

Measure What You Couldn't Measure Before!



RAMTEST-CSI™

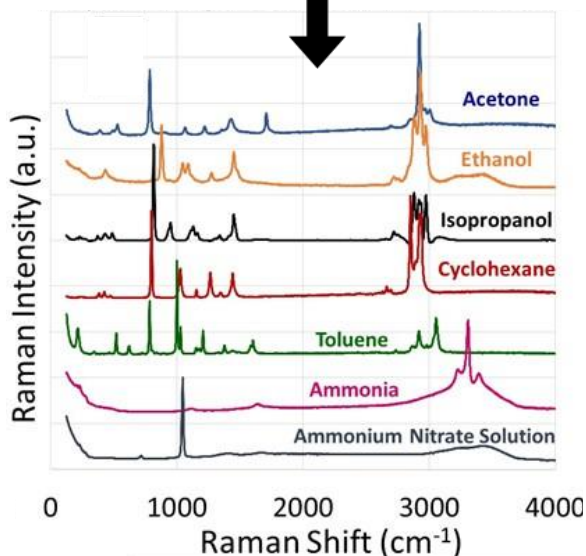
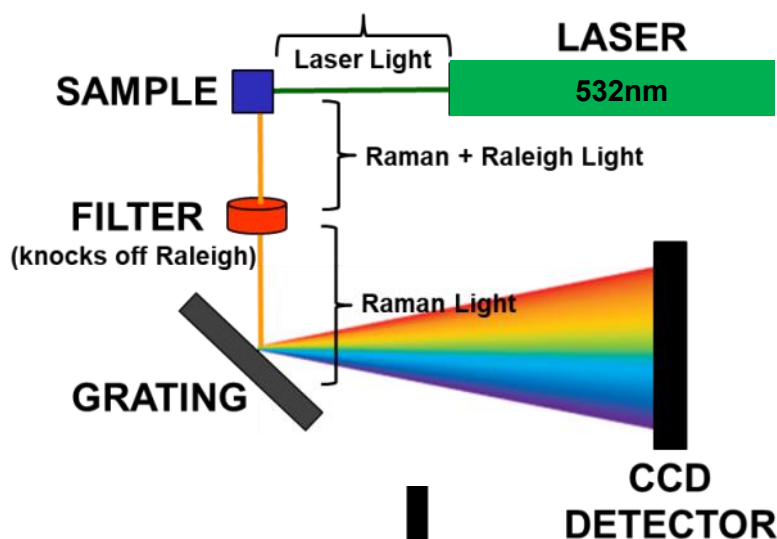
Handheld Raman Identifier
for Forensics, Crime Scene & Police Applications

INTRODUCTION TO RAMAN

Raman spectroscopy is a technique used to detect vibrational, rotational, and other low-frequency modes. Raman creates a unique fingerprint for each chemical substance.

Raman spectroscopy uses non-invasive, in-depth analysis. No preparation of the sample is required and measurement times are in seconds. Raman has the capability to measure organic as well as inorganic substances. These advantages have played a significant part in industry fields such as pharmaceuticals, chemistry, biologicals, forensics and life sciences.

Because of its non-destructive analysis and near immediate results Raman spectroscopy has become a valuable tool in forensics and CSI since precise identification of illegal substances and other materials is imperative.



Each molecule has its own unique and individual spectrum known as a 'fingerprint'

INTRODUCTION TO RAMTEST



The **RamTest™** is a state-of-the-art handheld analyzer that utilizes the most recent advances in Raman technology. This easy-to-use, lightweight, and ergonomic unit offers best-in-class analytical performance and unmatched cost-effectiveness. The superior performance is achieved by combining **532 nm laser** excitation (unique for handheld Raman) with the breakthrough methodology to reduce the impact of fluorescence on Raman measurements.

BENEFITS INCLUDE:

- 5–16 times faster analysis, improved analysis accuracy, dramatically reduced detection limits
- **spectral resolution** (4–6 cm^{-1})
- **full spectral range from 100—4000 cm^{-1}**
- Superior performance in water and most organic solvents
- Ability to measure delicate (for example, carbon nanotubes) and dangerous (for example, explosive) samples by utilizing up to 5–16 times reduced laser power (compared to conventional 785 and 1064 nm instruments) without compromising analytical quality.
- Instrument comes with a windows-based convertible tablet
- two-fold reduced unit cost



