

1. Record Nr.	UNINA9910829904103321
Titolo	Cavity ring-down spectroscopy [[electronic resource]] : techniques and applications // edited by Giel Berden, Richard Engeln
Pubbl/distr/stampa	Hoboken, NJ, : Wiley, 2009
ISBN	1-4441-3082-X 1-4443-0825-4 1-282-25948-2 9786612259487 1-4443-0824-6
Descrizione fisica	1 online resource (346 p.)
Altri autori (Persone)	BerdenGiel EngelnRichard
Disciplina	543.59
Soggetti	Cavity-ringdown spectroscopy Absorption spectra
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cavity Ring-Down Spectroscopy: Techniques and Applications; Contents; Preface; Contributors; Glossary; 1 An Introduction to Cavity Ring-Down Spectroscopy; 1.1 Introduction; 1.2 Direct Absorption Spectroscopy; 1.3 Basic Cavity Ring-Down Spectroscopy Set-Up; 1.4 A More Refined Picture; 1.5 Fitting of Cavity Ring-Down Transients; 1.6 A Few Examples; 1.7 Going Beyond the Standard Pulsed CRDS Experiment; 1.8 Summary; References; 2 Cavity Enhanced Techniques Using Continuous Wave Lasers; 2.1 Introduction; 2.2 Properties of Optical Cavities and CW Lasers Relevant to Cavity Enhanced Spectroscopy 2.2.1 Properties of Optical Cavities 2.2.2 Laser Bandwidth, Noise, and Cavity Interactions; 2.3 Experimental Methods for CW Laser Cavity Enhanced Spectroscopy; 2.3.1 CW-Cavity Ring-Down Spectroscopy (CW-CRDS); 2.3.2 Cavity Enhanced Absorption Spectroscopy (CEAS/ICOS); 2.3.3 Phase Shift Cavity Ring-Down Spectroscopy (PSCRDS); 2.4 Spectroscopy with Resonant Cavities; 2.4.1 Frequency Locked CW-CRDS; 2.4.2 Methods for Locking Cavities and Lasers; 2.4.3

Optical Feedback CRDS and CEAS (OF-CRDS/OF-CEAS); 2.4.4 Other Locked-Cavity Techniques; 2.4.5 Optical Heterodyne Cavity Ring-Down Spectroscopy
2.5 SummaryReferences; 3 Broadband Cavity Ring-Down Spectroscopy; 3.1 Introduction; 3.2 The Time and Wavelength Evolution of a Single Ring-Down Event; 3.3 Two-Dimensional Techniques: Resolving Broadband Cavity Output in Time and Wavelength; 3.4 One-Dimensional Techniques: Time or Wavelength; 3.4.1 Wavelength Selection Methods; 3.4.2 Fourier Transform Methods; 3.4.3 Phase Shift Cavity Methods; 3.4.4 Broadband Cavity Enhanced Absorption Spectroscopy; 3.5 How to Extract Quantitative Information from Broadband Spectra; 3.5.1 Mirror Reflectivity Considerations 3.5.2 Differential Optical Absorption Spectroscopy3.5.3 Multi-Exponential Decays; 3.6 Optimising the Sensitivity of a Broadband Measurement; 3.7 Applications of Broadband Cavity Methods; 3.7.1 Atmospheric Measurements; 3.7.2 Liquid Phase Spectroscopy; References; 4 Cavity Ring-Down Spectroscopy in Analytical Chemistry; 4.1 Introduction; 4.1.1 Absorbance Detection in Liquid Flow Systems; 4.1.2 Requirements for Detection Cells for Analytical Purposes; 4.2 Condensed Media CRDS; 4.2.1 Studying Solid-Phase Samples with CRDS; 4.2.2 Studying Liquid-Phase Samples With CRDS 4.2.3 Incoherent Broad-Band Cavity-Enhanced Absorption Spectroscopy: IBBCEAS4.2.4 CRDS Absorption Detection in Liquid Chromatography; 4.3 Evanescent-Wave CRDS; 4.3.1 EW-CRDS Using Monolithic Resonators; 4.3.2 Applications of EW-CRDS to Condensed Media; 4.4 Future Trends and Perspectives; References; 5 Cavity Ring-Down Spectroscopy Using Waveguides; 5.1 Introduction; 5.2 The Basic Experiments; 5.2.1 The Fiber-Loop Ring-Down Experiment; 5.2.2 The FBG Cavity Ring-Down Experiment; 5.3 Optics and Instrumentation; 5.3.1 Waveguide Optics; 5.3.2 Waveguide Materials; 5.3.3 Fiber-Optic Components
5.4 Review of Waveguide CRD Literature

Sommario/riassunto

Cavity Ring-Down Spectroscopy: Techniques and Applications provides a practical overview of this valuable analytical tool, explaining the fundamental concepts and experimental methods, and illustrating important applications. Designed as both an introductory text and a reference source, this book is relevant for scientists unfamiliar with CRDS who are interested in using the technique in their research, as well as experienced users.
