



**Materials Characterization Services**

**Service Offering  
for**

**Materials  
Characterization  
Services**

Bulk Analysis • Microscopy • Surfaces/Films • Liquids/Gases • Polymers • Optical • Electrical

N&U Equipment Supply, LLC  
+1 281-995-4774

[www.nues-usa.com](http://www.nues-usa.com)



## Materials Characterization Services

**Are you tired of searching for a lab that has the technique you need?  
Not sure which technique will answer your questions?  
Has your internal lab told you "It can't be done"?**

Materials Characterization Services is an analytical service broker, providing scientists and engineers with the exact analysis they need to solve their materials problem.

### **Breadth**

N&U offers the widest variety of testing services through our network of partnering laboratories. We also have collaborative agreements with instrument manufacturers allowing us to offer analysis that is not otherwise commercially available. No matter what your analysis need, we can meet it.

### **Experience**

Don't know which technique to use? we can help you determine the best technique, or combination of techniques to solve your problem. We also offer a wide variety of standardized tests (ASTM, MIL+SPEC, etc.) through our partner labs.

### **Independence**

N&U uses over 100 partnering laboratories to deliver services to its clients. Some labs may steer you towards a less-than-optimal technique only because it's available in-house. We will always choose the most applicable techniques to give you the answers you need.

### **Impartiality**

We understand that the quality and accuracy of scientific results are imperative. If results are questionable or don't make sense we will find a way to re-test or confirm the results using another technique.

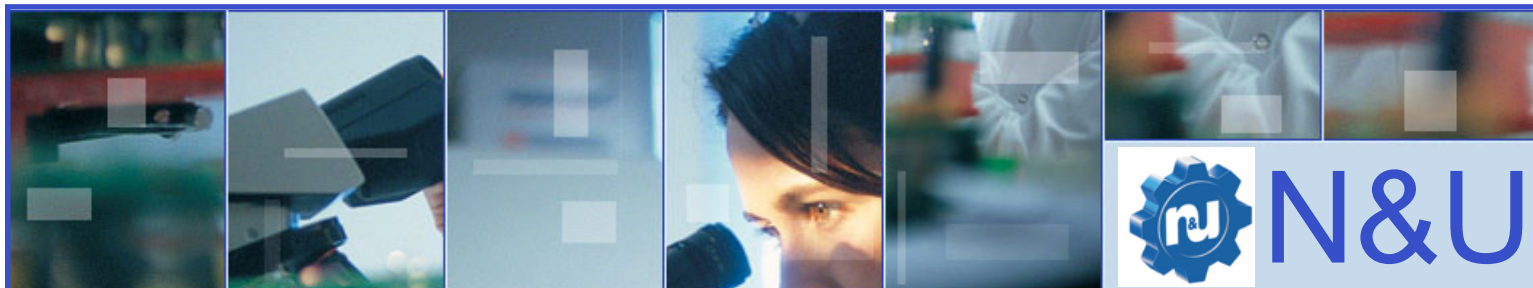
### **Knowledge**

We can help you to design an experiment to get the most out of your analytical dollar, interpret results, or synthesize data from multiple techniques. We have experience with Failure Analysis, Deformulation, Intellectual Property Protection, and Patent Infringement. While data from an analysis is important, what's equally important is how it related to your product or problem.

### **Simplicity**

Our mission is to offer the most complete set of techniques available so you only have to make one phone call or email to get the service you need.

