



Validation/Authentication of Physical Standards

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Accreditation Requirements

- ISO/IEC 17025:2005(E) Section 5.6.3.2
Reference Materials
 - Reference materials shall, where possible, be traceable to SI units of measurement, or to certified reference materials. Internal reference materials shall be checked as far as is technically and economically practicable.



Accreditation Requirements

- ASCLD/LAB-*International* Supplemental Requirements, 2011 Edition, Section 5.6.3.2.1
 - Reference collections of data or items/materials encountered in casework which are maintained for identification, comparison or interpretation purposes (for example, **mass spectra**, motor vehicle paints or headlamp lenses, **drug samples**, typewriter print styles, wood fragments, bullets, cartridges, DNA profiles, frequency databases) shall be fully documented, uniquely identified and properly controlled.



Typical State/Local Lab SOP for Verifying Physical Standards

- Verify by at least one structural elucidation technique (GC/MS, FTIR, NMR, etc) and compare to published reference spectra.



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 - GBI: For newly encountered substances that have no previously published data, the Technical Leader approves the verification. Verification data utilizes different techniques and/or different extraction procedures.

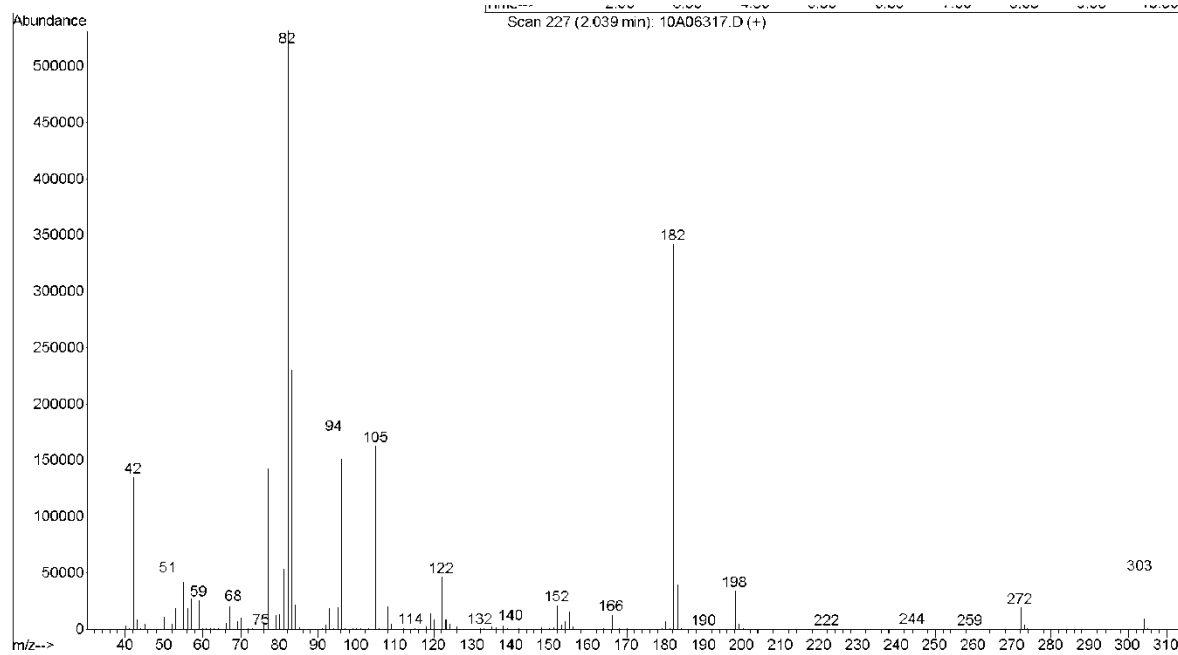


For "Classical" Drugs of Abuse

- Obtain a standard from any established reference company
 - Certificate of Analysis shows a practical level of traceability
- Compare data any number of references
 - Instrumental Data for Drug Analysis (IDDA)
 - Peer reviewed scientific journals
 - Clarke's Analysis of Drugs and Poisons
 - Previously validated standards

