

STATE-SELECTED AND STATE-TO-STATE ION-MOLECULE REACTION DYNAMICS Part 2. Theory

Edited by

MICHAEL BAER

Department of Physics and
Applied Mathematics
Soreq Nuclear Research Center
Yavne, Israel

CHEUK-YIU NG

Ames Laboratory
U.S. Department of Energy and
Department of Chemistry
Iowa State University
Ames, Iowa

ADVANCES IN CHEMICAL PHYSICS
VOLUME LXXXII

Series Editors

ILYA PRIGOGINE

University of Brussels
Brussels, Belgium
and
University of Texas
Austin, Texas

STUART A. RICE

Department of Chemistry
and
The James Frank Institute
University of Chicago
Chicago, Illinois



AN INTERSCIENCE® PUBLICATION
JOHN WILEY & SONS, INC.

NEW YORK • CHICHESTER • BRISBANE • TORONTO • SINGAPORE

CONTENTS

NONADIABATIC INTERACTIONS BETWEEN POTENTIAL ENERGY SURFACES: THEORY AND APPLICATIONS	1
<i>By B. H. Lengsfeld III and D. R. Yarkony</i>	
DIABATIC POTENTIAL ENERGY SURFACES FOR CHARGE-TRANSFER PROCESSES	73
<i>By V. Sidis</i>	
MODEL POTENTIAL ENERGY SURFACES FOR INELASTIC AND CHARGE- TRANSFER PROCESSES IN ION-MOLECULE COLLISION	135
<i>By F. A. Gianturco and F. Schneider</i>	
QUANTUM-MECHANICAL TREATMENT FOR CHARGE-TRANSFER PROCESSES IN ION-MOLECULE COLLISIONS	187
<i>By M. Baer</i>	
SEMICLASSICAL APPROACH TO CHARGE-TRANSFER PROCESSES IN ION-MOLECULE COLLISIONS	243
<i>By H. Nakamura</i>	
THE SEMICLASSICAL TIME-DEPENDENT APPROACH TO CHARGE- TRANSFER PROCESSES	321
<i>By E. A. Gislason, G. Parlant, and M. Sizun</i>	
THE CLASSICAL TRAJECTORY-SURFACE-HOPPING APPROACH TO CHARGE-TRANSFER PROCESSES	423
<i>By S. Chapman</i>	
STATISTICAL ASPECTS OF ION-MOLECULE REACTIONS	485
<i>By J. Troe</i>	
AUTHOR INDEX	531
SUBJECT INDEX	547