

9th International Conference on Dissociative Recombination 2013

(DR2013)

Theory, Experiment and Applications

EPJ Web of Conferences Volume 84 (2015)

**Paris, France
7-12 July 2013**

Editors:

**Ioan F. Schneider
Olivier Dulieu
Jacques Robert**

ISBN: 978-1-63439-980-7

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution license:

<http://creativecommons.org/licenses/by/2.0/>

You are free to:

Share – copy and redistribute the material in any medium or format.

Adapt – remix, transform, and build upon the material for any purpose, even commercial.

The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following terms:

You must give appropriate credit, provide a link to the license, and indicate if changes were made.

You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. The copyright is retained by the corresponding authors.

Printed by Curran Associates, Inc. (2015)

For additional information, please contact EDP Sciences – Web of Conferences at the address below.

EDP Sciences – Web of Conferences
17, Avenue du Hoggar
Parc d'Activité de Courtabœuf
BP 112
F-91944 Les Ulis Cedex A
France

Phone: +33 (0) 1 69 18 75 75
Fax: +33 (0) 1 69 28 84 91

contact@webofconferences.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

THE HD⁺ DISSOCIATIVE RECOMBINATION RATE COEFFICIENT AT LOW TEMPERATURE	1
<i>A. Wolf, O. Novotný, H. Buhr, C. Krantz, I.F. Schneider, O. Motapon, J.Zs. Mezei</i>	
STATE SELECTIVE STUDY OF H₃⁺ RECOMBINATION IN CRYO-FALP AND SA-CRDS	
EXPERIMENTS AT 77 K	8
<i>Juraj Glosík, Michal Hejduk, Petr Dohnal, Peter Rubovic, Ábel Kálosi, Radek Plašil</i>	
THREE-BODY MECHANISMS IN PLASMA RECOMBINATION OF H₃⁺ AND D₃⁺ IONS	18
<i>Rainer Johnsen</i>	
DESIREE: PHYSICS WITH COLD STORED ION BEAMS	26
<i>R.D. Thomas, H.T. Schmidt, M. Gatchell, S. Rosén, P. Reinhed, P. Löfgren, L. Brännholm, R.D. Thomas, H.T. Schmidt, M. Gatchell, S. Rosén, P. Reinhed, P. Löfgren, L. Brännholm, M. Blom, M. Björkhage, E. Bäckström, J.D. Alexander, S. Leontine</i>	
SOME REMARKS ON THE SELECTION OF EXIT CHANNELS IN THE THEORETICAL DESCRIPTION OF DISSOCIATIVE RECOMBINATION	33
<i>Steven L. Guberman</i>	
STUDY ON THE DISSOCIATIVE RECOMBINATION OF HeH⁺ BY MULTI-CHANNEL QUANTUM DEFECT THEORY	39
<i>Hidekazu Takagi, Motomichi Tashiro</i>	
ADVANCES IN THE MQDT APPROACH OF ELECTRON/MOLECULAR CATION REACTIVE COLLISIONS: HIGH PRECISION EXTENSIVE CALCULATIONS FOR APPLICATIONS	45
<i>O. Motapon, S. Niyonzima, K. Chakrabarti, J.Zs. Mezei, D. Backodissa, S. Ilie, M.D. Epee Epee, B. Peres, M. Lanza, T. Tchakoua, N. Pop, F. Argoubi, M. Telmini, O. Dulieu, A. Bultel, J. Robert, Å. Larson, A.E. Orel, I.F. Schneider</i>	
STUDIES OF HEH: DR, RIP, VE, DE, PI, MN,	56
<i>Åsa Larson, Sifiso Nkambule, Emelie Ertan, Josefine Söder, Ann E. Orel</i>	
COMPUTED BOUND AND CONTINUUM ELECTRONIC STATES OF THE NITROGEN MOLECULE	66
<i>Jonathan Tennyson, Duncan A. Little</i>	
USING BLOCK DIAGONALIZATION TO DETERMINE DISSOCIATING AUTOIONIZING STATES: APPLICATION TO N₂H, AND THE OUTLOOK FOR SH	73
<i>D.O. Kashinski, D. Talbi, A.P. Hickman</i>	
INDIRECT PREDISSOCIATION OF HIGHLY EXCITED SINGLET STATES OF N₂	82
<i>A.N. Heays, B.R. Lewis, S.T. Gibson, G. Stark, N. de Oliveira</i>	
GENERAL FEATURES OF THE DISSOCIATIVE RECOMBINATION OF POLYATOMIC MOLECULES	93
<i>S.T. Pratt, Ch. Jungén</i>	
FAST METASTABLE HYDROGEN ATOMS FROM H₂ MOLECULES: TWIN ATOMS	98
<i>A. Trimèche, D. Houdoux, G. Rahmat, O. Dulieu, I.F. Schneider, A. Medina, G. Jalbert, F. Zappa, C.R. de Carvalho, R.F. Nascimento, N.V. de Castro Faria, J. Robert</i>	
AUTOIONIZING DOUBLY-EXCITED STATES OF ³Σ_g⁻ SYMMETRY OF H₂	113
<i>F. Argoubi, M. Telmini, Ch. Jungén</i>	
AB INITIO R-MATRIX AND MQDT INVESTIGATION OF LOW-LYING RYDBERG STATES OF THE HeH⁺ MOLECULAR ION	120
<i>I. Bouhalil, S. Bezzaoui, M. Telmini, Ch. Jungén</i>	
MULTICHANNEL QUANTUM DEFECT THEORY OF PHOTODISSOCIATION IN H₂	129
<i>J.Zs. Mezei, I.F. Schneider, Ch. Jungén</i>	
PRODUCTION OF A ROVIBRATIONALLY SELECTED O₂⁺ BEAM FOR DISSOCIATIVE RECOMBINATION STUDIES	139
<i>A. Dochaina, X. Urbain</i>	
ELECTRON IMPACT INDUCED DISSOCIATION OF N₂H⁺ INTO NH⁺	147
<i>M.O.A. El Ghazaly, J.B.A. Mitchell, J.J. Jureta, A.S. Jabr, S.M. Alshammary, P. Defrance</i>	
AN ELECTROSTATIC STORAGE RING FOR ATOMIC AND MOLECULAR PHYSICS, AT KACST – A STATUS REPORT	152
<i>Mohamed O.A. El Ghazaly</i>	
ELECTRON COLLISIONS WITH EXCITED MOLECULES IN LOW TEMPERATURE PLASMAS	158
<i>Roberto Celiberto, Vincenzo Laporta</i>	