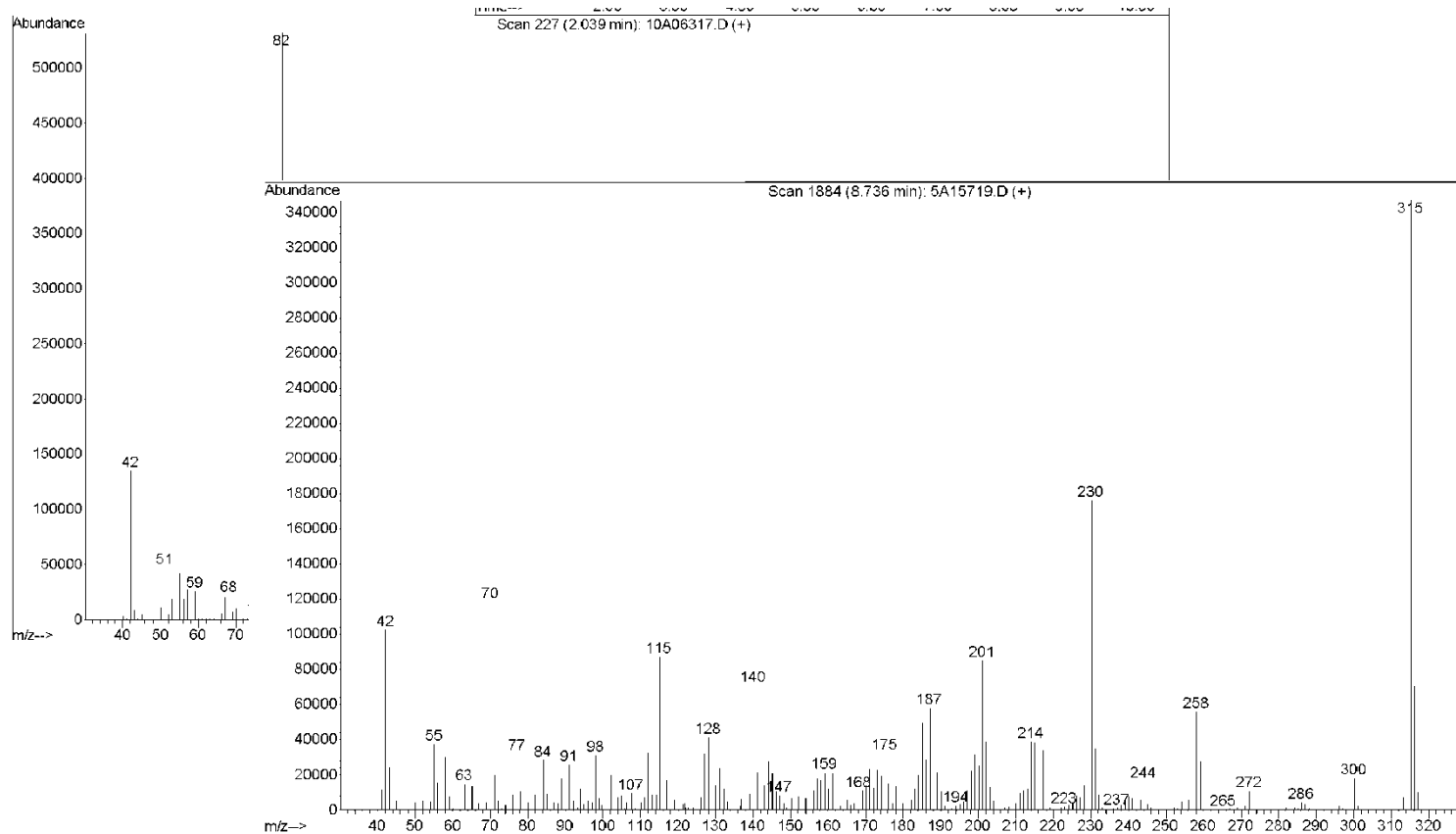


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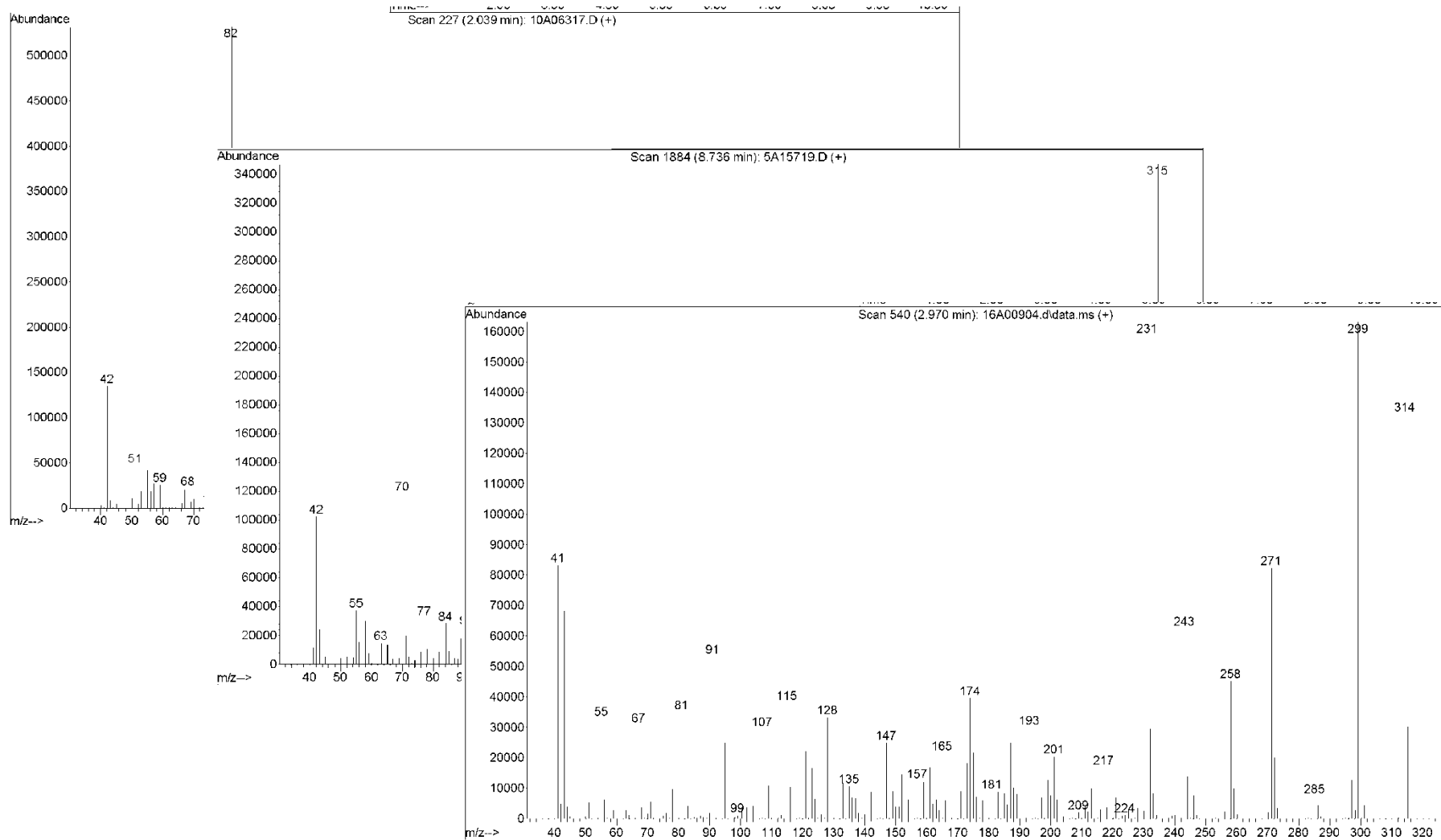


For "Classical" Drugs of Abuse





For "Classical" Drugs of Abuse





For “Emerging” Drugs of Abuse

- Obtain a standard from any established reference company
 - Certificate of Analysis not always provided
- What do you compare your data to?
 - Company databases
 - Previously published data
 - Using the same manufacturer’s standard?
 - Using the same lot of standard?
 - Data from other laboratories

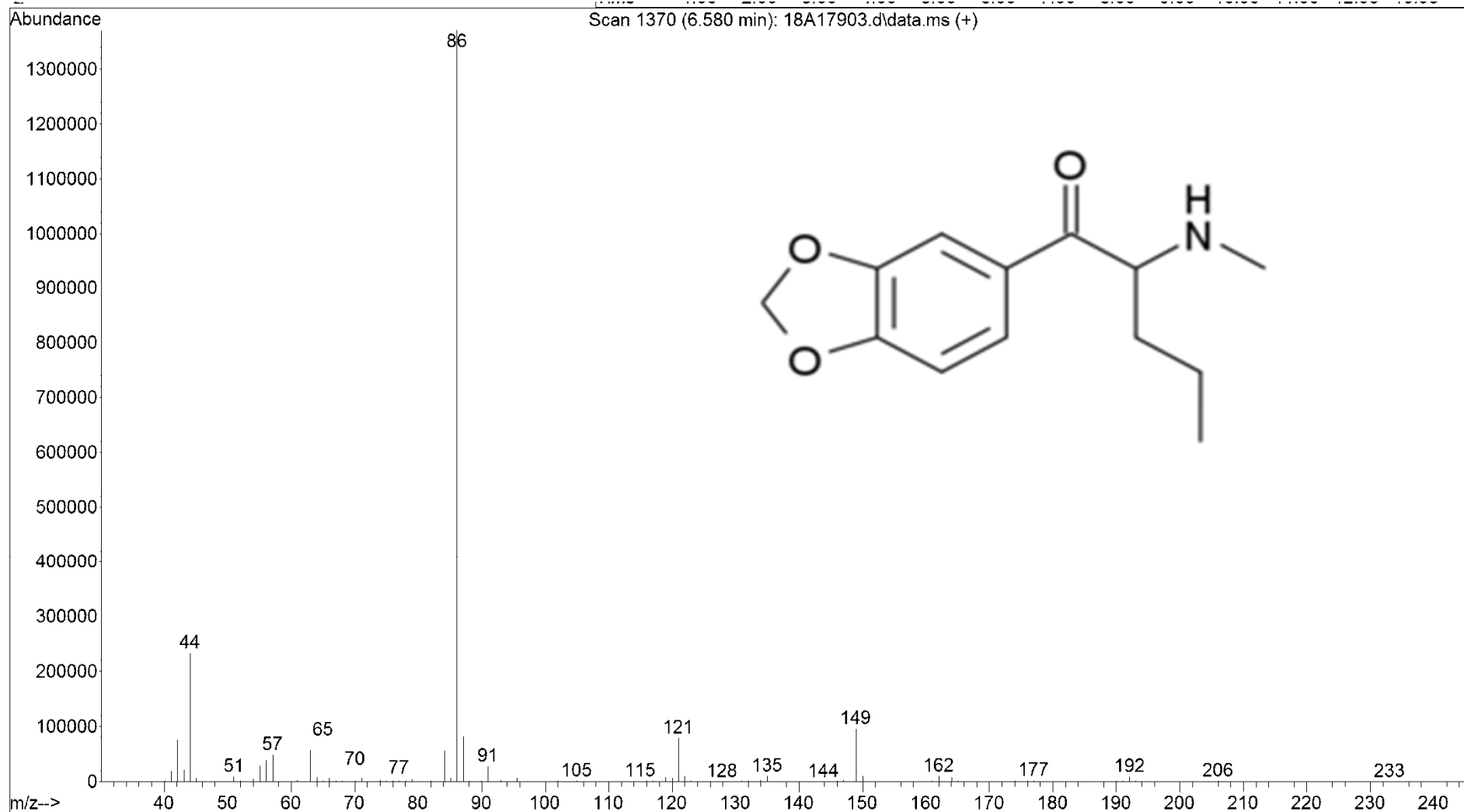


How Do You Actually Verify?

- How can you ensure the standard is in fact what you ordered?
- How can you ensure the verification data is reliable and reproducible?
- Without historical validations, these questions can be very difficult for the state/local chemists to answer.

