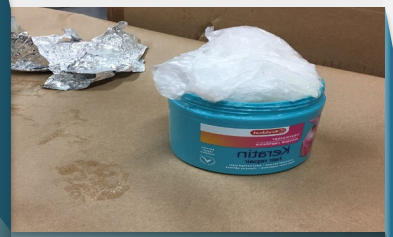
ADVANCED TECHNOLOGY

STREAMLINES PROCESSES



ELIMINATES CAPABILITY GAPS

~~TRAFFICKING~~

~~DISTRIBUTION~~

~~THREAT SYNTHESIS~~

Rigaku

Leading With Innovation

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24 July 2019

SO WHAT? WHO CARES?

- **Space- Solving US DHS technology and process capability gaps:**
  - Rapid/accurate/reliable **identification** of narcotics, precursors, cutting agents, explosives, and other chemical threats – through packaging
  - Streamlines screening processes and interdiction throughput – packages, baggage, and belongings
  - Aids DHS collaboration efforts with USPS, law enforcement and others
- **Solution:**
  - Rigaku's 1064nm - based handheld Raman with integrated Automated Colorimetrics
    - One device meets presumptive testing requirements
- **Results:**
  - DHS/CBP/TSA to benefit from advanced technology that streamlines processes and eliminates capability gaps.
  - ResQ already proven effective for mailroom applications at JFK, MIA, CBP- Puerto Rico & DHS ICE – SFO and Atlanta.
- **TRL:** 9
- **Contact:** Mr. Bree Allen - bree.allen@Rigaku.com - 781-328-1024

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RIGAKU ANALYTICAL DEVICES, INC

2011

Rigaku Raman Technologies (RRT) founded

2012

RRT introduces line of first generation portable and handled Raman analyzers

2013

ISO 9001:2008 certification

Analytical Scientist Innovation Award

- RRT opens new corporate office: Burlington, MA

2014

All-Star Innovators Award

- RRT opens new corporate office: Burlington, MA
- Rigaku Elemental Technologies (RET) founded

RRT launches revolutionary next generation **Progeny™ 1064nm** handheld Raman

2015

RRT launches **Progeny™ ResQ™** Safety & Security Analyzer

ResQ Wins Top Award

- RRT & RET rebranded: Rigaku Analytical Devices (RAD) Opens ISO 9001:2008 Certified HQ and manufacturing in Wilmington, MA
- ResQ selected and participates in Thunderstorm 15
- **ResQ selected for US Army JPEO tech refresh for DR SKO**

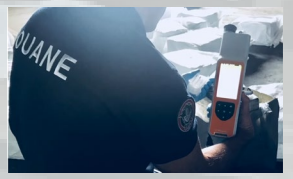
RAD launches **KT-100™ Katana™** Handheld LIBS Metals Analyzer

2016

KT-100™ Becomes 1st MIL STD 810G IP-68 certified Rugged metals analyzer

KT-100 Wins Top Innovation Award

- RAD ships 500th handheld analyzer globally
- ResQ aids France Customs seizure of 1.5 tons of cocaine



2017

RAD launches **Progeny™ FLX™** Narcotics Analyzer

RAD launches **ResQ™ CQL™** Safety & Security Analyzer

2018

- **ResQ selected for US Army JPEO tech refresh for DR SKO standard kit**
- ResQ selected and completes DHS TSA Innovation Task Force demonstration

RAD and DetectaChem integrate Automated Colorimetrics onboard **CQL** – bulk and trace on one unit