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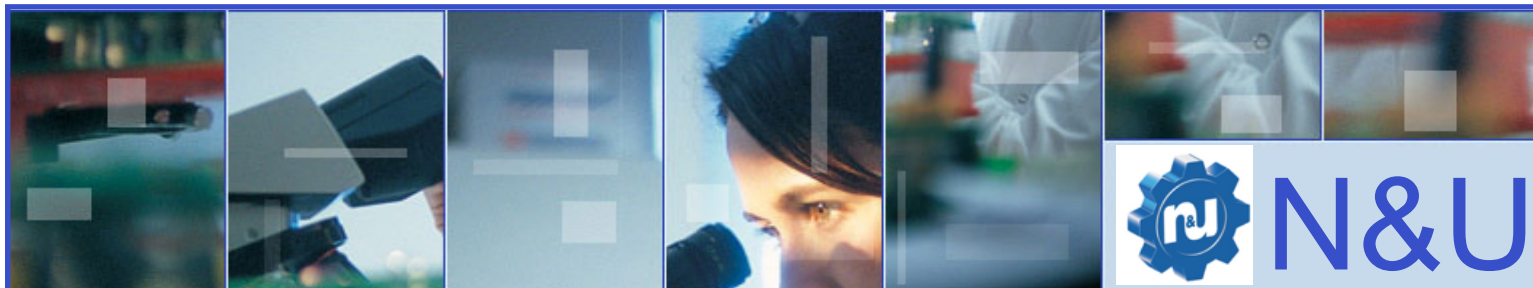


## Materials Characterization Services

### Bulk Analysis Techniques

AA	Atomic Absorption
AES	Atomic Emission Spectroscopy
LECO	Combustion Analysis
DSC	Differential Scanning Calorimetry
DMA	Dynamic Mechanical Thermal Analysis
EPR	Electron Paramagnetic Resonance
EPMA	Electron Probe MicroAnalysis
ESR	Electron Spin Resonance
FTIR	Fourier Transform InfraRed Spectroscopy
DMS	Glow Discharge Mass Spectrometry
GD-OES	Glow Discharge Optical Emission Spectroscopy
	Gravimetry/Density
ICP-OES	Inductively Coupled Plasma Optical Emission Spectroscopy
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
IGA	Interstitial Gas Analysis
IC	Ion Chromatography
LA-ICPMS	Laser Ablation Inductively Coupled Plasma Mass Spec.
NAA	Nuclear Activation Analysis
NMR	Nuclear Magnetic Resonance
OES	Optical Emission Spectroscopy
PIXE	Particle Induced X-ray Emission
	Particle Size/Porosimetry/Surface Area
RAMAN	Raman
RIMS	Resonance Ionization Mass Spectrometry
SAXS	Small Angle X-ray Scattering
TIMS	Thermal Ionization Mass Spectrometry
TMA	Thermo Mechanical Analysis
TGA	ThermoGravimetric Analysis
WDS	Wavelength Dispersive Spectrometry
WDX	Wavelength Dispersive X-ray
XRD	X-ray Diffraction
XRF	X-ray Fluorescence

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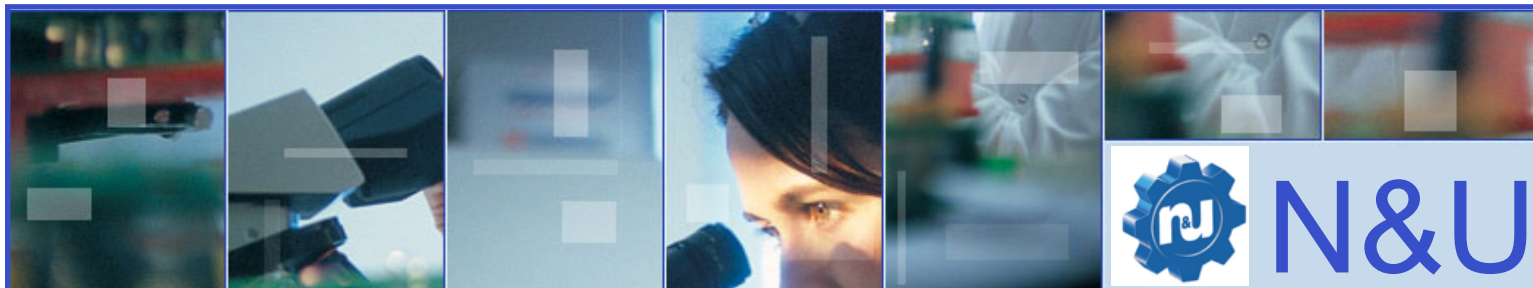


