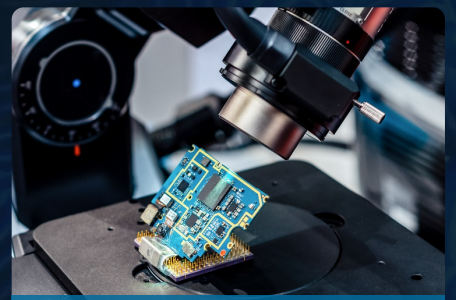
Digital Surf

COVALENT METROLOGY

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COVALENT METROLOGY

Silicon Valley-based analytical labs and platform delivering quality data and expert analysis for advanced materials and device innovation



Comprehensive Solutions Stack

50+ cutting-edge instruments, offering 100+ Techniques

Analytical Services

Advanced Modeling

Method Development

Temp. Staffing Solutions



Affordable and Fast

Fast Turnaround Times, No Expedite Fees

Volume Savings

Instant Access to Data and Reports in Secure Portal



Flexible Business Model

Custom Consulting Solutions and Certified Onsite Support

Training and Certification on Instrumentation

Co-op and Tool-Share Opportunities

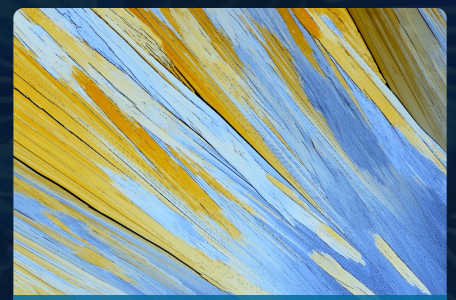
Laboratory Audits

Rich Network of Partnerships

Rigaku, Anton Paar, ThermoFisher Scientific, Asylum Research an Oxford Instruments company, KEYENCE, J.A. Woollam, TA Instruments, PVA TePla, TELEDYNE CETAC TECHNOLOGIES Everywhereyoulook, HORIBA Scientific, Digital Surf

Partner to World's Leading Instrument Manufacturers and Labs

Expanding Instrumentation, Lab Connections and Learning



Who We Are, Who We Serve

500+ Clients, 40-60 Added / Quarter

50+ People, 14 PhDs

Cutting-edge Analytical Capabilities

Lab Location: Sunnyvale, CA

Covalent Technical Groups and Organization

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PCBA, Semiconductor, and Electronic Device Metrology & Failure Analysis

- DPA / Mechanical Cross-section
- Dye & Pry Test
- EBIC / OBIC failure analysis
- Hot Spot Detection
- IR Imaging / Emission Microscopy
- NIR Imaging
- Root-Cause Failure Analysis

Electron Microscopy and Scanning Probe Microscopy

- AFM & Advanced AFM Modes (EFM, KPFM, MFM, PFM)
- Scanning Acoustic Microscopy (SAM)
- SEM (+ EDS)
- FIB-SEM (+ EDS)
- S/TEM (+ EDS / + EELS)
- Nano-indent / Nano-scratch

Optical Microscopy & Spectroscopy

- Chromatic Aberration
- Digital Optical Microscopy
- FTIR and ATR-FTIR
- Laser Scanning Confocal Microscopy
- Spectral Ellipsometry
- UV-Vis-NIR Spectroscopy
- White Light Interferometry

X-Ray Characterization

- X-Ray Diffraction (XRD)
- X-Ray Reflectometry (XRR)
- Micron-spot ED-XRF
- WDXRF
- Micro-computed X-ray Tomography (Micro-CT)
- 2D X-ray Inspection & X-ray Radiography

Elemental / Chemical Composition Analysis

- EPMA
- GD-OES
- GC-MS
- ICP-MS and LA-ICP-MS
- Raman Microscopy & Spectroscopy
- NMR (1D or 2D; solid / liquid)

Particle Analysis

- Dynamic Light Scattering (DLS)
- Laser Diffraction Particle Size Analysis (PSA)
- Particle Zeta Potential

Material Property Characterization

- DSC
- DMA & TMA
- Rheometry
- TGA
- Surface Zeta Potential
- Porometry / Porosity
- Gas Adsorption
- Gas Pycnometry / Foam Density
- Tap Density

Surface Spectroscopy Analysis

- Dynamic-SIMS
- ToF-SIMS (Static-SIMS)
- Ion Scattering Spectroscopy (ISS)
- Ultraviolet Photoelectron Spectroscopy (UPS)
- X-ray Photoelectron Spectroscopy (XPS)

Covalent Partnership with Digital Surf



- **Digital Surf** is a global leader in analytical software development
- Companies will work together to pool customer insights and provide improved services and more powerful analytical software tools
  - Identify new features and capabilities to empower engineers and scientists
  - Expand access to advanced data insights