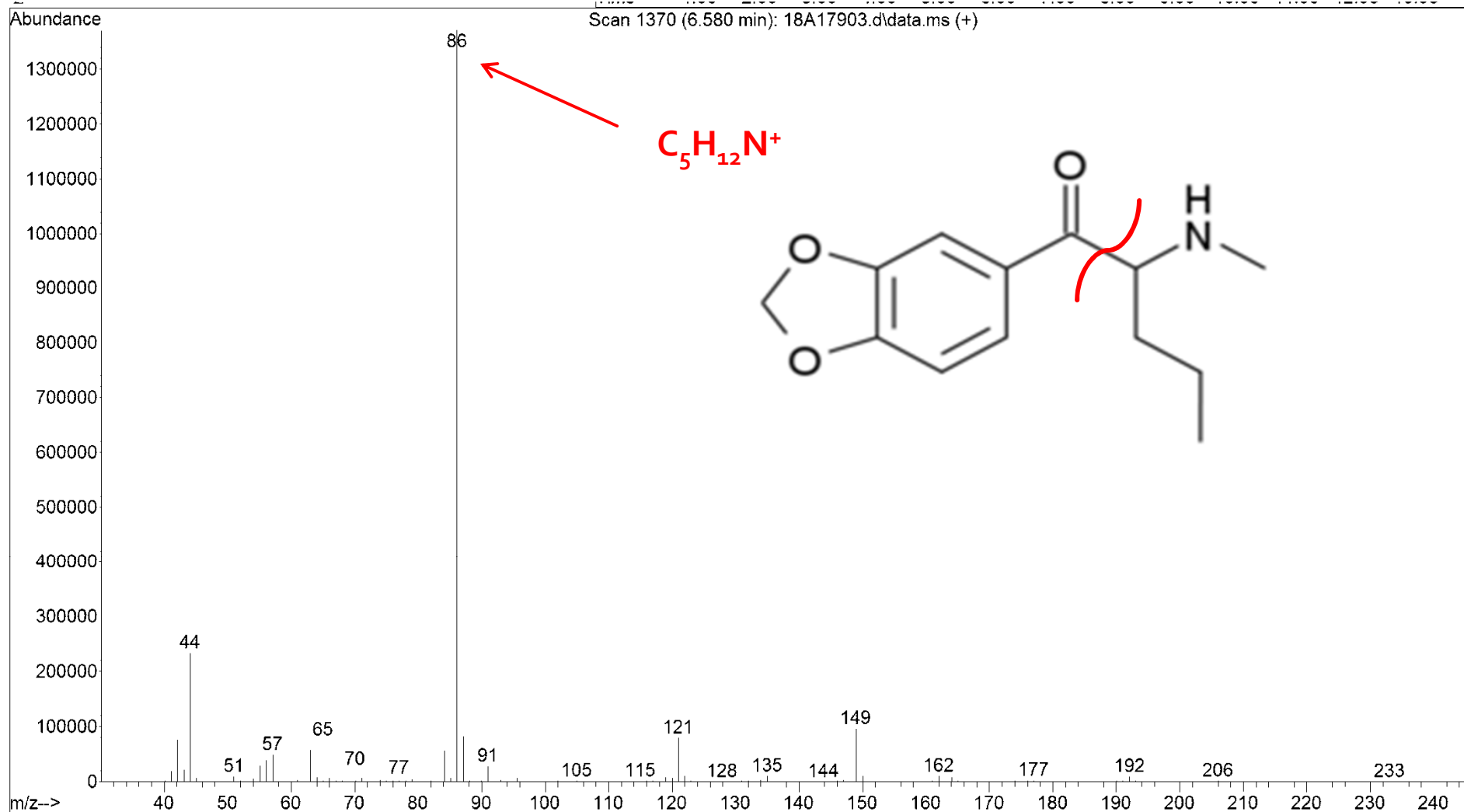


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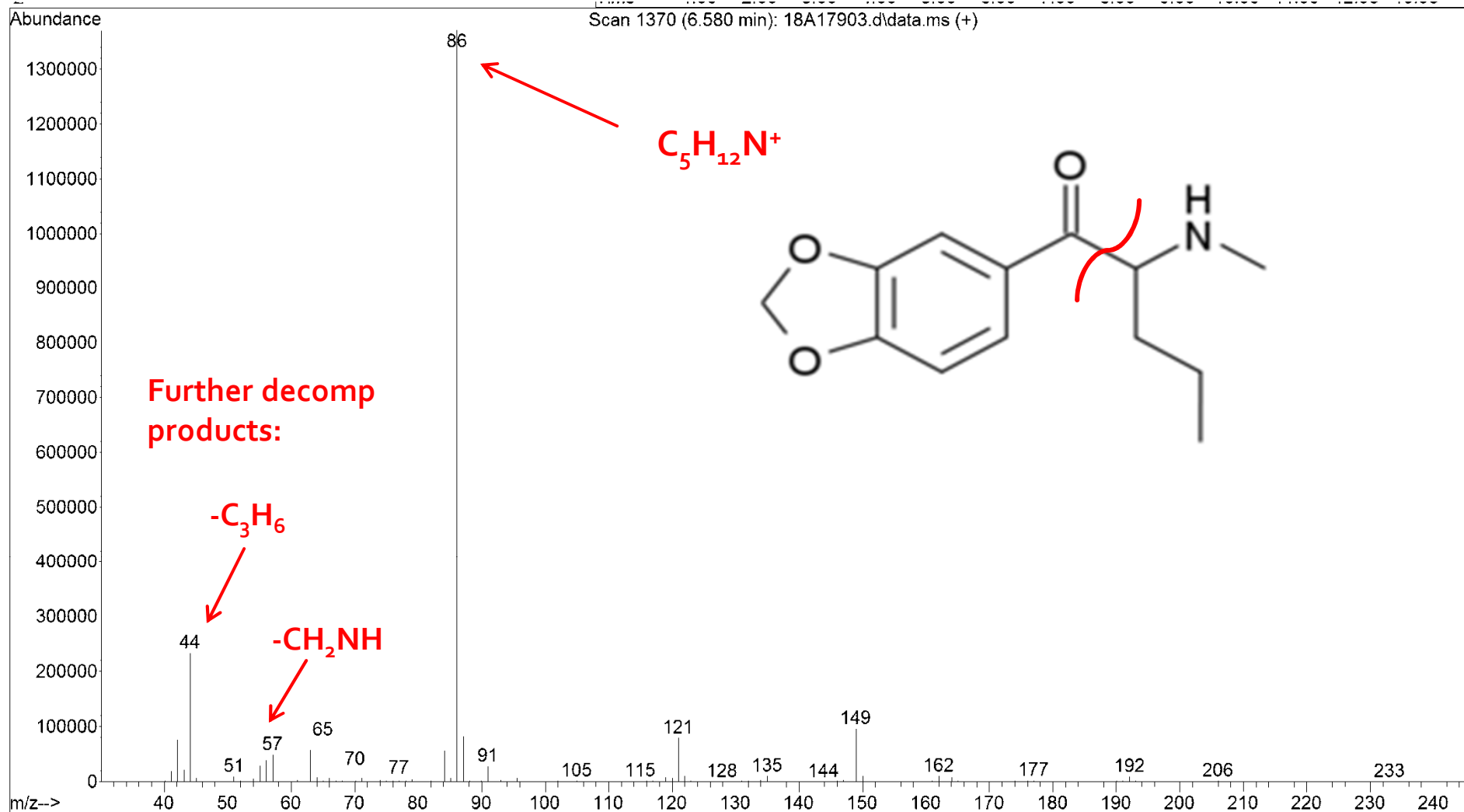


