

# Contents

<b>Preface</b>	<b>xi</b>
<b>1. Historical Overview of Spectral Studies: From Sunlight to Lasers</b> B. A. Paldus and R. N. Zare	<b>1</b>
<b>2. Introduction to Cavity-Ringdown Spectroscopy</b> Kenneth W. Busch and Marianna A. Busch	<b>7</b>
<b>3. Introduction to Optical Cavities</b> Kenneth W. Busch, Aurélie Hennequin, and Marianna A. Busch	<b>20</b>
<b>4. Mode Formation in Optical Cavities</b> Kenneth W. Busch, Aurélie Hennequin, and Marianna A. Busch	<b>34</b>
<b>5. Absorption Spectroscopies: From Early Beginnings to Cavity Ring-Down Spectroscopy</b> B. A. Paldus and R. N. Zare	<b>49</b>
<b>6. Cavity-Ringdown Laser Spectroscopy: History, Development, and Applications</b> A. O’Keefe, J. J. Scherer, J. B. Paul, and R. J. Saykally	<b>71</b>
<b>7. Quantitative Absorption Measurements Using Cavity-Ringdown Spectroscopy with Pulsed Lasers</b> J. Patrick Looney, Joseph T. Hodges, and Roger D. van Zee	<b>93</b>
<b>8. Dispersion and Cavity-Ringdown Spectroscopy</b> Keven K. Lehmann	<b>106</b>
<b>9. Cavity-Ringdown Spectroscopy versus Intra-Cavity Laser Absorption</b> Daniele Romanini	<b>125</b>
<b>10. Fourier Transform and Polarization Dependent Cavity-Ringdown Spectroscopy</b> Richard Engeln, Giel Berden, and Gerard Meijer	<b>146</b>
<b>11. Infrared Cavity-Ringdown Laser Absorption Spectroscopy of Transient Species in Pulsed Supersonic Expansions</b> J. B. Paul, R. A. Provencal, C. Chapo, E. Michael, A. Pettersson, and R. J. Saykally	<b>162</b>

<b>12.</b>	<b>Cavity-Ringdown Laser Absorption Spectroscopy of Polyatomic Radicals in Low Pressure Flames</b>	<b>174</b>
	J. J. Scherer, K. W. Aniolek, and D. J. Rakestraw	
<b>13.</b>	<b>Kinetic Studies of Aromatic Radical Reactions by Cavity-Ringdown Spectroscopy</b>	<b>196</b>
	J. Park and M. C. Lin	
<b>14.</b>	<b>Cavity-Ringdown Methods for Studying Intramolecular and Intermolecular Dynamics</b>	<b>210</b>
	Fredrick C. Hagemester, Caleb A. Arrington, Brent J. Giles, Bobby Quimpo, Limin Zhang, and Timothy S. Zwier	
<b>15.</b>	<b>Using FM Methods with Molecules in a High Finesse Cavity: A Demonstrated Path to <math>&lt;10^{12}</math> Absorption Sensitivity</b>	<b>233</b>
	Jun Ye, Long-Sheng Ma, and John L. Hall	

#### INDEXES

<b>Author Index</b>	<b>257</b>
<b>Subject Index</b>	<b>259</b>