GENERAL ADVANTAGES

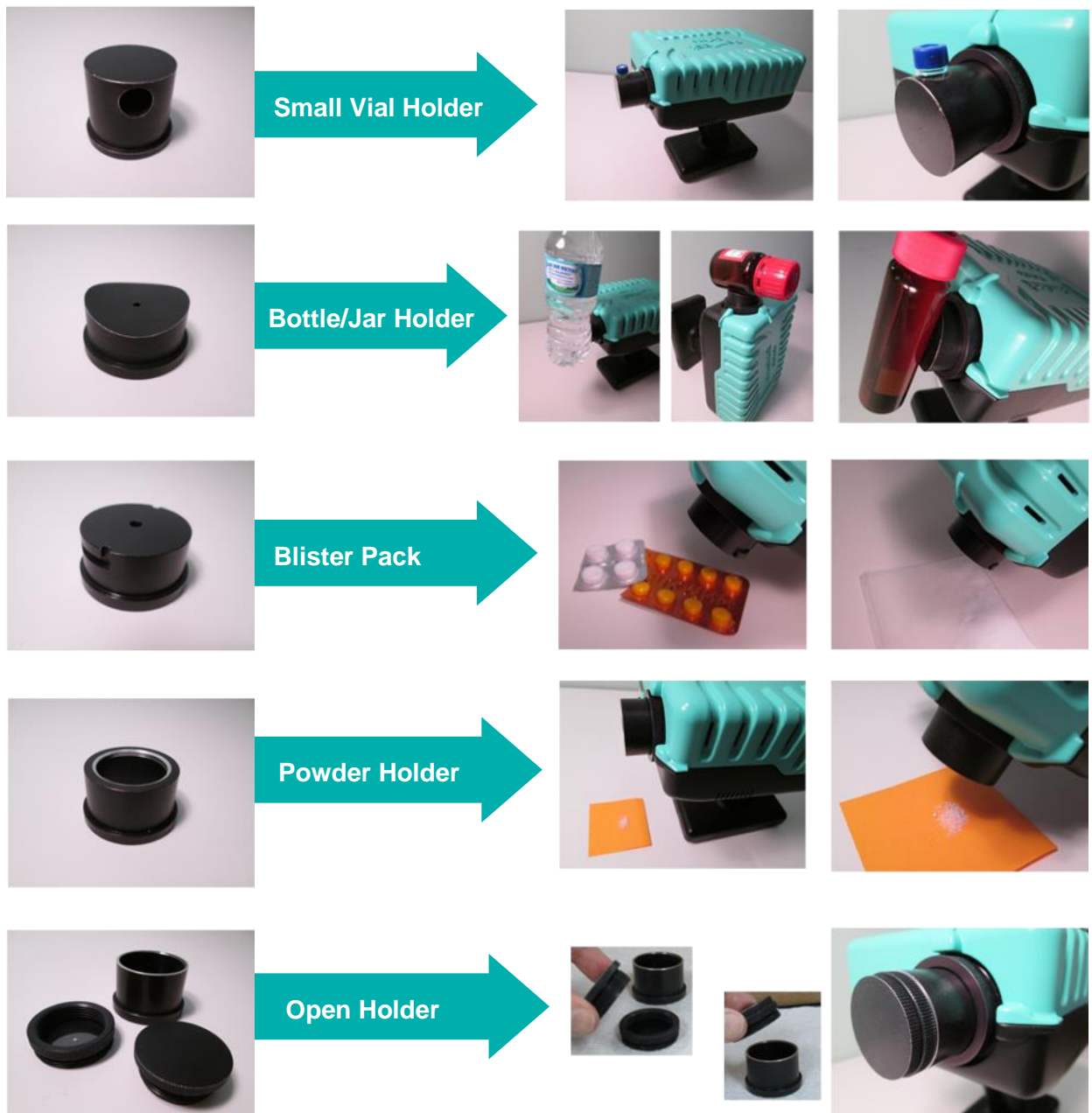
Portable: Measurements can be done anywhere

Rapid analysis: Seconds to minutes to get results compared to forensic lab turnaround times which take days or even weeks!

Extreme broad scope applicability scope!

- Liquids or gels (including water)
- Solids: powders, tablets or pills, chips, crystals, fibers, stains, etc.
- Gases
- Pure and mixed substances