For "Emerging" Drugs of Abuse





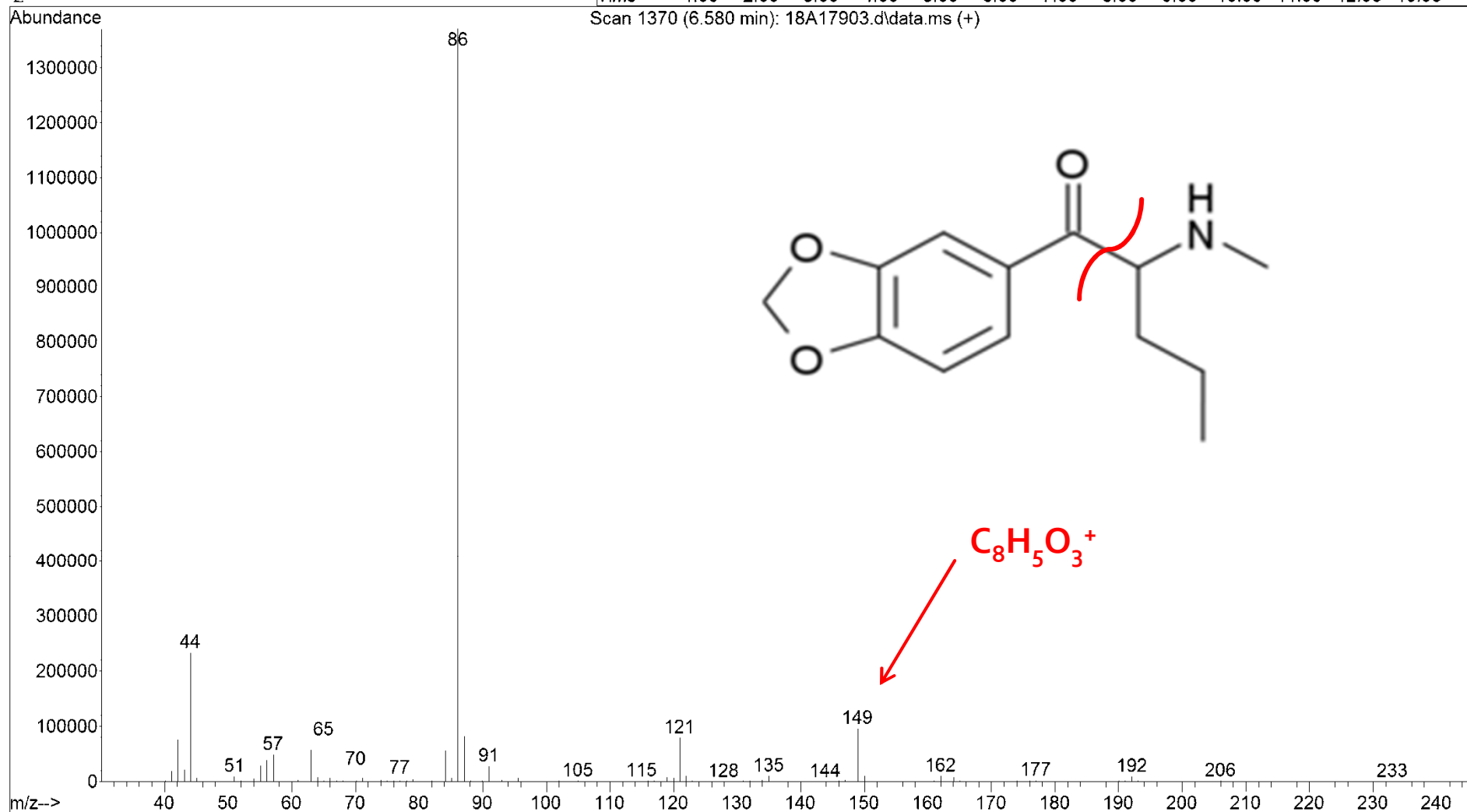
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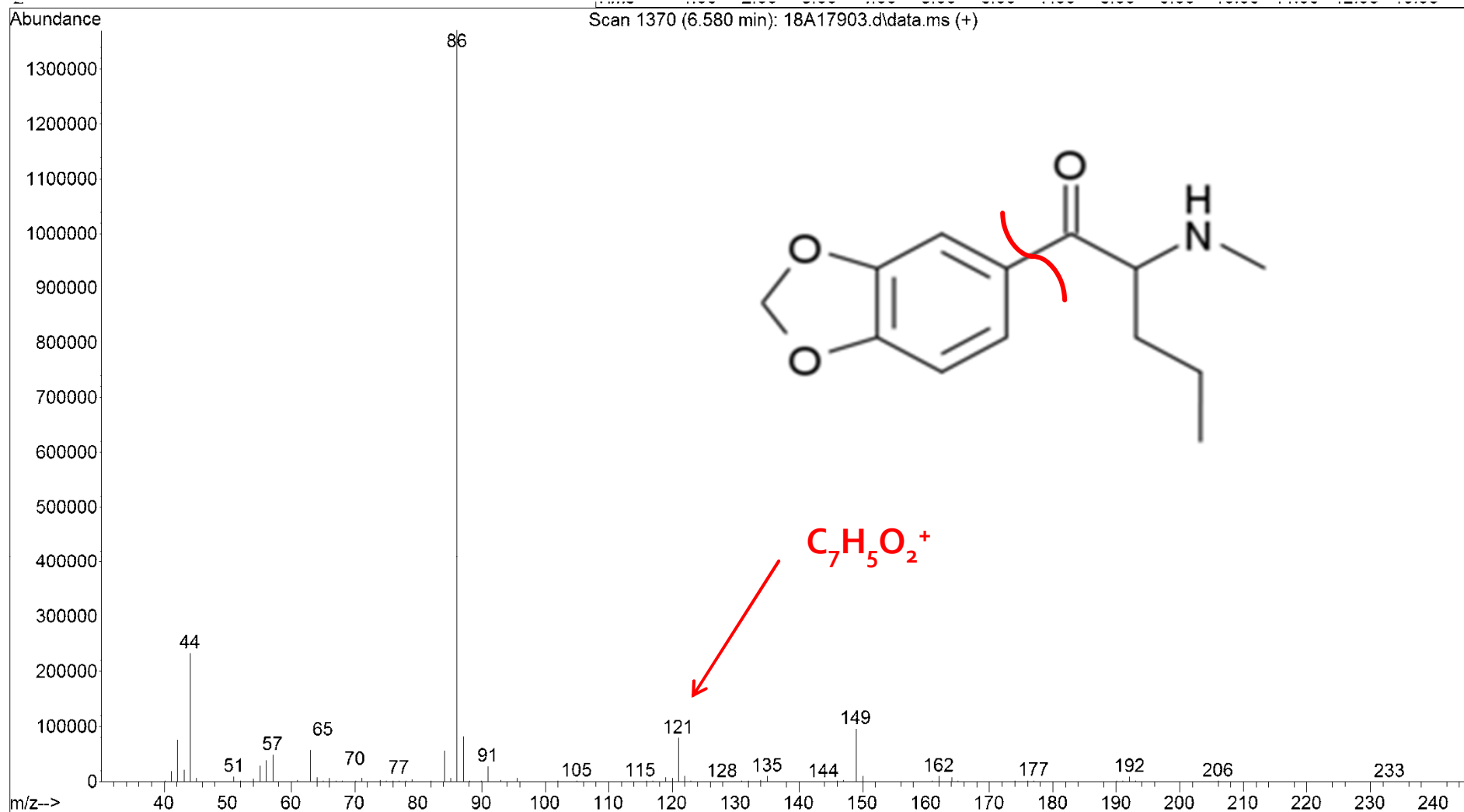
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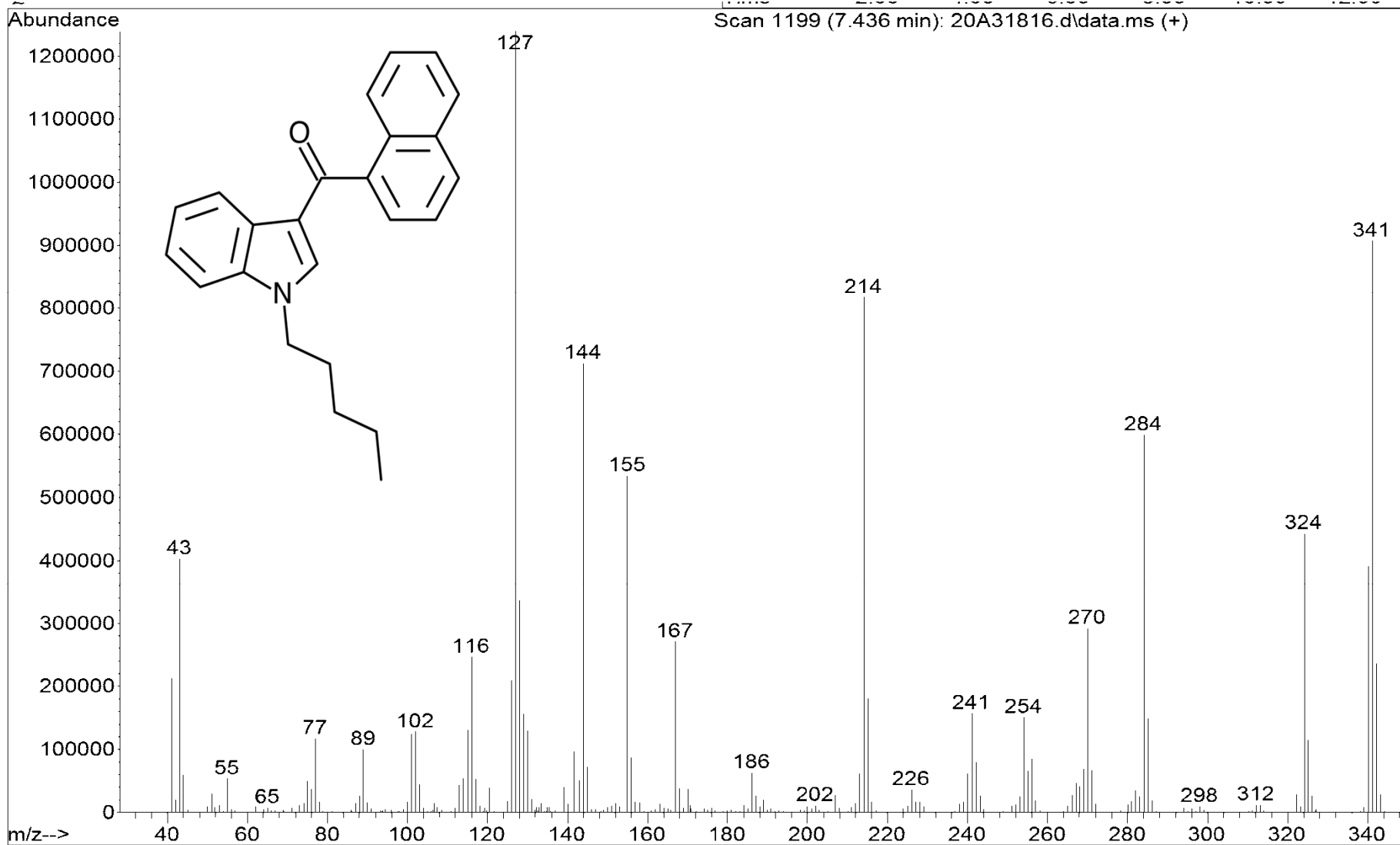


