

Abstract Submitted
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Enthalpy of sublimation as measured using a silicon oscillator.

HAMZA SHAKEEL, J.M. POMEROY, National Institute of Standards and Technology — In this study, we report the enthalpy of sublimation of common gases (nitrogen, oxygen, argon, carbon dioxide, neon, krypton, xenon, and water vapor) using a large area silicon oscillator with a sub-ng (≈ 0.027 ng/cm²) mass sensitivity. The double paddle oscillator design enables high frequency stability (17 ppb) at cryogenic temperatures and provides a consistent technique for enthalpy measurements. The enthalpies of sublimation are derived from the rate of mass loss during programmed thermal desorption and are detected as a change in the resonance frequency of the self-tracking oscillator. These measured enthalpy values show excellent agreement with the accepted literature values.

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