

## Obtaining Small Uncertainty in Vapor Pressure Measurements of Low Volatility and Low Stability Compounds with Rapid Dynamic Vapor Microextraction

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Through its carefully selected design, dynamic vapor microextraction (DVME) allows for state-of-the-art uncertainty in the determination of vapor pressure measurements near 1 Pa. These design choices include lower internal volume by using a “saturator” with 1 mm glass beads in a 2 mL GC vial and small diameter capillary vapor traps, using helium as a carrier gas, and using GCFID to determine the mass of trapped vapor. We used eicosane as a reference compound for the DVME method, to confirm that we can measure the vapor pressure of a low volatility compound near 1 Pa with high accuracy and minimal deviations from literature correlations. DVME also allows for rapid experimental times, where we can obtain accurate results for eicosane with experiments under 20 minutes, this time also includes a thermal equilibration period for the saturator vial to allow the glass beads to reach the setpoint temperature. All these benefits of using DVME will allow for vapor pressure measurements of low volatility compounds such as cannabinoids like cannabidiol and  $\Delta^9$ -tetrahydrocannabinol, as well as low stability compounds such as terpenes like linalool. We are optimizing DVME to measure these types of compounds over a wide range of temperatures, between 300 – 420 K. We will discuss the basics of DVME, our work with eicosane to confirm our method, a detailed uncertainty analysis, and our use of the method for more difficult samples such as cannabinoids and terpenes.