

Nitazene Detection using an Agilent Resolve Handheld Raman Analyzer

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Safe identification of potent synthetic opioids

Nitazenes, also known as benzimidazole-opioids, are potent synthetic opioids that were developed 60 years ago as potential pain relief medication. The drugs were never approved for clinical use, however, due to adverse side effects, including the risk of overdose.¹ Certain nitazenes can be more potent than fentanyl and are increasingly found on the illicit drug market in North America and Europe.² Nitazenes are available as powders, tablets, or liquids and have been found with other psychoactive substances, including illicit opioids and benzodiazepines.³ These material types present a high risk in their pure form. Also, due to their high potency, the risk remains after these substances have been prepared and packaged for sale.

The **Agilent Resolve Handheld Raman Analyzer** uses **spatially offset raman spectroscopy (SORS)** technology to identify hazardous materials, explosives, and narcotics concealed behind single and multiple barriers. These barriers can include colored and opaque plastics, glass, paper, card, wrapping, and fabrics. The combination of SORS, high data quality, reduced fluorescence interference, and a library continuously updated with new psychoactive substances makes the Resolve a powerful tool in the detection and identification of controlled substances. As of library version 42, over 30 different nitazenes can be identified using Resolve.

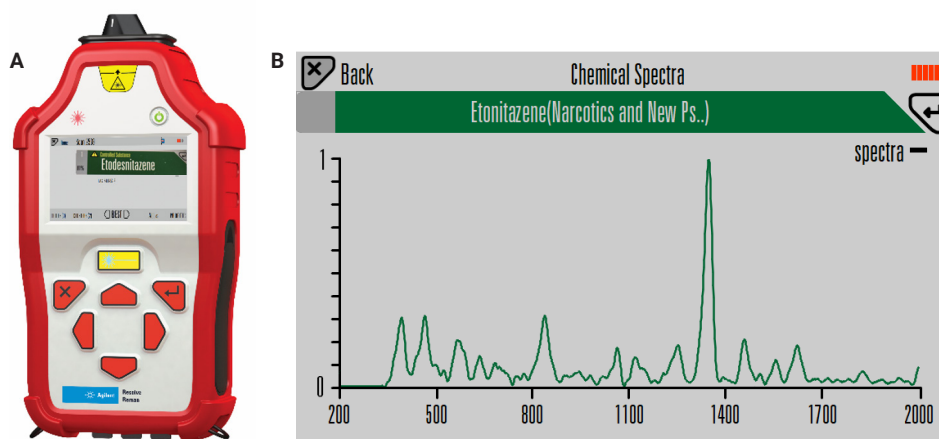
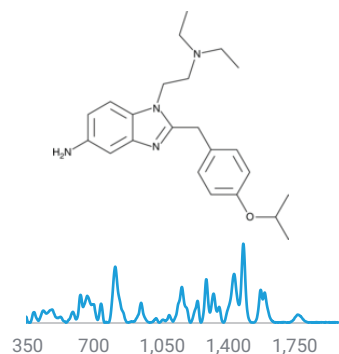


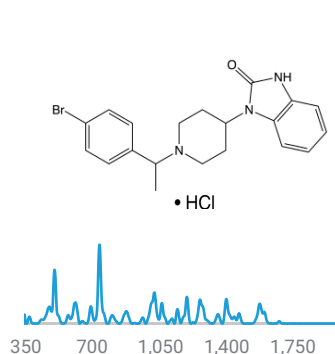
Figure 1. (A) Agilent Resolve handheld Raman analyzer. (B) SORS spectrum of etonitazene in the Agilent Resolve "Narcotics and New Psychoactive Substances" spectral library.

Structure and Raman spectra of nitazene materials included in the Resolve library