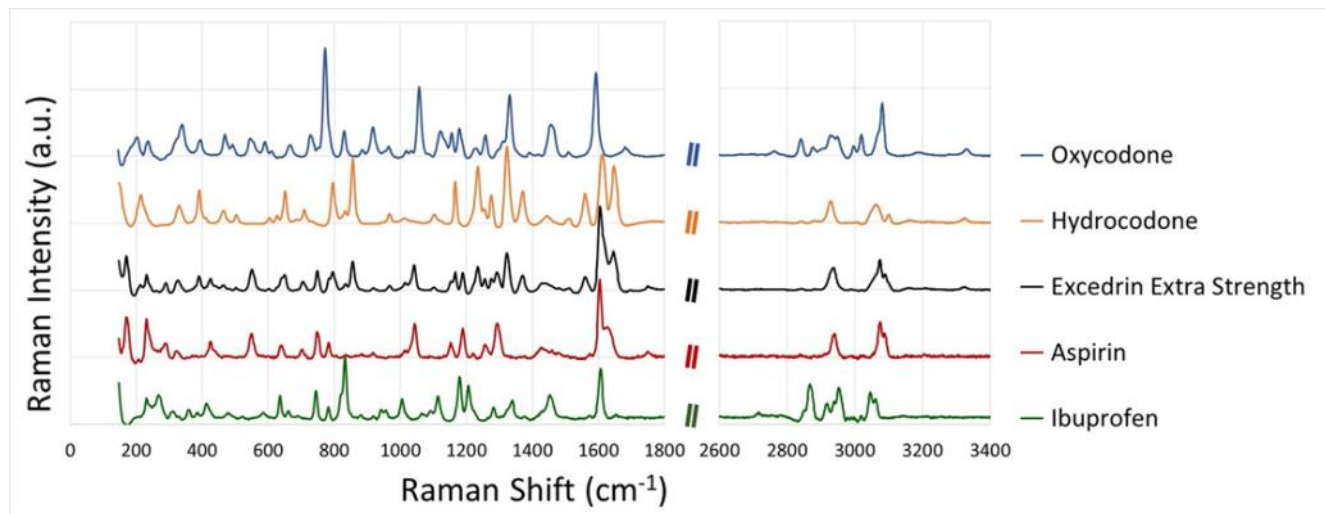
Use the different attachments to measure solids, liquids, powders or through vials/packageaging.



APPLICATION EXAMPLES

Opioid Applications:

Identification of Opioid-Containing Drugs

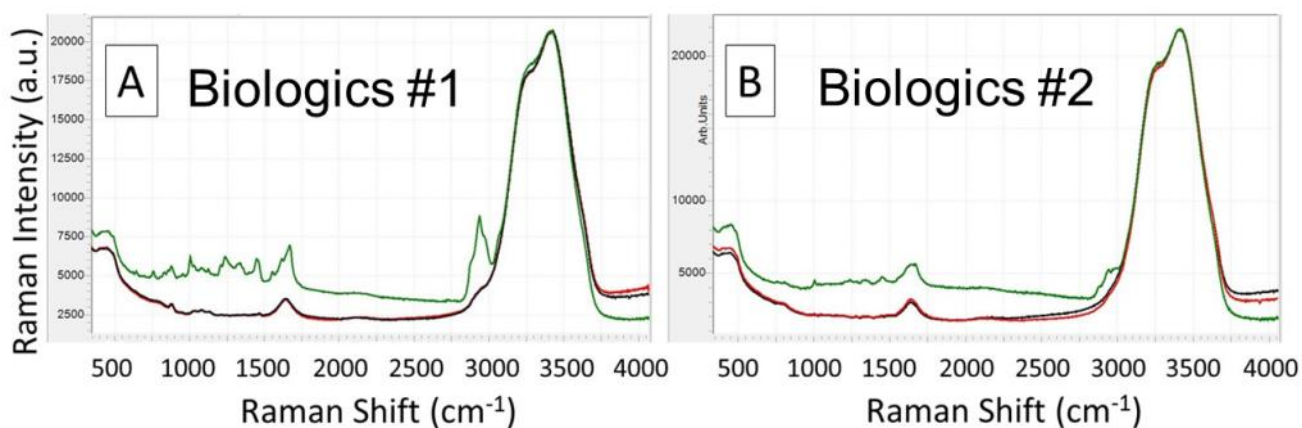


532 nm Raman spectra of the listed drugs show remarkable differences to enable reliable automated identification with RamTest-CSI™ handheld Raman identifier.

NOTE: 1800 – 2600 cm⁻¹ and 3400 – 4000 cm⁻¹ spectral regions are intentionally cut, since they do not contain any characteristic Raman bands.

BioPharma Applications:

Detection of Counterfeit Biologics



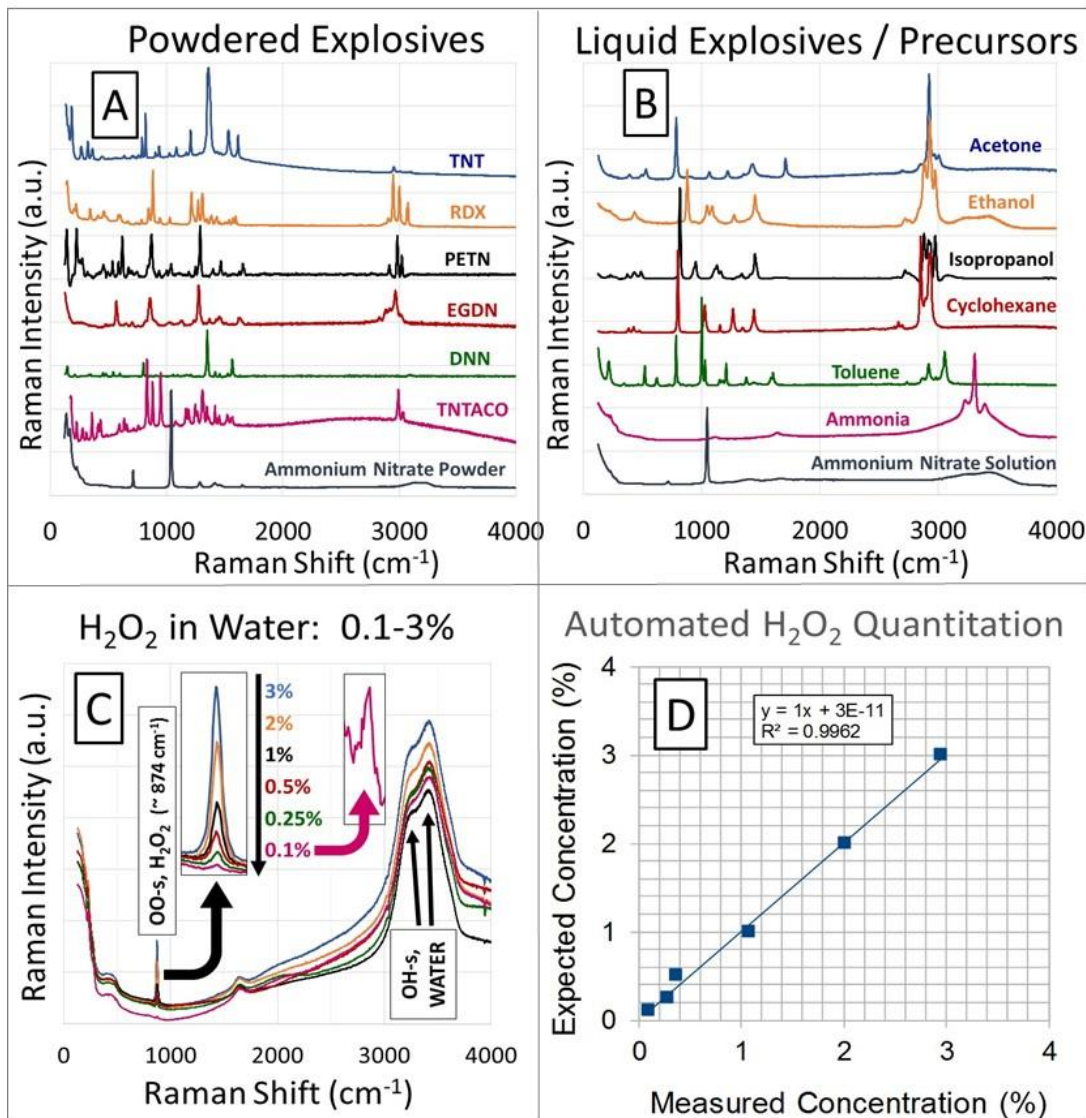
Original drug (green), counterfeit drug (red), and buffer / placebo (black).

NOTE: For quantitative API determination, data are normalized to the water 3200-3400 cm⁻¹ OH-stretching bands (unattainable with the other handhelds)

APPLICATION EXAMPLES

Explosives Applications:

Detection of Explosive Materials



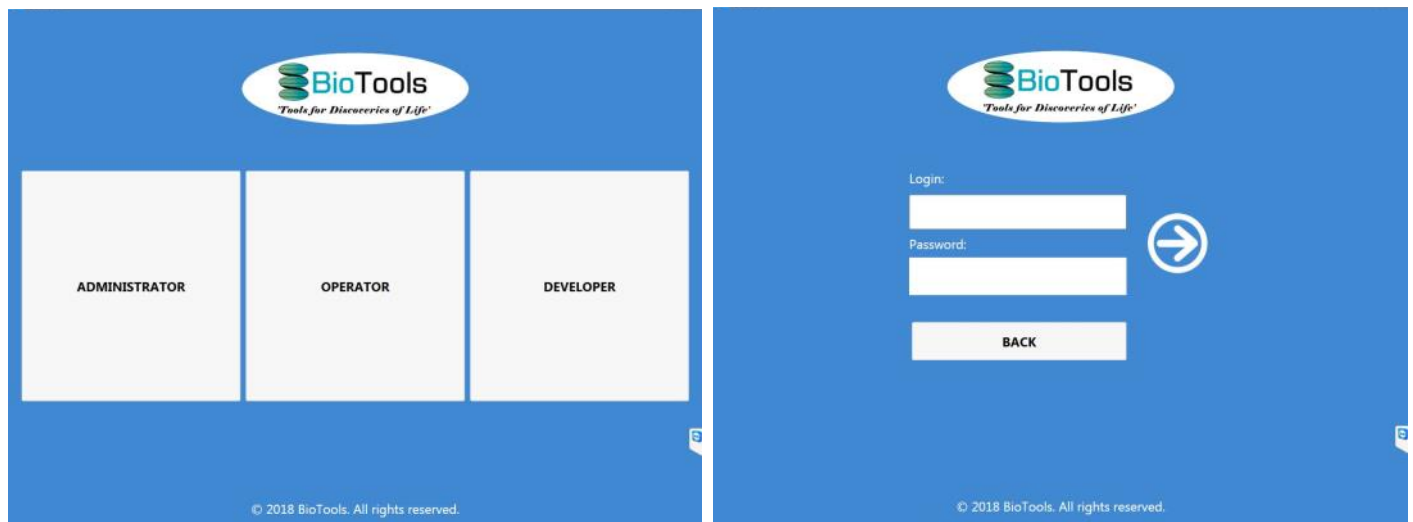
Spectra of Explosives Measured by a 532 nm RamTest-CSI™ Handheld Raman Identifier

A) Powdered explosives. **B)** Liquid explosives / precursors. **C)** Hydrogen peroxide (H₂O₂) solutions in water, 0.1-3%. Insets show magnified ~874 cm⁻¹ OO-stretching hydrogen peroxide band. **D)** Automated hydrogen peroxide quantitation using 3200-3400 cm⁻¹ OH-stretching water bands (unattainable with today's commercial 785 or 1024 nm handhelds).