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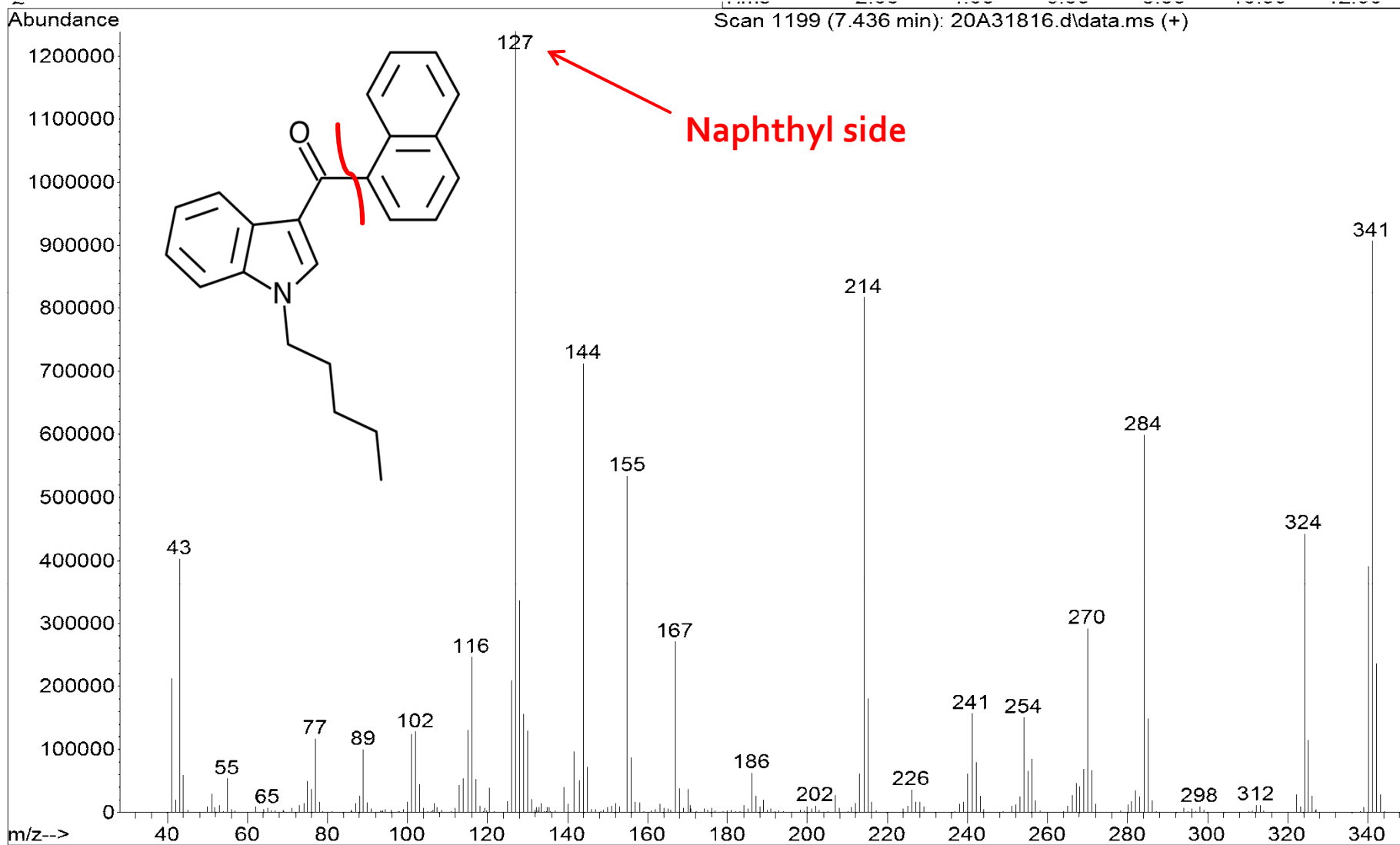


