AI RAMAN

THE WORLD'S FIRST CLOUD AI HANDHELD RAMAN SPECTROMETER

Stay Connected to Raman Data, Anytime and Anywhere

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AI Raman - the World's First Cloud AI Handheld Raman Spectrometer

The AI Raman is the world's first cloud-based handheld Raman spectrometer with 785nm laser excitation. This handheld Raman unit is fully integrated with the Data A1 smartphone device and maintains constant WiFi/Bluetooth and 4G LTE connections, letting you stay connected anywhere, and anytime. The cloud-based data platform not only allows speedy analysis but also enables spectral library expansion with ensured security.

A1 Smart Phone + Raman Module

Handheld Raman

Ruggedized Case

A1 Phone, Raman Rugged Case

Smart Handheld Raman

The AI Raman handheld consists of two components; the Data A1 mobile phone and the Raman spectrometer module.

Raman Features:

- Compact and super lightweight (<400g)
- Ruggedized for field applications
- Integrated Raman with smartphone
- Intuitive user interface, easy to use
- Proprietary optical design for maximum sensitivity
- Built-in 4G LTE/Wifi/Bluetooth connection
- Smart control, automated setting
- Rapid material ID with Cloud-based analysis
- Proprietary deep learning AI algorithm
- Mixture analysis with components and ratio
- Factory spectral and user custom libraries
- Cloud data management for high security and flexibility
- Quick, Online and offline Scan

Versatile Configuration

# Stay Connected to Raman Data Anytime and Anywhere

Switch From Smart Phone to Raman With One Touch of the Screen

The AI Raman's unique architecture features a dual smartphone and Raman spectrometer domains. The A1 phone operates with the full functionality of a smartphone, including voice calls, emails, GPS locations, and image capture by camera. It can connect to the cloud platform via a cellular link even when WiFi is not available.

Smart Automated Operation

Operation of the AI Raman spectrometer is fully automated for integration time, background and dark correction. The intuitive interface is easy to use and requires no user training.
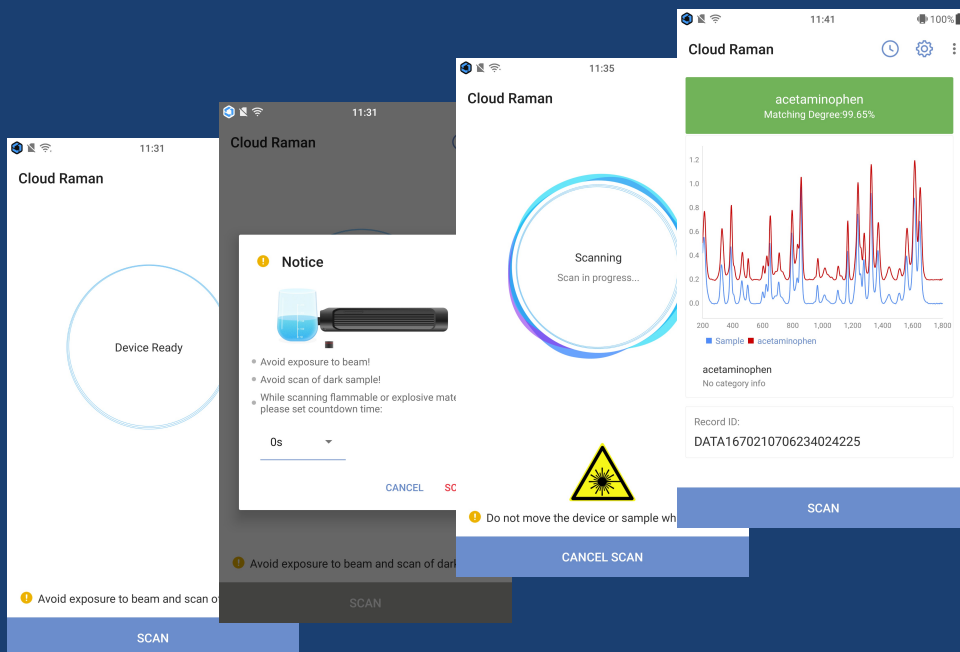
Cloud Data Platform
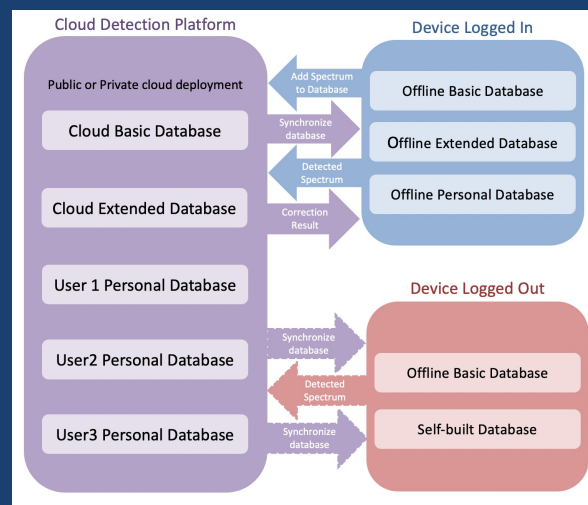
Both factory spectral and user custom libraries Cloud-based data analysis allows for faster material ID

A World of Applications for Field Material ID

The AI Raman is the world's first cloud-based handheld Raman spectrometer with 785 nm laser excitation. The device is fully integrated with the Data A1 smartphone device and provides constant Wifi/ Bluetooth/4G connectivity. It can be used for nondestructive material identification without any sample preparation for field detection in real time.

