LEADING WITH INNOVATION.

Rigaku Analytical Devices

APPLICATION NOTE

NARCOTICS IDENTIFICATION USING HANDHELD RAMAN

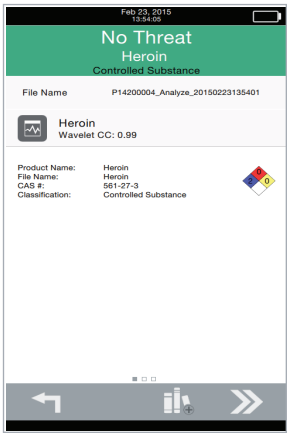
- Category A technique by SWGDRUG
- Measure through packaging
- Extensive library of over 12,000 compounds

Progeny ResQ™

Mobile techniques for fast and accurate identification of illegal drugs and narcotics are in demand by several agencies involved in removing controlled substances from circulation. Raman spectroscopy is considered a confirmatory test under Category A by the Scientific Working Group for the Analysis of Seized Drugs (SWGDRUG), and may be used towards obtaining sufficient probable cause to hold suspects. Street drugs are typically contaminated with degradation products, impurities, diluents and unreacted precursors. These contaminations often will have strong fluorescence intereference and cannot be analyzed using previous generation 785nm Raman-based systems. Handheld Raman using 1064nm excitation reduces this interference.

CHEMICAL DETECTION IN THE FIELD

The high specificity and reduced fluorescence of the handheld Rigaku Progeny ResQ allows it to identify common narcotics, as well as identify cutting agents, precursors, clandestine lab hazards, and in many cases even the manufacturing source. Some examples of the high specificity and quality spectra observed are shown in Figures 1 and 2. These spectra illustrate the ease with which Progeny ResQ can differentiate between compounds, even if they have similar structures.



Screenshot of heroin results using a Progeny ResQ handheld analyzer.

MINIMIZE SAMPLE INTERFERENCE WHILE MAXIMIZING EFFICIENCY

Raman spectra of street heroin was easily collected using a Progeny ResQ 1064nm excitation compared to 785nm Raman in Figure 3. When measured at 785nm, the sample shows much more fluorescence, as can be seen by the broad curvature of the baseline. This fluorescence obscures the specific characteristic Raman peaks of the heroin.

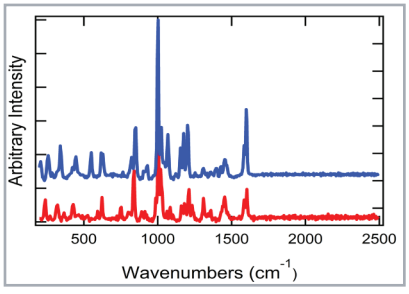


Figure 1. 1064nm Raman spectra of ephedrine HCl and methamphetamine HCl.

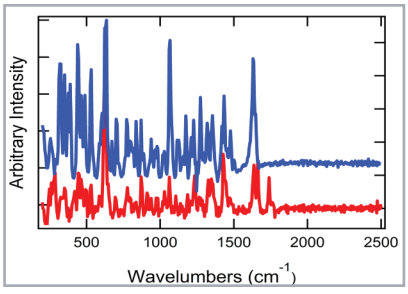


Figure 2. 1064nm Raman spectra of morphine HCl and street heroin.

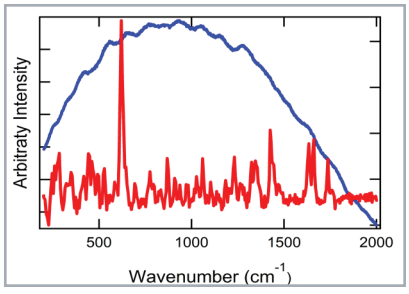


Figure 3. Raman spectra of street heroin collected at 1064nm and 785nm.

CONCLUSION

The high specificity and mobility of the handheld Progeny ResQ makes it ideal for the identification of narcotics, even impure street drugs. Its integrated digital camera is optimal for tracking samples and creating complete reports, simplifying analysis procedures.

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