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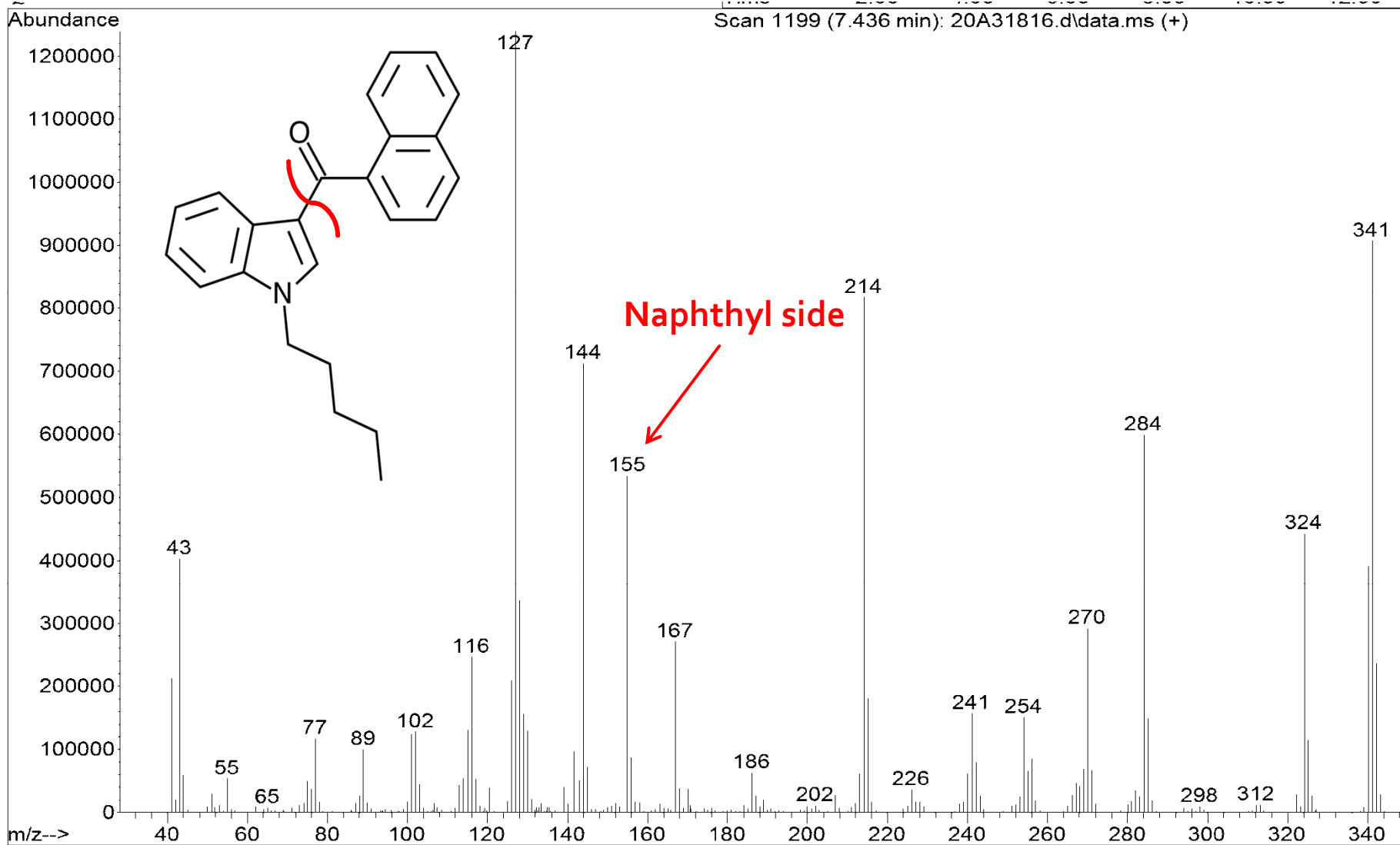


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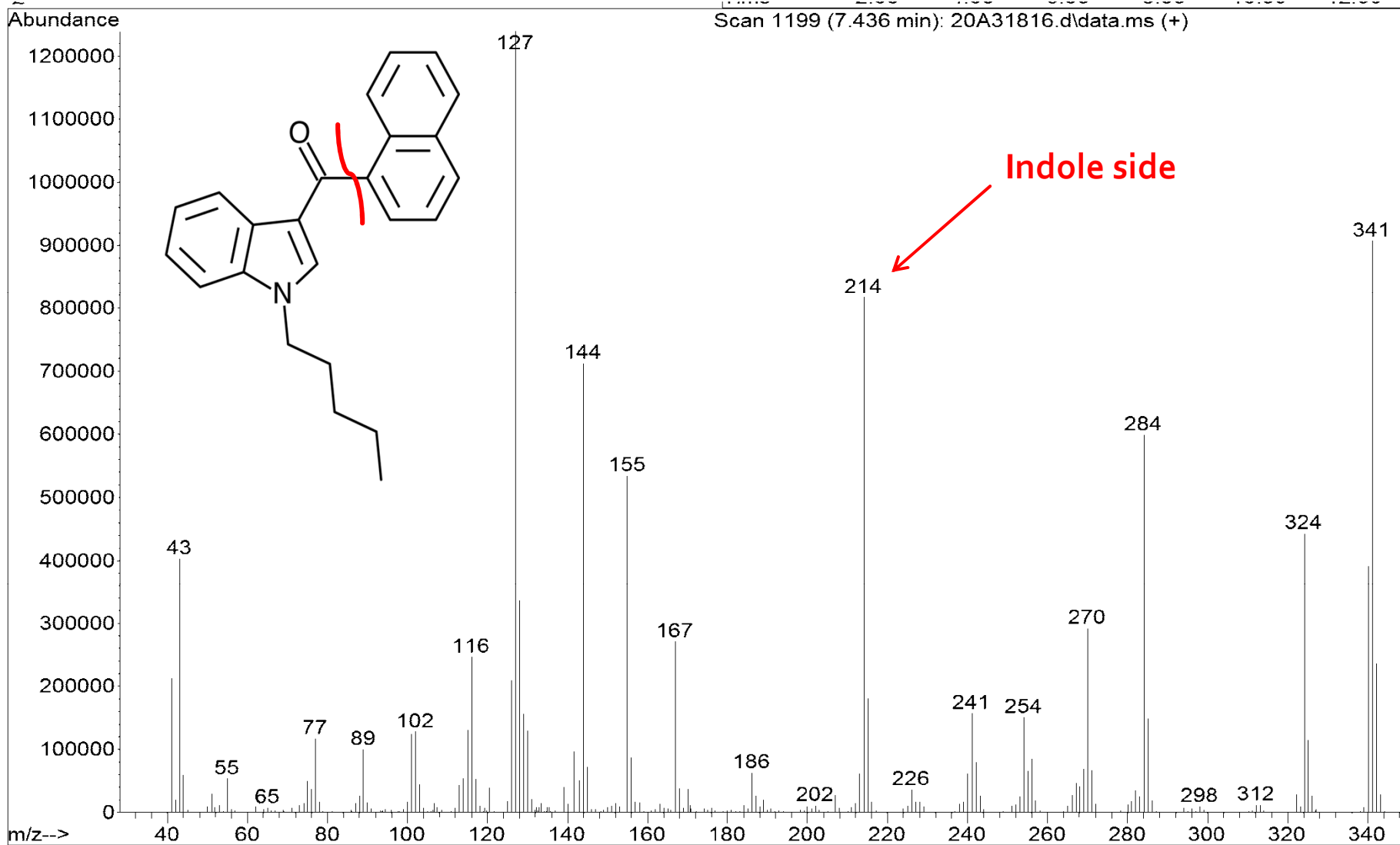