Covalent Instrument Partners

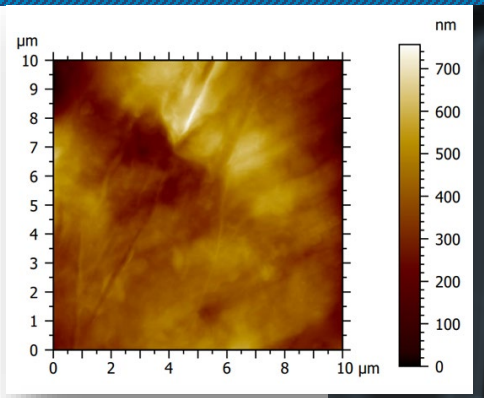
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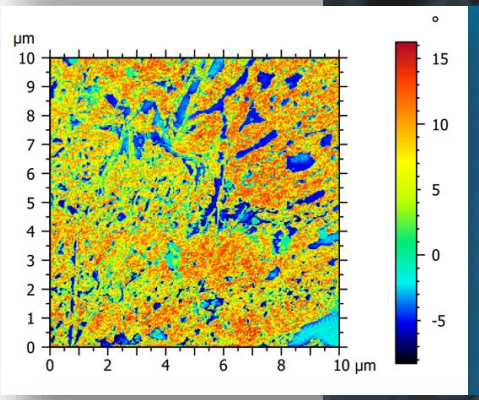
Client Advantages with Digital Surf

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Digital Surf's Mountains® 9 Software enables Covalent to provide clients:

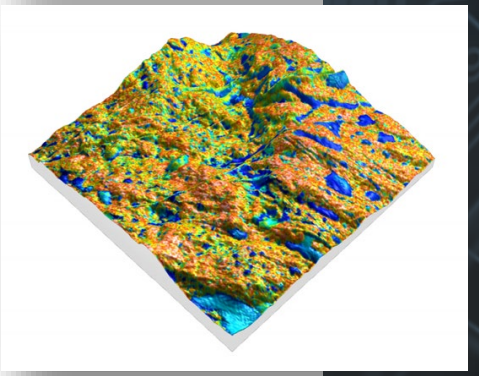
- **Faster Analysis**
  - **Automated report recipes and templates**
    accelerate routine analysis for faster reporting on repeat jobs
  - **Built-in Data Processing Toolkits**
    improve speed and accuracy when preparing data for interpretation
- **Deeper Insights**
  - **Efficient parameter extraction**
    accompanies automated artifact removal and powerful statistical analysis capabilities
  - **Correlative analysis**
    creates composite visualizations that probe relationships between distinct raw datasets, images, and experimental trials
  - **Multi-instrument data confluence**
    facilitates analysis spanning different tools and even techniques
- **Greater Impact**
  - **Readily adaptable reports**
    allow you and your Covalent experts to inspect your data in new ways to unlock actionable conclusions
  - **Enhanced presentation of key results**
    elevates the clarity of your data through advanced data visualization tools





Composite Topography and Phase Data from Teflon Sheet

Generated at Covalent using Mountains® software



Cyrille Charles

Key Account Manager, Digital Surf

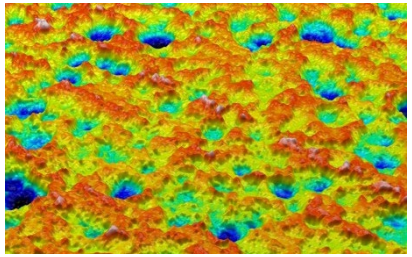
- 15 years' experience in the field of surface characterization in both sales and support roles
- Strong background in 3D analysis, photogrammetry and spectrometry
- Extensive industry knowledge of today's metrology & inspection landscape.
- Currently in charge of developing business with international partners

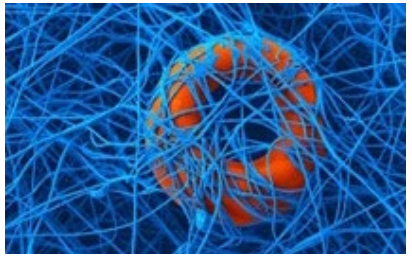
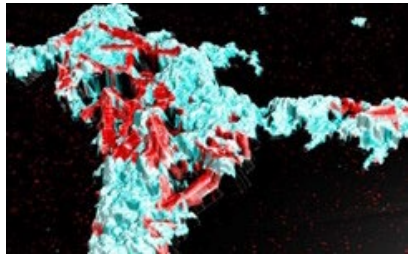