Key Specifications:

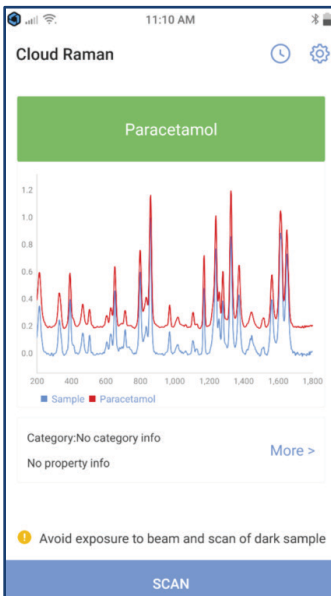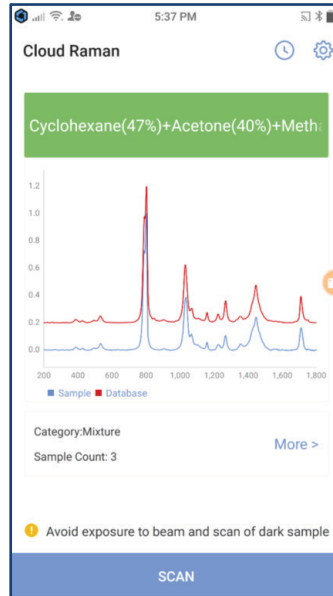| Spectrometer	
Excitation	laser 785 nm
Laser Power output	Up to 500mW, Adjustable
Spectral Range	200-1800 cm-1
Spectral Resolution (FWHM)	8-11 cm-1
Spectrograph	f/2
Integration Time	AUTO
Sample analysis time	3 sec (Typical)
Dimensions (mm)	159 (d) x 78.9 (w) x 27 (h)
Weight	410g/510g with rugged case
Operating Temperature	-10°C – 50°C
Smart Phone Operated and Cloud data	
Operating platform	Embedded Smart Phone operation
Operating Software	Smart phone Apps (Android)
Network connection	Wifi, Bluetooth, 4G-LTE
Data analysis	Local, Cloud based with deep learning algorithm
Spectral Library	standard factory library, and user custom built library
RGB Camera	8MP or 16MP
Data Ports	USB 2.0
Battery	5700 mAh
Cloud Data Management	
Device	Event, location, results logging, reporting
User	Password authentication, role-based access control
Cloud	Multi-tenant, Virtual Private Cloud

Drug Detection
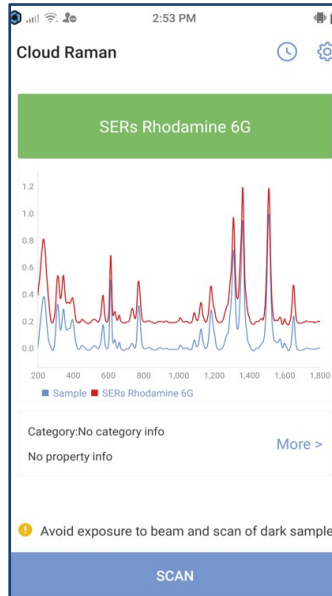
Material ID

Reaction Monitoring

Field Detection
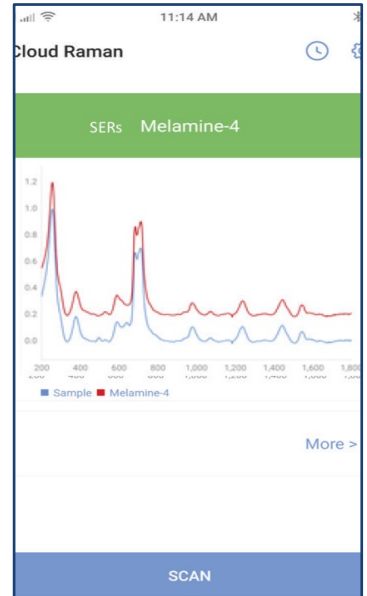
Fast Cloud Data Analysis

Speedy Detection

Mixture Analysis With Ratios

Trace Analysis with SERs

Melanine Detection with SERs

Deep Learning Algorithm for Material ID and Mixture Ratio Analysis

The AI Raman is the first Raman spectrometer with a cloud-based data platform and AI Deep learning algorithms. By leveraging TensorFlow (TensorFlow is Google Brain's second-generation system), a major mechanism for machine learning, Cloud Raman can rapidly recognize Raman Spectroscopy with high accuracy and reduce detection time drastically to fewer than 40ms. It can also recognize a mixture of three materials with great accuracy and speed.

Portable and Compact
The most portable Raman device on the market

24mm

AI Deep Learning and Cloud Data Platform

By leveraging cloud infrastructure (both private and public), the deep machine learning/training process can be conducted via wireless network instead of cumbersome servers. The cloud platform allows the data analysis beyond the handheld spectrometer via Cloud, ensuring research grade performance on a handheld device for the first time. It also provides a management platform to manage and connect all Cloud Raman devices for information sharing and real-time updates.

USER

ADMIN

mAIrobotics

About mAIrobotics

mAIrobotics is based in Irvine, California. We have built an end-to-end multimodal AI robotics system, along with various humanoid and non-humanoid service robots.

Together with our partners we offer solutions to make the workplace safer, healthier, cost effective and more efficient.

Our innovative and unified architecture consists of a multimodal AI cloud acting as the human brain, a fast and secure networking stack acting as the human nerve system, a robot commander, and finally the robot acting as human body or Avatar. This unified architecture can serve a vast number of smart, safe, and diversified robots simultaneously. Some of our highly trusted products are multimodal AI guard, commercial cleaning robot, portable Raman spectrometer, and robot development kit (RDK).

We strive for excellence and perfection for our customers.

mAIrobotics's Innovation & Proprietary Technologies