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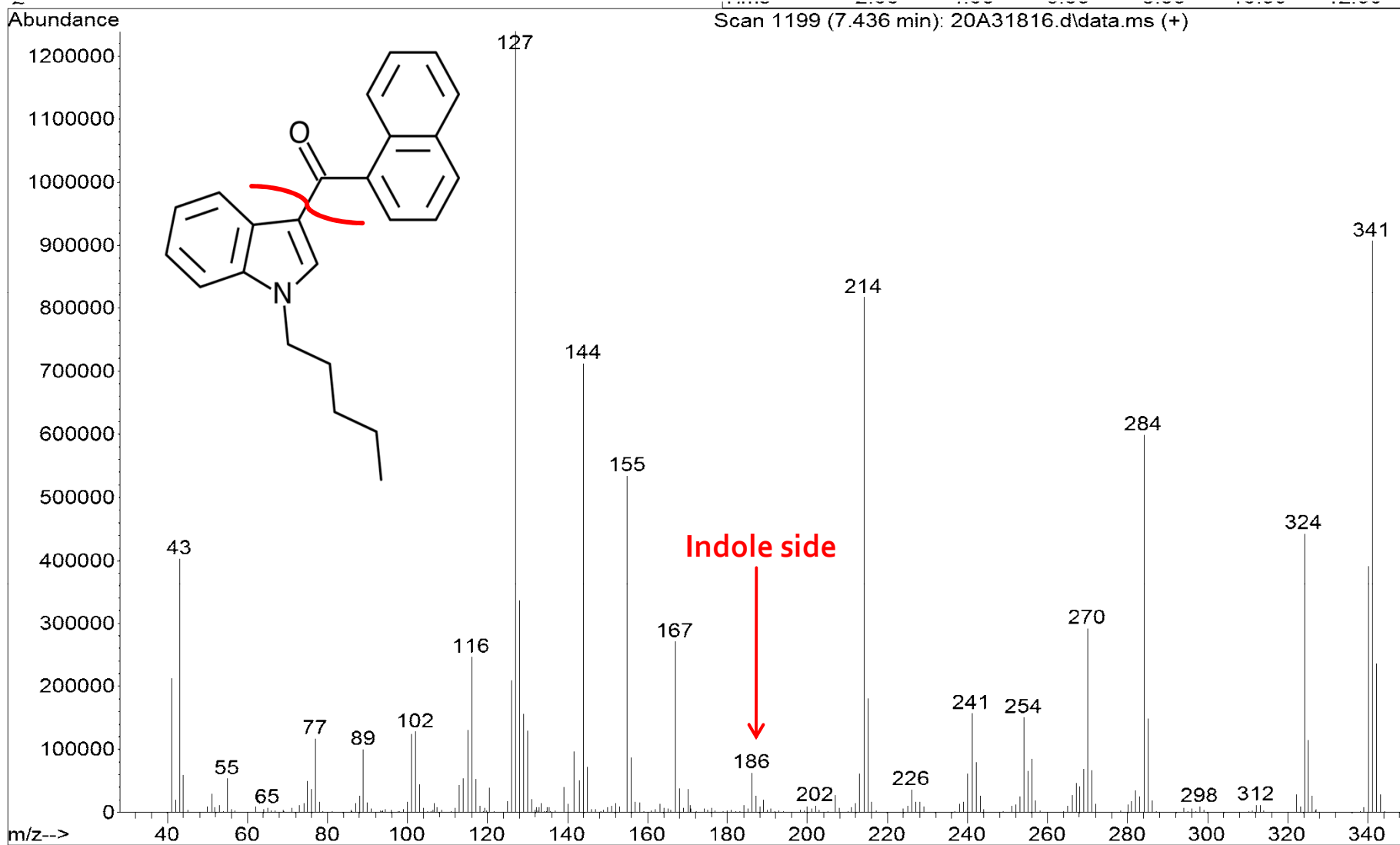


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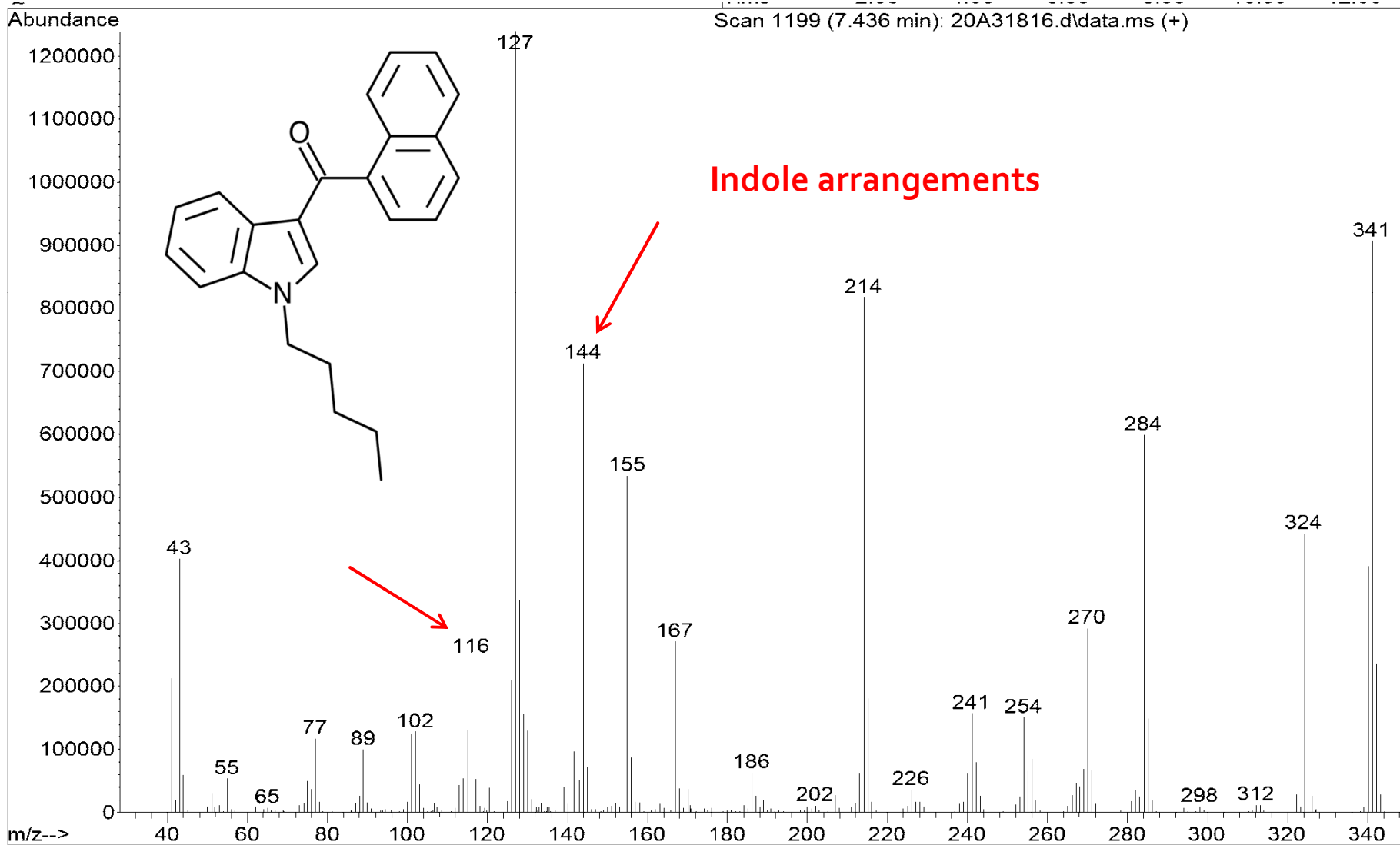