## Materials Characterization Services

### Microscopy and Microanalytical Analysis Techniques

AES	Auger Electron Spectroscopy
CT	Computed Tomography
EELS	Electron Energy Loss Spectroscopy
EDS	Energy Dispersive Spectrometry
EDX	Energy Dispersive X-ray
FIB	Focused Ion Beam
	Fracture Analysis
LA-ICPMS	Laser Ablation Inductively Coupled Plasma Mass Spec.
MFM	Magnetic Force Microscopy
OM	Optical Microscopy
	Particle Analysis
	Radiography
SAM	Scanning Acoustic Microscopy
SEM	Scanning Electron Microscopy
STEM	Scanning Transmission Electron Microscopy
	Surface Area/Porosimetry
TEM	Transmission Electron Microscopy
TTM	Transmission Temperature Microscopy
	X-ray Imaging
XRT	X-ray Topography

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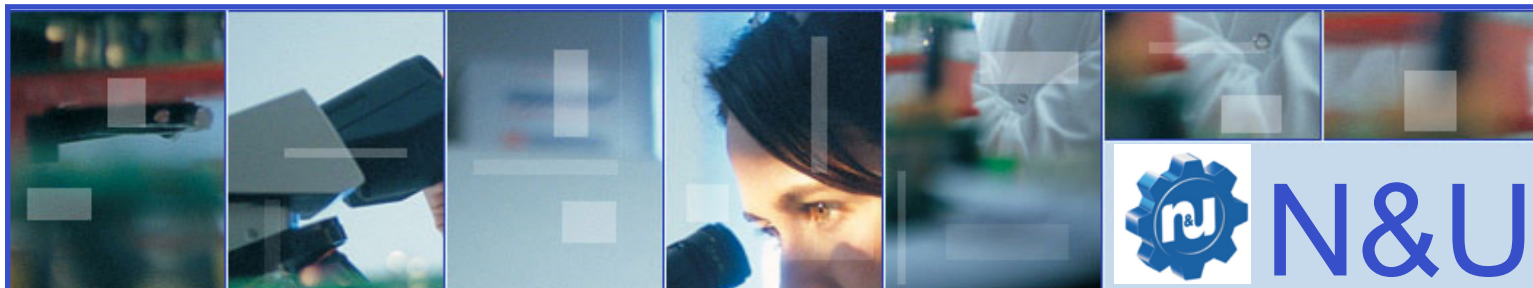
## Materials Characterization Services

### Surface & Thin Film Analysis Techniques

	3-D Surface Profiling
	Adhesion
AFM	Atomic Force Microscopy
AES	Auger Electron Spectroscopy
	Contact Angle Measurement
EBSD	Electron BackScatter Diffraction
ESCA	Electron Spectroscopy for Chemical Analysis
	Ellipsometry
EXAFS	Extended X-ray Absorption Fine Structure
	Hardness Testing
HFS	Hydrogen Forward Scattering
ISS	Ion Scattering Spectroscopy
LA-ICPMS	Laser Ablation Inductively Coupled Plasma Mass Spec.
LEXES	Low Energy X-ray Emission Spectroscopy
	MicroHardness & Nanohardness
NRA	Nuclear Reaction Analysis
	Profilometry (contact and non-contact)
RBS	Rutherford Backscattering Spectrometry
SPM	Scanning Probe Microscopy
SIMS	Secondary Ion Mass Spectrometry
	Surface Roughness/Flatness
TOF-SIMS	Time-of-Flight Secondary Mass Spectrometry
TXRF	Total reflection X-Ray Fluorescence
	Tribology
VPD-ICPMS	Vapor Phase Decomposition/ICPMS
	Wafer Bow
	Wafer Particle Maps
	Wear & Friction
XRD	X-ray Diffraction
XRF	X-ray Fluorescence
XPS	X-ray Photoelectron Spectroscopy
XRR	X-ray Reflectivity

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### Polymer/Organic Analysis Techniques

	Deformulation
EPR	Electron Paramagnetic Resonance
ESR	Electron Spin Resonance
FTIR	Fourier Transform InfraRed spectroscopy
GC	Gas Chromatography
GCMS	Gas Chromatography/Mass Spectrometry
GPC	Gel Permeation Chromatography
HPLC	High Performance Liquid Chromatography
IC	Ion Chromatography
LC-MS	Liquid Chromatography / Mass Spectrometry
MALDI	Matrix Assisted Laser Desorption Ionization
NMR	Nuclear Magnetic Resonance
	Polymer Filler & Additives Quantitation
PyMS	Pyrolysis Mass Spectrometry
	Raman
UV-VIS	UltraViolet Visible Spectroscopy