2019

- CQL selected for Thunderstorm 19

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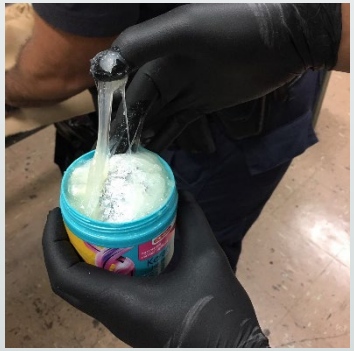
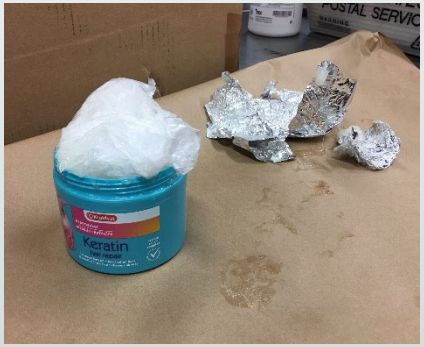
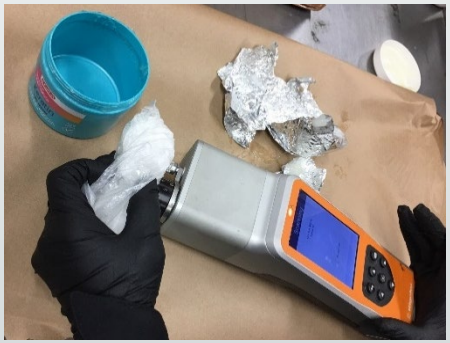
ADVANCED TECHNOLOGY

Fast and reliable identification of illicit narcotics, explosives and other substances.







ResQ effectively fills analytical performance gaps other technologies cannot:

- Rigaku's 1064nm better identifies chemical fingerprint
- Minimized sample interference from fluorescence compared to 785 and 830 nm Raman and moisture interference using FTIR
- MIL-STD-1472G Human Factor Efficiency designed and tested for ease of use by operators of varying skill levels
- Results in under 1 minute
- Large database easily expandable by user
    - Fleet management - transfer database to other units in the field

***Rigaku created custom CBP/TSA library as requested**

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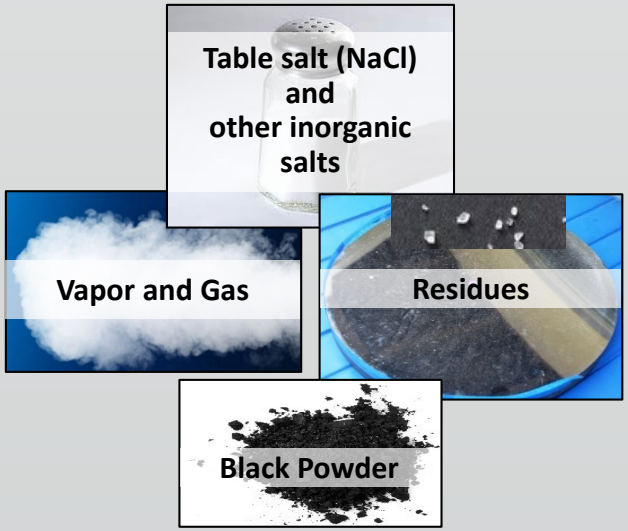
CAPABILITY SCOPE

Identifiable substances

- Pure and degraded - colored liquids, solids, pastes and gels
- Loose or in translucent packaging
- Major component present at 5-10%
- Bulk quantities – enough sample to cover 5 mm aperture

Limitations



Samples in opaque packaging

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RIGAKU'S RESQ STREAMLINES PROCESSES

Use case: Rapid mailroom/cargo clearance

- Increases testing and interdiction throughput
- Significantly reduces number of samples requiring confirmatory testing
- Reduces pressure on CBP
  - Clear packages faster so CBP can meet the 3-day USPS release requirement
  - Proven to reduce backlog
  - Reduced cognitive load on officers – ease-of-use by operators of varying skill sets

Use case: Increased border protection and crossing inspection

- Increases testing and interdiction throughput
- Significantly reduces number of samples requiring confirmatory testing
- Better evidentiary documentation using onboard camera to capture images of samples
- Reduced cognitive load on officers
  - Speed of analysis
  - MIL-STD-1472G Human Factor Efficiency designed and tested for ease-of-use

Use case: Efficient Public transportation screening

- Rapid and definitive chemical threat identification
- Clear passenger and baggage alarms faster
- Reduced TSSE support requirement

BARRIERS FOR DEPLOYING NEW TECHNOLOGY

- Prohibitively long technology evaluation times by government – often years
  - Companies launched next generation technology while previous generation still in testing process
- Outdated and prohibitive requirements and CONOPS
- Decision makers repeatedly selecting less capable technology – often at a higher lifecycle cost
- Heavy influence by large traditional government contractors – restricts non-traditional performers
- Sole-source multi-unit (100's) IDIQs not allowing "Or Equal"
- Voice of the operator not weighted heavily in procurement decision making process

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