

21 世紀 COE 特別講演会 報告書

集会名： Dr. Mario Bitter 特別講演会

日 時： 平成 17 年 7 月 21 日(木) 9:00～10:30

講演会場： A2 - 118 号室 (桂キャンパス会議室)

主な参加者：教員、本学大学院生

総参加者概数：教員 3 名、大学院生 12 名、学部学生 5 名

講演者：Dr. Mario Bitter (Department of Chemistry, University of Cambridge, U.K.)

講演題目：Detection of atmospheric active species by broadband cavity ring-down spectroscopy
(広波長域キャビティリングダウン法による大気中の活性種検出)

講演内容：

In the 15 years since its inception, cavity ring-down spectroscopy (CRDS) has established itself as a selective and sensitive method for making absorption measurements on weakly absorbing or highly dilute samples. The detection of a wide range of species has been accomplished in the laboratory, and many of these species are of atmospheric importance. Moreover, the sensitivities demonstrated for the laboratory instruments are approaching the levels to probe species at the concentrations present in the atmosphere. Being an absorption technique, CRDS is also able to provide absolute measurements of an absorber's concentration provided that molecular absorption cross sections are known from laboratory measurements and the various contributions to the absorption spectrum of the sample mixture can be spectrally separated. Cavity ring-down techniques therefore offer an alternative to other methods of making absorption measurements in the atmosphere, of which long-path (10 km) differential optical absorption spectroscopy has previously been the most widely applied in the visible and UV regions of the electromagnetic spectrum. However, compared to long-path DOAS, CRDS makes measurements on an intrinsically smaller spatial scale determined by the length of the optical cavity, and thus CRDS instruments have applications in the attribution of local sources/sinks and the investigation of small-scale chemical processing in the atmosphere.



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