

# Contents

Preface.....	vii
Editor .....	ix
Contributors .....	xi
<b>Chapter 1</b> Vibrational Echo Chemical Exchange Spectroscopy.....	1
<i>Michael D. Fayer</i>	
<b>Chapter 2</b> Ultrafast Vibrational Dynamics of Hydrogen-Bonded Dimers and Base Pairs.....	35
<i>Thomas Elsaesser</i>	
<b>Chapter 3</b> Water Reorientation and Ultrafast Infrared Spectroscopy.....	73
<i>Damien Laage and James T. Hynes</i>	
<b>Chapter 4</b> Femtosecond Vibrational Spectroscopy of Aqueous Systems .....	99
<i>H. J. Bakker and M. Bonn</i>	
<b>Chapter 5</b> Solvation Dynamics of Vibrational States in Hydrogen-Bonding Solvents: Vibrational Frequency Fluctuations Studied by the Three-Pulse Infrared Photon Echo Method.....	149
<i>Kaoru Ohta, Jumpei Tayama, Shinji Saito, and Keisuke Tominaga</i>	
<b>Chapter 6</b> Polarization Anisotropy Effects for Degenerate Vibrational Levels.....	169
<i>Daniel G. Kuroda and Robin M. Hochstrasser</i>	
<b>Chapter 7</b> Polarization-Controlled Chiroptical and 2D Optical Spectroscopy .....	203
<i>Kyung-Won Kwak, Kwang-Hee Park, and Minhaeng Cho</i>	
<b>Chapter 8</b> Ultrafast Infrared Probes of Electronic Processes in Materials .....	239
<i>John B. Asbury</i>	
<b>Chapter 9</b> Vibrational Energy and Molecular Thermometers in Liquids: Ultrafast IR-Raman Spectroscopy.....	269
<i>Brandt C. Pein and Dana D. Dlott</i>	
<b>Chapter 10</b> Ultrafast Processes at Liquid Interfaces Investigated with Time-Resolved Sum Frequency Generation .....	305
<i>Yi Rao, Benjamin Doughty, Nicholas J. Turro, and Kenneth B. Eisenthal</i>	

**Chapter 11** Energy Transport in Molecules Studied by Relaxation-Assisted 2D IR Spectroscopy ..... 333  
*Igor V. Rubtsov*

**Chapter 12** An Introduction to Protein 2D IR Spectroscopy ..... 361  
*Carlos R. Baiz, Mike Reppert, and Andrei Tokmakoff*

**Chapter 13** Quasi-Particle Approach to 2D IR Spectra of Vibrational Excitons in Biomolecules: Molecular Dynamics versus Stochastic Simulation Protocols .....405  
*Cyril Falvo, František Šanda, and Shaul Mukamel*

**Chapter 14** Ultrafast Infrared Spectroscopy of Amylin Solution and Fibrils..... 437  
*L. Wang, L. E. Buchanan, E. B. Dunkelberger, J. J. de Pablo, M. T. Zanni, and J. L. Skinner*

**Index** ..... 461