

Cambridge University Press

978-0-521-12650-2 - The Triplet State

Edited by A. B. Zahlan, G. M. Androes, C. A. Hutchison, H. F. Hameka, G. W. Robinson,
F. W. Heineken and J. H. van der Waals

Table of Contents

[More information](#)

CONTENTS

Preface	<i>page</i> v
List of participants	xi
Section 1. Spin-orbit coupling and intersystem crossing	
<i>H. F. Hameka</i> †: Spin-orbit interactions in organic molecules	1
G. Castro <i>et al.</i> (<i>Hochstrasser</i>): Singlet-triplet transitions in organic molecules	29
<i>W. Siebrand</i> : Triplet decay and intersystem crossing in aromatic hydrocarbons	31
<i>J. S. Avery</i> and J. C. Packer: Statistical aspects of resonance energy transfer	47
DISCUSSION	59
Section 2. Magnetic resonance and magnetic interactions	
<i>C. A. Hutchison Jr.</i> : Magnetic resonance spectra of organic molecules in triplet states in single crystals	63
<i>J. H. van der Waals</i> and M. S. de Groot: Magnetic interactions related to phosphorescence	101
<i>M. Schwoerer</i> and H. C. Wolf: ESR investigations of naphthalene- d_8 :Naphthalene- h_8 mixed crystals	133
H. Lemaire and <i>A. Rassat</i> : Biradicals and polyradicals in the nitroxide series	141
<i>C. K. Jen et al.</i> : Changes induced in the phosphorescent radiation of aromatic molecules by paramagnetic resonance in their metastable triplet states	144
<i>J. S. Vincent</i> : Paramagnetic resonance of the triplet state of tetramethylpyrazine	163

† *Italic* indicates the author who delivered the paper, and to whom discussion was directed.

Cambridge University Press

978-0-521-12650-2 - The Triplet State

Edited by A. B. Zahlan, G. M. Androes, C. A. Hutchison, H. F. Hameka, G. W. Robinson,
F. W. Heineken and J. H. van der Waals

Table of Contents

[More information](#)

viii

CONTENTS

M. Sharnoff: On magnetic dipole contributions to the
intrinsic $S_0 \rightleftharpoons T_1$ transition in simple aromatics page 165

DISCUSSION 171

Section 3. Photochemistry

R. E. Kellogg: The kinetics of energy transfer from the triplet
state in rigid solutions 181

R. B. Cundall et al.: Triplet states in gas-phase photo-
chemistry 183

S. Siegel and *H. S. Judeikis*: Biphotonic photochemistry,
involving the triplet state: polarisation of the effective
 $T-T$ transition and solvent effects 195

J. Jousset-Dubien and *R. Lesclaux*: Direct and sensitised photo-
oxidation of aromatic hydrocarbons in boric acid glass 197

DISCUSSION 207

Section 4. Radiationless transitions

G. W. Robinson: Radiationless transitions in gaseous benzene 213

M. W. Windsor and *J. R. Novak*: Low-lying excited triplet
states and intersystem crossing in aromatic hydro-
carbons 229

D. L. Dexter and *W. B. Fowler*: De-excitation rates of triplet
states in condensed media 237

B. Stevens et al.: Lifetimes of the triplet state of aromatic
hydrocarbons in the vapour phase 239

DISCUSSION 259

Section 5. Triplet excitons

S. A. Rice: Some comments on the properties of triplet
excitons in molecular crystals 265

H. Haken and *G. Strobl*: Exact treatment of coherent and
incoherent triplet exciton migration 311

J. Kommandeur and *G. T. Pott*: Magnetic susceptibility
of a system of triplet excitons: Würster's Blue
Perchlorate 315

Cambridge University Press

978-0-521-12650-2 - The Triplet State

Edited by A. B. Zahlan, G. M. Androes, C. A. Hutchison, H. F. Hameka, G. W. Robinson,
F. W. Heineken and J. H. van der Waals

Table of Contents

[More information](#)

CONTENTS	ix
<i>T. A. King</i> and <i>H.-G. Seifert</i> : A study of triplet excitons in anthracene crystals under laser excitation	page 329
<i>M. Silver</i> and <i>J. Hernandez</i> : The electronic states in crystal- line anthracene	343
DISCUSSION	345
Section 6. Delayed fluorescence and phosphorescence	
<i>C. A. Parker</i> : Delayed fluorescence of solutions	353
<i>G. R. Powell et al. (Silver)</i> : The kinetics of the excited states of anthracene and phenanthrene vapor	391
<i>H. Port</i> and <i>H. C. Wolf</i> : Optical investigations of the triplet state of naphthalene in different crystalline environments	393
<i>J. B. Birks</i> : Excitation of the triplet states of organic molecules	403
<i>J. B. Birks</i> and <i>G. F. Moore</i> : The delayed luminescence and triplet quantum yields of pyrene solutions	407
<i>I. A. Ramsay</i> and <i>I. H. Munro (Birks)</i> : Triplet state studies of some polyphenyls in rigid glasses	415
<i>F. R. Lipssett</i> and <i>D. H. Goode</i> : Decay time of delayed fluorescence of anthracene as a function of temperature (2–300 °K)	425
<i>C. S. Parmenter</i> and <i>B. L. Ring</i> : Energy transfer between benzene and biacetyl and the lifetime of triplet benzene in the gas phase	431
<i>S. Iwata et al. (Tanaka)</i> : Charge transfer triplet state of molecular complexes	433
<i>A. Kellmann</i> and <i>L. Lindqvist</i> : Flash-photolytic detection of triplet acridine formed by energy transfer from biacetyl	439
<i>R. Astier</i> and <i>Y. H. Meyer</i> : Extinction coefficients of triplet- triplet transitions between 3000 and 8800 Å in anthracene	447
<i>G. Finger et al. (Olmsted)</i> : Anthracene triplet-triplet annihila- tion rate constant	455
DISCUSSION	461

Cambridge University Press

978-0-521-12650-2 - The Triplet State

Edited by A. B. Zahlan, G. M. Androes, C. A. Hutchison, H. F. Hamerka, G. W. Robinson,
F. W. Heineken and J. H. van der Waals

Table of Contents

[More information](#)

x

CONTENTS

Section 7. Triplet state related to biology

<i>J. M. Lhoste et al.</i> : ESR and optical studies of some triplet states of biological interest	page 479
<i>M. Guéron et al.</i> : The triplet state of DNA	505
<i>A. Pullman</i> : Some characteristics of the triplet states of the nucleic bases	515
DISCUSSION	525
Index of names	530
Index of subjects	537