Digital Surf

Company profile

2021



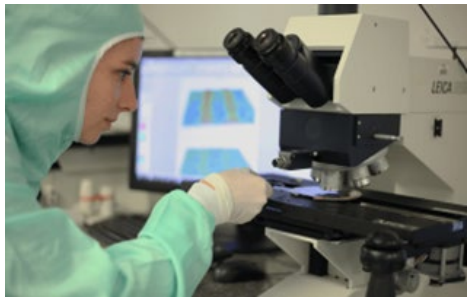
Digital Surf

Developing surface imaging & metrology software for profilers and microscopes since 1989



30+ years of experience

developing analysis software



20,000+ Mountains® software licenses

installed worldwide



50+ Instrument manufacturers

providing Mountains® with their instruments



11 Languages

in which Mountains® software is available

ISO®

Active member of ISO technical committee 213

Partner of world-renown research laboratories (NIST, NPL, LNE etc.)

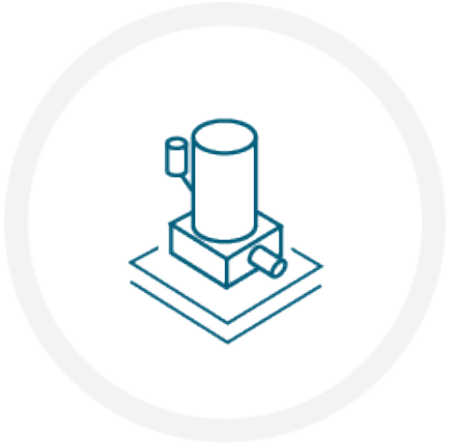
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Compatible instrument technologies



Profilometry

- 2D/3D (profile/areal) contact or optical profilometry
- White light interferometry
- Confocal microscopy
- Focus-variation microscopy



Scanning Electron Microscopy

With features for

- EDS/EDX
- Cathodoluminescence



Scanning Probe Microscopy

- Atomic Force Microscopy (AFM)
- Scanning Tunneling Microscopy (STM)
- And more



Spectroscopy

- Raman
- IR
- Hyperspectral
- XPS
- Etc.

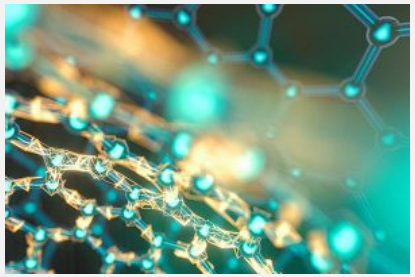
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Multiple application areas in research & industry



Industry & Manufacturing

- Aerospace
- Automotive
- Metallurgy
- Plastics
- Optics
- Electronics (Semiconductor)
- Renewable energy
- Etc.



Materials Science

- Nanomaterials
- Superconductors
- Spintronics
- Ceramics
- Composites
- Polymers
- Semiconductors
- Etc.



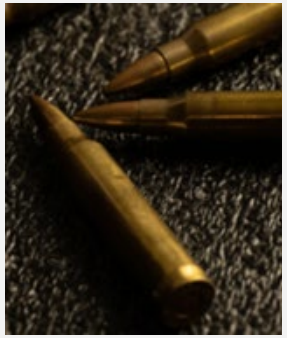
Life Sciences

- Biotechnology
- Biomaterials
- Biomedical science
- Food science
- Dentistry
- Medical devices
- Drug development
- Etc.



Heritage

- Archaeology
- Paleontology
- Art restoration
- Etc.



Forensics

- Criminalistics
- Etc.

And many more

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Mountains® 9 live demo

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Find out more
www.digitalsurf.com

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25000 Besançon
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Sales

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Support & Training

support@digitalsurf.com

Contact

+33 3 81 50 48 00
contact@digitalsurf.com

Coming Up...

COVALENT METROLOGY

MODERNIZING MICROSCOPY METHODS: CAPABILITIES AND APPLICATIONS OF TEM/STEM SYSTEMS

SPEAKER:

Dr. Jan Ringnalda
Principal Scientist, Materials and Structural Analysis
Thermo Fisher Scientific

November 11, 2021 | 11am PT

ThermoFisher SCIENTIFIC

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Survey and Sign-Up for Calendly Appointments

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Want to learn more about Covalent's