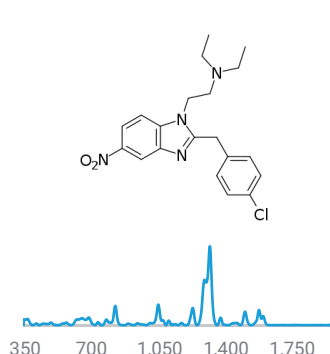
5-Aminoisotonitazene



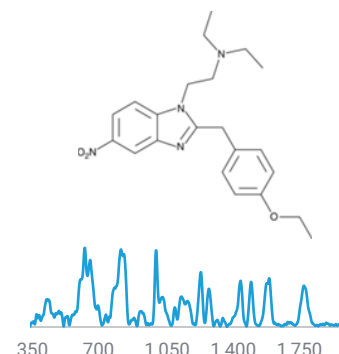
Brorphine HCl



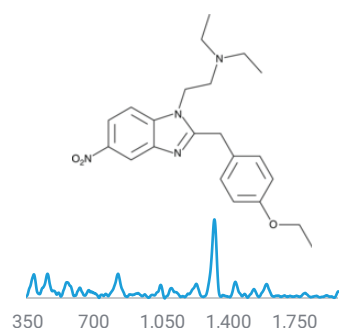
Clonitazene



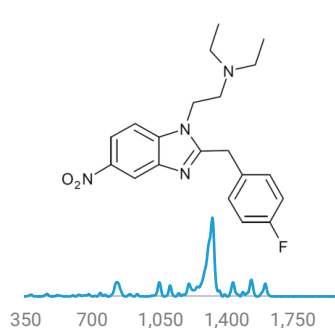
Etodesnitazene



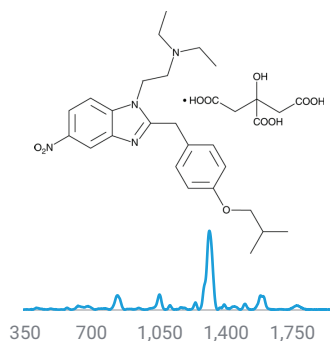
Etonitazene



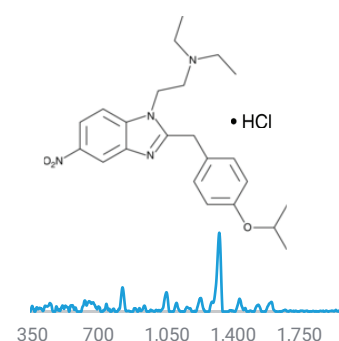
Fluonitazene



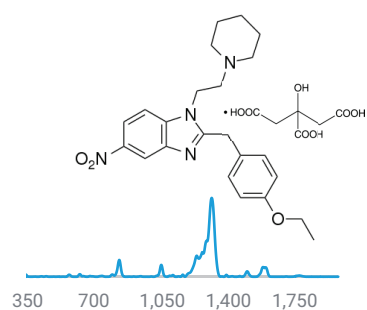
iso-Butonitazene citrate



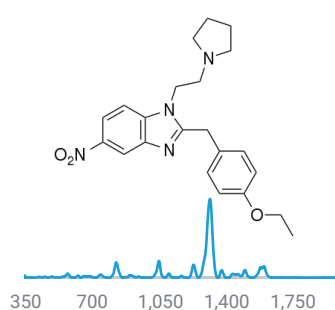
Isotonitazene



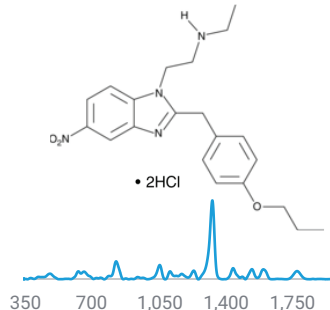
N-Piperidiny etonitazene citrate



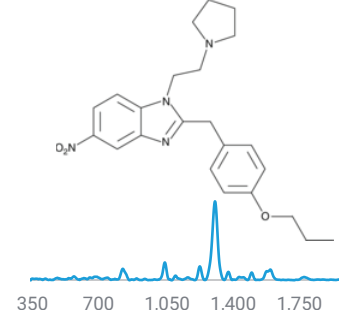
N-Pyrrolidino etonitazene



N-Desethyl protonitazene 2HCl



N-Pyrrolidino protonitazene



Fast, direct identification of narcotics

The Agilent Resolve handheld Raman analyzer with SORS and Resolve Narcotics and New Psychoactive Substances spectral library can be used for the identification of narcotics in the original packaging. Direct analysis using the Resolve minimizes the risk of accidental exposure to the compounds by law enforcers.

References

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3. Drug Enforcement Administration, Diversion Control Division, Drug & Chemical Evaluation Section. Benzimidazole-Opioids, January **2024**. https://www.deadiversion.usdoj.gov/drug_chem_info/benzimidazole-opioids.pdf

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