### Liquid/Gas Analysis Techniques

	Chemical Methods (titrimetry, extractions, etc.)
EGA	Evolved Gas Analysis
GC	Gas Chromatography
GCMS	Gas Chromatography/Mass Spectrometry
GPC	Gel Permeation Chromatography
HPLC	High Performance Liquid Chromatography
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
ICP-OES	Inductively Coupled Plasma Optical Emission Spectroscopy
IC	Ion Chromatography
LC-MS	Liquid Chromatography / Mass Spectrometry
	Outgassing
RGA	Residual Gas Analysis
TOC	Total Organic Content

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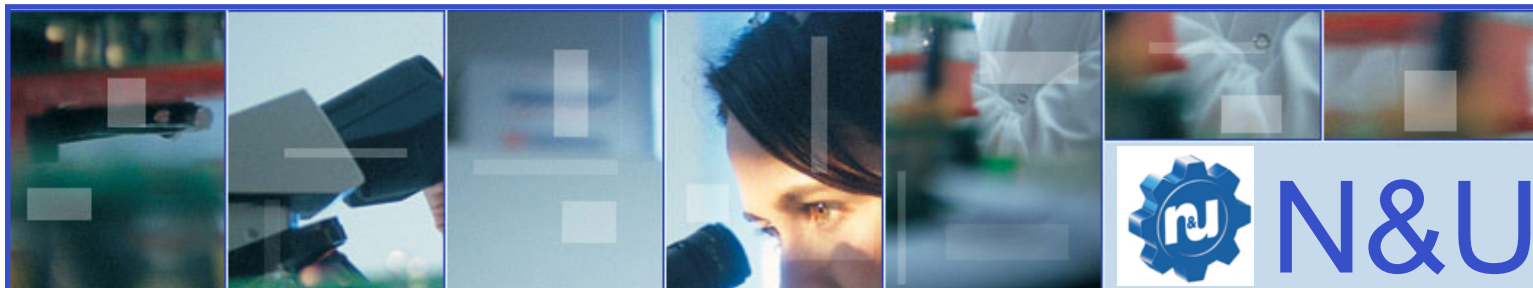


## Materials Characterization Services

### Electrical Analysis Techniques

	4 Point Probe
ATE	Automated Test Equipment
	Breakdown Voltage
C-V	Capacitance-Voltage
	Conductivity
	Construction Analysis
	Decapsulation
DLTS	Deep Level Transient Spectroscopy
	Dielectric Constant
ECV	Electrochemical Capacitance Voltage
ESD	ElectroStatic Discharge
EMMI	Emission Microscopy
FIB	Focused Ion Beam
	Hall Mobility
HAST	Highly Accelerated temperature and humidity Stress Test
	Latchup
	Lifetime Measurement
$\mu$ PCD	Microwave PhotoConductive Decay
	PCB failure analysis
	Reliability
	Resistivity
SIRM	Scanning InfraRed Microscopy
	Sheet resistance (4 point probe)
SRP	Spreading Resistance Profiling
SPV	Surface Photo Voltage
	Wire Bond Strength

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### Miscellaneous Analysis Techniques

	Age Dating
	Air Monitoring
	Alpha Detection
	Aroma/Odor Testing
	Asbestos Testing
	Corrosion Testing
	Ellipsometry (Refractive Index)
	Environmental Testing
	Explosive Dust Analysis
FA	Failure Analysis
	Flammability/Fireproofing
	Geochemical Testing
	Isotope Analysis
	Mechanical Testing
	Mineral Identification
	Mineral Isotope Ratio
	Nanotoxicity
	Optical Properties
	Permeation
	Petroleum Product Testing
	Pharmaceutical Testing
	Photoluminescence
	Physical Testing
ROHS	Reduction Of Hazardous Substances
	Reflectivity
	Spectrophotometry
	Tensile Strength
	Thermal Imaging
	Vibration & Shock Testing
WEEE	Waste Electrical and Electronic Equipment
	Weathering

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