ChemImage Corporation - Falcon II Wide-Field RCI System

GENERAL DESCRIPTION:

FALCON II combines benefits of wide-field Chemical Imaging with dispersive Raman spectroscopy. This combination of powerful analytical multiple hardware options and unique, easy-to-use software makes FALCON II the most versatile and feature-rich Raman microscope platform available. Chemical Imaging combines digital imaging and Raman spectroscopy to provide molecular images that reveal material morphology, composition, structure and concentration. Chemical Imaging takes advantage of the microscope user's natural visual senses and perception to make complex analysis more intuitive and straightforward. FALCON II produces 2-D and 3-D molecular images with unequaled speed and quality. Duet Vision Technology™ delivers real-time simultaneous imaging and spectroscopy, allowing users to quickly and easily identify critical regions of interest. ChemImage proprietary use of a liquid crystal imaging spectrometer provides unparalleled image fidelity, spatial and spectral resolution for high throughput hyperspectral screening of materials. FALCON II also performs dispersive Raman spectroscopy at high spectral resolution for microscopy applications. Limited or no sample preparation required. Raman spectroscopy and Raman Chemical Imaging are compatible with aqueous systems. Non-destructive sample characterization can be performed through glass containers, thin plastic bags, blister packs. Application areas include drug content uniformity, particle size distribution, polymorph characterization, water quality monitoring, cancer research, polymer characterization, biological and chemical agent detection and identification.

TECHNICAL DESCRIPTION:

Chemical Imaging combines digital imaging and Raman spectroscopy to provide molecular images that reveal material morphology, composition structure and concentration. Falcon II can be configured to operate in visible as well as Raman with optional fluorescence or Near Infrared (NIR) absorbance/reflectance capabilities. Falcon II consists of 3 major subsystems all package in one convenient unit. Subsystems are an excitement source to provoke material response, imaging optics to acquire sample response information and an optical detection system with optical filters to detect high resolution spatial and spectral information.

CONTACT INFORMATION

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COST

- N/A/system
- $0.54/analysis

Tier Selection

Final tier assignment is based on overall product score.

- ● Top Tier
- ◐ Second Tier
- ○ Third Tier
- ◗ Fourth Tier
- ● Bottom Tier

RANKINGS

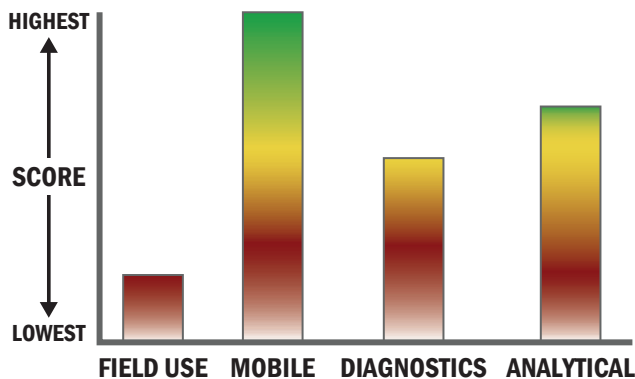|	Biological	Chemical	Radiological
FIELD USE System	◒	●	N/A
MOBILE Laboratory	○	◓	N/A
DIAGNOSTIC Laboratory	○	◓	N/A
ANALYTICAL Laboratory	◓	◓	N/A

## Survey Source

Vendor Supplied Information

Scoring Analysis

System scores are compared across the four scenarios and ranked from highest to lowest.

Impact Chart

The Impact Chart is a spider graph representing specific categories and designed to give the reader a visual depiction of how a particular system is expected to operate across the four different scenarios. The score for each of the seven categories is presented as the percentage of the total possible score. Higher category scores extend the spokes of a graphic toward the outer edge of the chart. The area graphed for each of the four scenarios relates to how well the system performed in that scenario. Graphics for each of the four scenarios are super-imposed for ease of comparison.
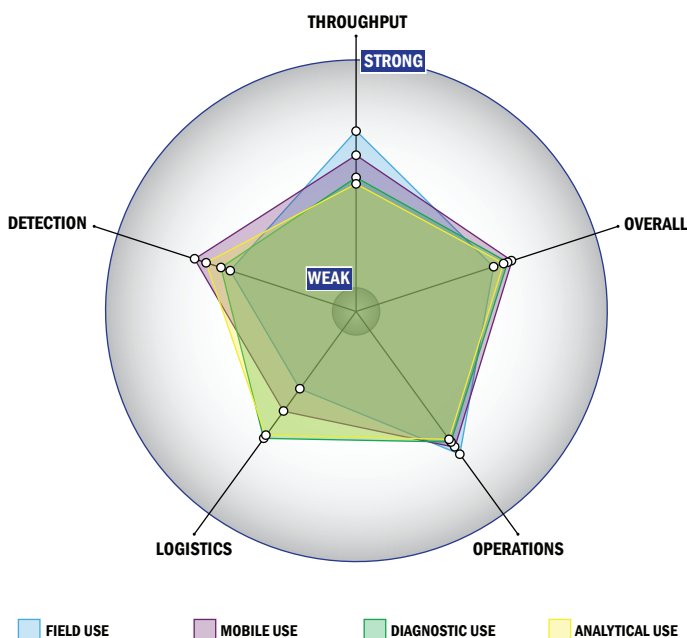

Evaluation Criteria

Throughput:
- Between 2 and 15 minutes for detection
- Multiple samples, multiple tests/sample per run
- Less than 32 samples every 2 hours
- The system could be adapted to a semi-automated system with some effort
- Device or system is intended for multiple detection assays
- 0-1 solutions, buffer, eluents, and/or reagents
- 2 components
- 10-20 minutes is required for set-up
- 1-2 steps are required for detection

Logistics:
- A day of training and technical skills are required
- Larger than a home dishwasher
- More than 50 kg
- Wireless and wired connections are available
- System or device has 110V electrical requirement

MOST MATURE ← LEAST MATURE
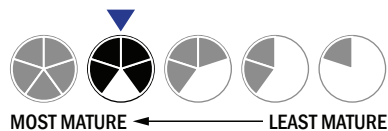
Operations:
- Can be used from 4°C to 41°C
- Components must be stored at room temperature (27°C)
- Performance is not influenced by relative humidity
- Greater than 3 years shelf life
- Greater than 10 years expected life
- Results can be viewed in real-time
- The system could be adapted to a fully autonomous system with some effort
- The system software is closed and not available for modification
- The system hardware is closed and not available for modification

Detection:
- Not possible for the system to achieve 510K clearance
- Possible the system could receive FDA approval, no current efforts at this time
- Less than 10 µL
- Fair specificity. Consistent level of false alarms (5-10%)
- 100-1,000 CFU per mL
- 10,000-100,000 PFU per mL
- 100-1,000 ng per mL
- Spore lysis not necessary for detection by system
- > 1 ppt
- System currently can identify liquid chemical agent