



## **Calibration of optical cavity spectrometers based on integrated absorption**

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Quantitative measurements using optical cavity techniques like CEAS (ICOS) and its broadband equivalents require the spectrometer response to be calibrated. Current calibration approaches include cavity ring-down measurements and introducing a known absorption into the cell. Such methods have drawbacks in instrument cost, complexity, or convenience, especially for real-time monitoring of the atmosphere. This work develops the relationship between the integrated absorption and a known amount of absorber. An accurately known amount of absorber may be introduced into the system directly from the liquid phase if the calibration standard is sufficiently volatile. This alternative calibration strategy is demonstrated experimentally using a near-UV IBBCEAS spectrometer. The calibration curve is highly linear and has a low uncertainty. The method is straightforward to implement and in many cases offers a practical and accurate alternative to other calibration approaches.