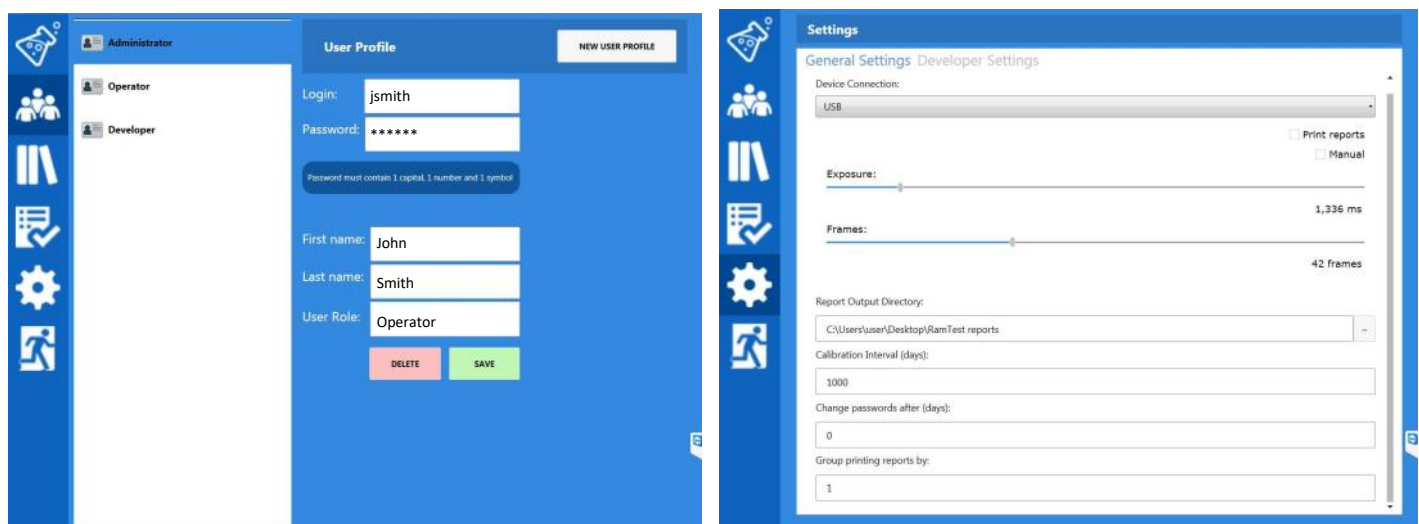
EASY TO USE, INTUITIVE SOFTWARE

21 CFR Compliant Software specifically designed for ID and QC applications.

General screen and login screen

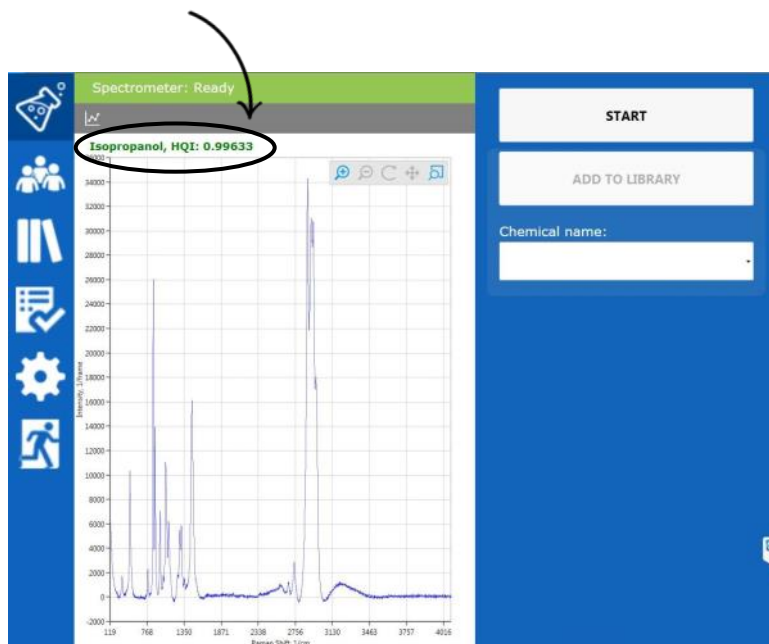


User profile screen and setting screen



EASY TO USE, INTUITIVE SOFTWARE

Identification with Hit Quality Index (HQI)



Material Library

REMOVE MATERIAL IMPORT DATABASE IMPORT FROM .TXT ADD FDM © DATABASE

- Acetic acid.64-19-7@demo (Limited access)
- Acetone.67-64-1@demo (Limited access)
- Acetylsalicylic acid.50-78-2@demo (Limited access)
- Chloramphenicol.56-75-7@demo (Limited access)
- Cyclohexane.110-82-7@demo (Limited access)
- Dimethyl sulfoxide.67-68-5@demo (Limited access)
- Ethyl alcohol.64-17-5@demo (Limited access)
- Glycerol.56-81-5@demo (Limited access)
- Isopropyl alcohol.67-63-0@demo (Limited access)

Enter material name...

Material Library

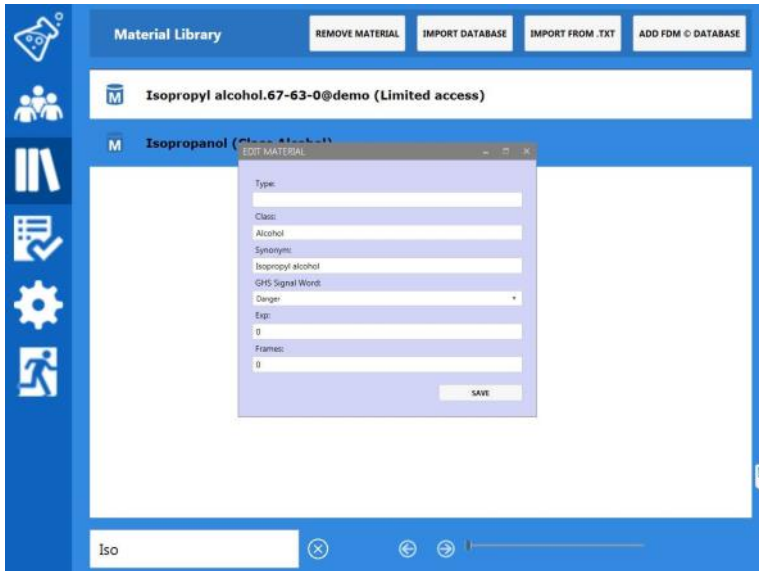
REMOVE MATERIAL IMPORT DATABASE IMPORT FROM .TXT ADD FDM © DATABASE

- Isopropyl alcohol.67-63-0@demo (Limited access)
- Isopropanol (Class Alcohol)