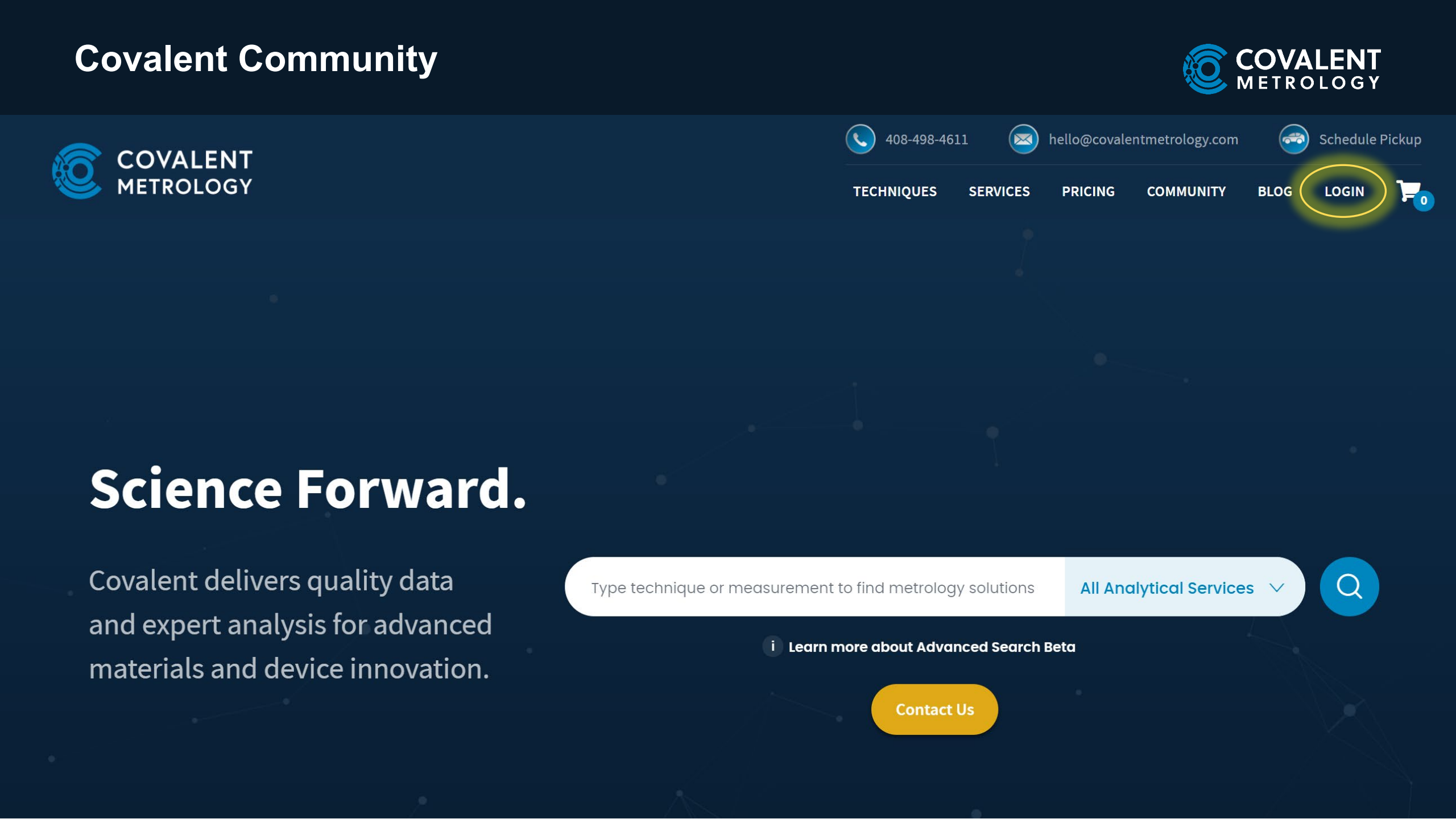
Advanced Imaging Services?

Talk with a Covalent Expert!

Schedule your Appointment Now with Calendly

- link is in the chat -

Covalent Community



Covalent Community

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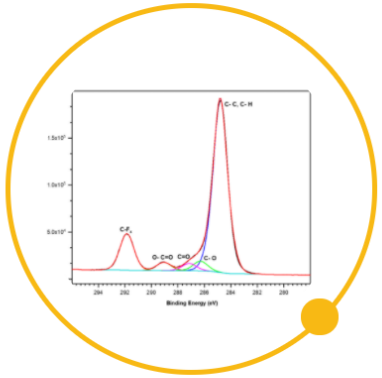
Search Technique or Measurement...

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TECHNIQUES SERVICES PRICING COMMUNITY BLOG LOGIN 0

Access Covalent Portals

Customer Access to Data & Community Content



The DATA PORTAL is used by Customers and Lab Partners for uploading and downloading data. It requires two-factor authentication and advanced password protection. Data Portal users have complete access through their home page on the portal to all Community content, and do not require a separate Community account.

LOGIN TO DATA PORTAL

Community Content Access for All Other Users



The COVALENT COMMUNITY PORTAL requires password entry. It contains webinar and other metrology and characterization-related content that we believe would be useful and educational for the materials science innovation community. It does not provide access to any customer data and should only be used by individuals that are not Covalent customers or lab partners.

LOGIN TO COMMUNITY PORTAL

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Q & A Session

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Thank you