

Visible Particle Investigation

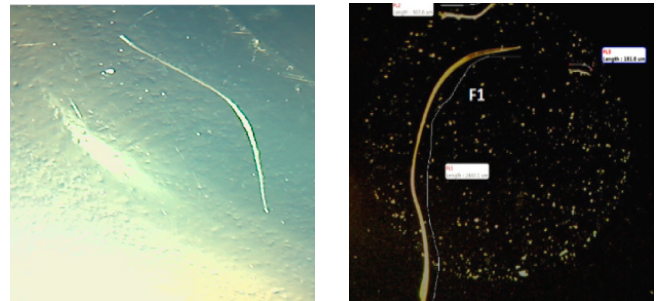
Unchained Labs gets it. You have particle problems and you need to know what they are – right now. Our experts use Hound to nail particle identification with its unique spectroscopy combo. Raman spectroscopy is used to chemically identify the usual suspects like fibers, rubber and protein aggregates. Laser-Induced Breakdown Spectroscopy (LIBS) will identify inorganic and metal particles with elemental analysis. If that’s not enough we’ll break out the FT-IR or SEM/EDS to get your particle identified.



Hound identifies particles by Raman and LIBS spectroscopy.

Applications

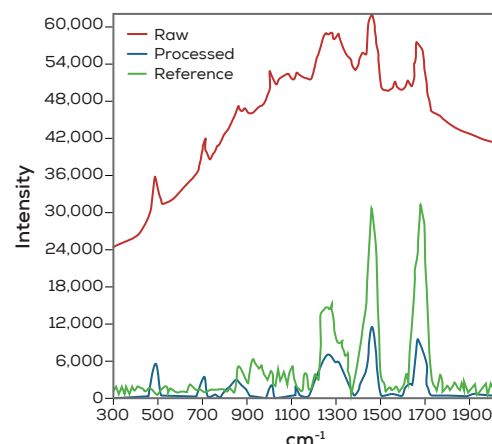
- Identify protein, organic, inorganic and metal particles
- Customize references to your lab
- Root cause analysis
- ID particles that cause QC or visual inspection failures



Particles are documented and imaged throughout the identification process. A fiber imaged in situ (left) and on a filter round (right).

Visible Particle Testing

- Visible particle (>50 μm) identification
- “Chain of custody” – your particles are imaged and documented in the primary container, after sample prep and through spectroscopic identification
- ID particles from liquid, powder, lyophilized products
- Raman, LIBS, FT-IR and SEM/EDS as needed



Raman or LIBS spectra are collected and matched to a reference database for identification.

About Unchained Labs Testing

Testing includes

- Sample preparation and testing performed by trained experts
- Detailed experimental reports that document the test plan, measurement parameters and results
- Results delivered when you need them: 3 business days, 5 business days, 2 weeks or 3-4 weeks turnaround available

Our analysis tools

Instrument	Methods
Hound	Particle imaging Raman spectroscopy Laser-induced breakdown spectroscopy (LIBS)
Bouncer	White light reflectometry Laser interferometry
Bruker LUMOS	ATR Infrared spectroscopy (ATR FT-IR)
PAMAS SVSS	Light obstruction
FlowCam VS	Dynamic imaging particle analysis
Bruker QUANTAX EDS	Scanning electron microscopy (SEM) Energy dispersive X-ray spectroscopy (EDS)

Our Labs



• Pleasanton, California

• Berlin, Germany

- ISO 9001:2015 compliant lab
- USP<788> compliance
- Custom method development
- Custom method validation
- Full visual inspection capabilities



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