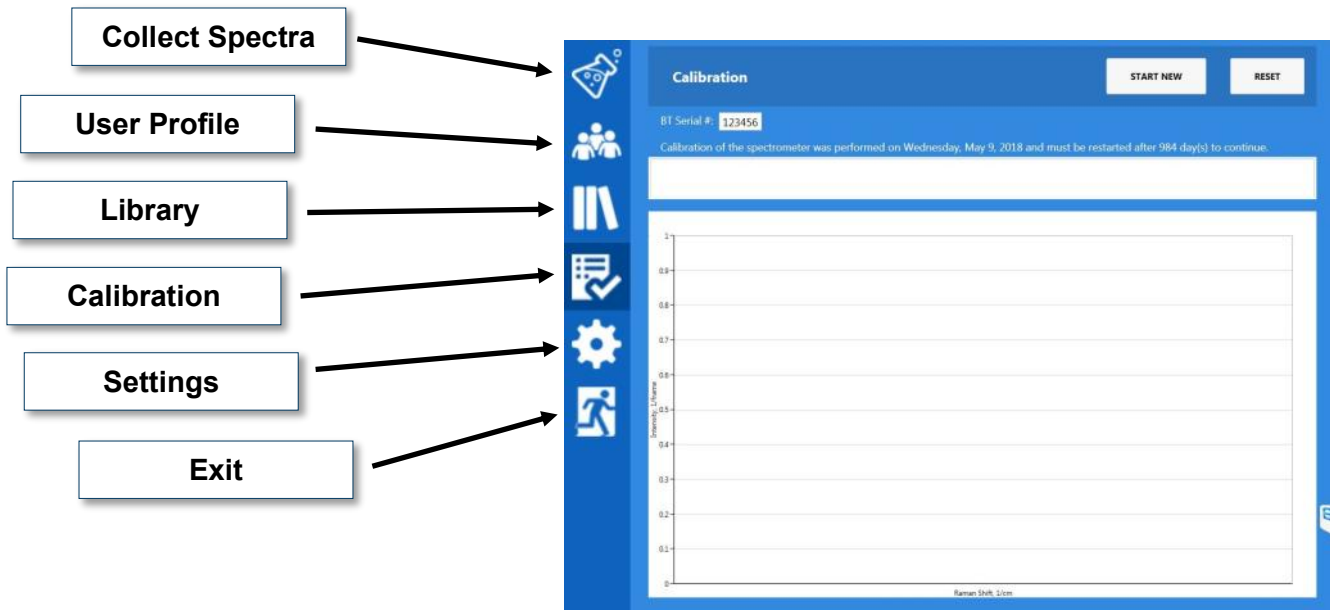
Iso

Searchable library

A customizable library database → add a commercial database

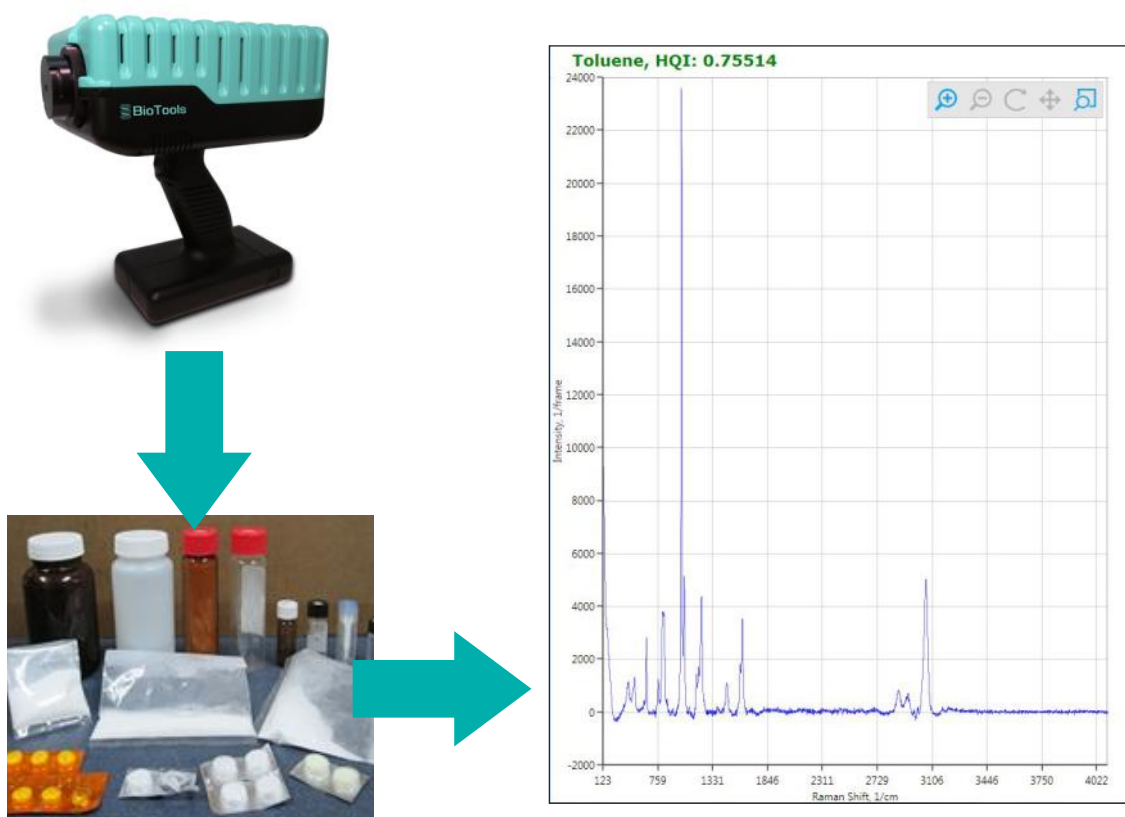


Software menu guide



EASE OF USE

- Truly hand-held, light weight
- User-friendly interface
- **“Push-button”** measurement
- Automatic adjustment of parameters maximize S/N
- Automatic subtraction of fluorescence background
- User-updatable database of reference compounds