HELP!!! THEORY FOR H₃⁺ RECOMBINATION STILL NEEDED	169
<i>Takeshi Oka</i>	
INTERSTELLAR PROCESSES: ORTHO/PARA CONVERSION, RADIATIVE ASSOCIATION, AND DISSOCIATIVE RECOMBINATION	174
<i>Eric Herbst</i>	
DISSOCIATIVE RECOMBINATION EXALTS MOLECULAR GROWTH IN N₂/CH₄ PLASMAS.....	185
<i>P. Pernot, Z. Peng, S. Plessis, N. Carrasco</i>	
(NEW) MOLECULAR IONS IN THE INTERSTELLAR MEDIUM	191
<i>Evelyne Roueff</i>	
DISSOCIATIVE RECOMBINATION IN REACTIVE FLOWS RELATED TO PLANETARY ATMOSPHERIC ENTRIES.....	200
<i>Arnaud Bultel, Julien Annaloro, Marie-Claude Druguet</i>	
THEORY OF DISSOCIATIVE ELECTRON ATTACHMENT: BIOMOLECULES AND CLUSTERS.....	210
<i>Ilya I. Fabrikant</i>	
INTERATOMIC COULOMBIC ELECTRON CAPTURE IN ATOMIC, MOLECULAR, AND QUANTUM DOT SYSTEMS	220
<i>Annika Bande, Federico M. Pont, Kirill Gokhberg, Lorenz S. Cederbaum</i>	
SIMPLIFIED MODEL TO DESCRIBE THE DISSOCIATIVE RECOMBINATION OF LINEAR POLYATOMIC IONS OF ASTROPHYSICAL INTEREST	227
<i>N. Douguet, S. Fonseca dos Santos, V. Kokouline, A.E. Orel</i>	
Author Index	