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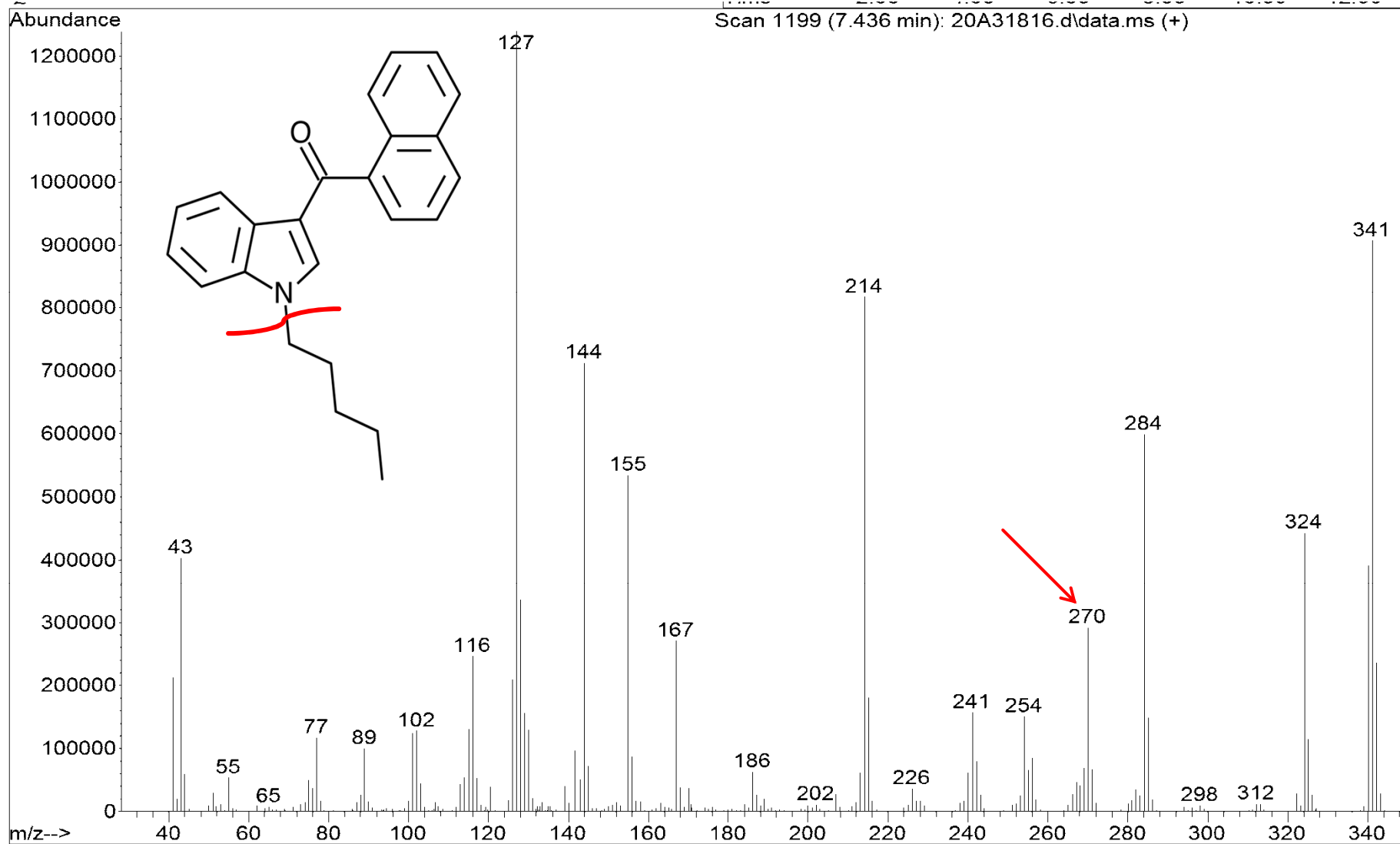


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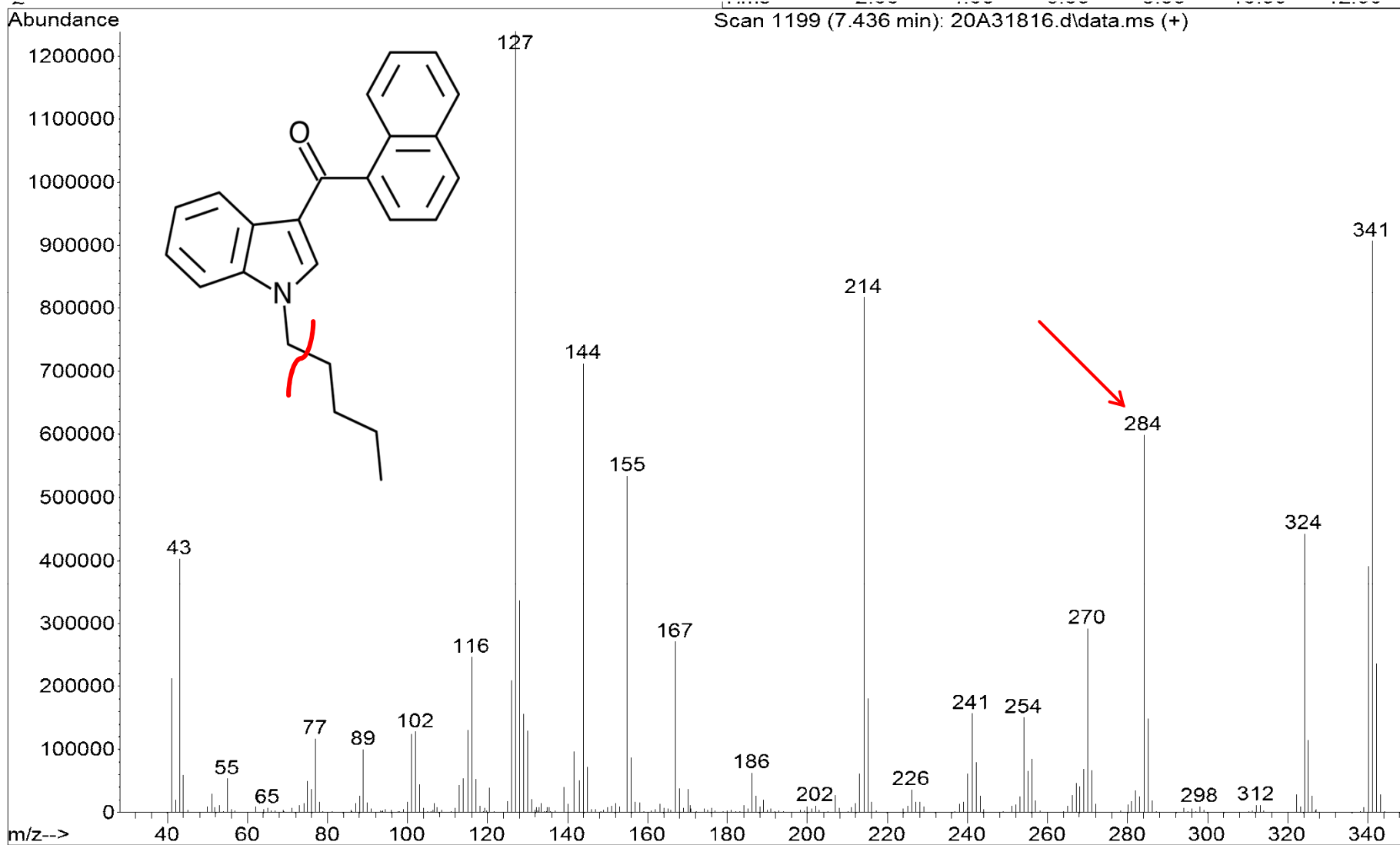


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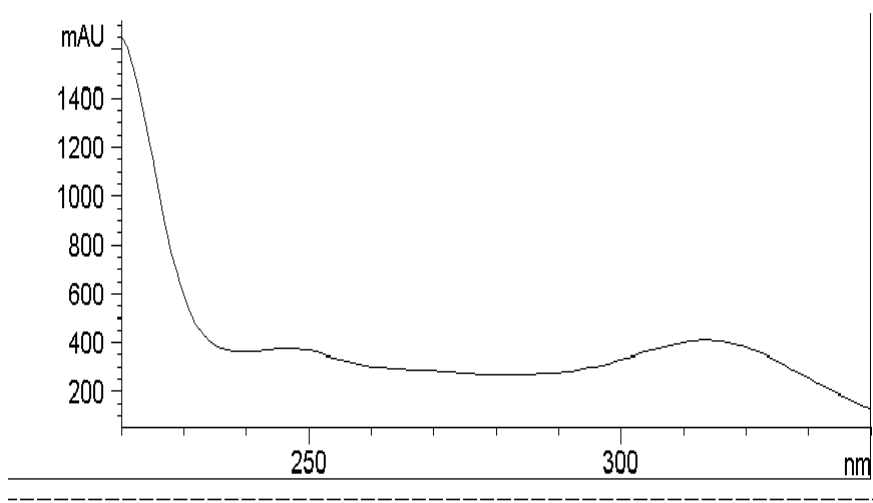
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For "Emerging" Drugs of Abuse

- A secondary technique is used to verify
 - Depending on the vendor, other analytical information may be given



**JWH-018 has a UV λ_{\max} :
219, 246 nm**



Know Your References

- Vendors
 - Are they accredited?
 - What kinds of Quality Control measures do they use?
 - How often do they validate their products?



Know Your References

- Vendors
 - Are they accredited?
 - What kinds of Quality Control measures do they use?
 - How often do they validate their products?
- Databases
 - What kinds of source information are offered?
 - How were the spectra verified/authenticated?



Questions?