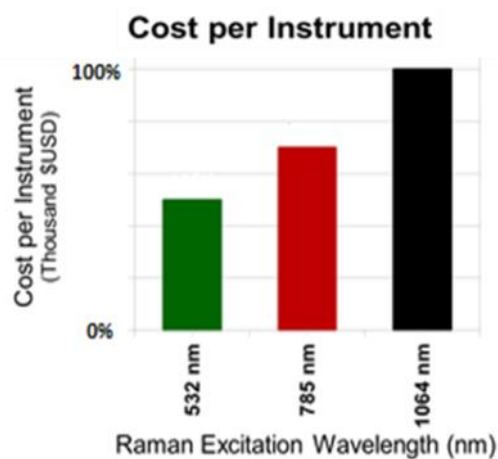
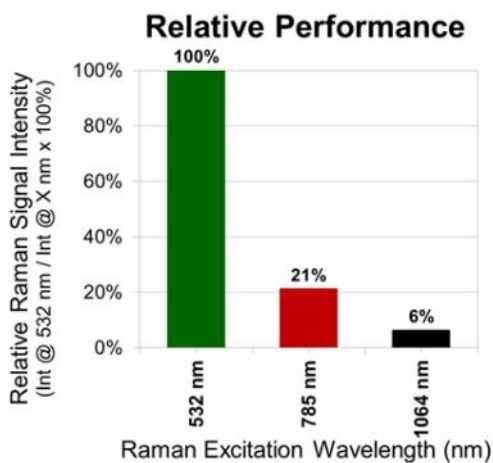


SEE MEASUREMENTS IN SECONDS!

PERFORMANCE & AFFORDABILITY

- Best performance-to-price ratio on the market
- Volume discounts are available

The **RamTest™** delivers the best-in-class performance combined with lowest-in-class unit cost versus the traditional 785 nm and 1064 nm units.



Call or email BioTools to receive a price quote.

info@btools.com | 561-625-0133

COMPARISON CHART & SPECS

Comparison:

Feature	532 nm	785/1065 nm
Highest sensitivity (~5 - 10x)	✓	✗
Fluorescence is automatically removed and subtracted	✓	some
Rapid analysis (1 to 100 seconds)	✓	✗
Unmatched spectral range (~100 - 4000cm ⁻¹)	✓	✗
Can measure through colored bottles, blister packs and plastic bags	✓	✓
Can use low laser power without compromising analysis quality	✓	✗

Specifications:

Specification	RamTest with 532nm Laser
Weight	4 ½ lb (2 kg)
Dimensions (without handle)	3.5" H x 6" W x 8" L
Spectral Range	100 – 4000 cm ⁻¹
Spectral Resolution	4 – 6 cm ⁻¹
Time Per Measurement	< 3 seconds
Operating Mode Start	2 minutes
Battery Continuous Operation	6 – 8 hours
Battery Recharge	2 – 3 hours
Software	BioTools RamTest™ Software
Extra Battery Pack + Charger	Yes
Continuous Measurement Mode	Yes
SERS available	Yes
Tablet	Windows Tablet
Case	Padded Carrying Case or Hardcover Case

OPTIONS

4 Choices of Integration

General reference databases are available (~15,000 compounds) or choose a specialized database such as forensics, minerals or biologics.



Ram-532™

with different accessories for vials, cells, solids, etc.



Ram-532™ with Stage



RamTest™

choose tablet or laptop



MicroRam-L532™

Olympus CX41 microscope + Raman

RamTest models available for specialized applications with their own dedicated software and databases:

RamTest-**BIO**
biologics



RamTest-**CHE**
chemistry



RamTest-**GEO**
geology/gems



RamTest-**ART**
art/archeology



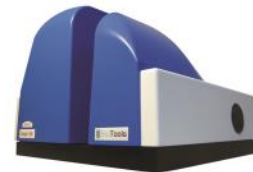
Characterization Experts: Chirality & Biologics



ChiralRAMAN-2X™



PROTA-3S™



ChiralIR-2X™



MANTIS™



ComputeVOA™



CompareVOA™

BioTools Worldwide



Europe • Asia • Middle East • South America

Corporate Headquarters
North America
17546 Bee Line Highway
Jupiter, Florida 33458 USA
Phone: 561.625.0133
Fax: 561.625.0717

info@biotools.us • www.biotools.us

