# Subject Index

Absorption coefficients of, and kinetics of the BrO radical using molecular modulation. 189 triplet-triplet, of 1,3-dienes, detection of by pulse radiolysis, 89 UV, spectrum of, and photochemistry of CF<sub>2</sub>ClBr, 277 Alizarin adsorbed on a glass surface, photochemistry of, 357 Alkvlcvclohexanes liquid, biradical intermediates in 7.6 eV photon-induced isomerization of, 79 Aryl ethylenes the effect of changing the electronic configurations of the excited states on the rate constant of photoevelization of, 253 Azastilbenes theoretical description of conformational isomers in the, and a study using modified neglect of differential overlap (MNDO) and intermediate neglect of differential overlap/ spectroscopic (INDO/S), 329 Benzophenone triplet, the behaviour of in micellar solutions, and the evidence for an exciplex mechanism, 59 Bis(fluoroxy)difluoromethane the photolysis of, and its photochemical reaction with CO, 303 Bromoxy radical absorption coefficients and kinetics of using molecular modulation, 189 Carbon disulphide electronically excited  $({}^{1}A_{2} \text{ and } {}^{3}A_{2})$ states), quenching of by several collision partners, 13 Carbon monoxide ground state (X  ${}^{1}\Sigma^{+}$ ), reactions of electronically excited (A  $^{1}\pi$ , v' = 13)  $^{13}C^{16}O$  and  $^{12}C^{18}O$  molecules with, 1

the photolysis of bis(fluoroxy)difluoromethane  $(CF_2(OF)_2)$  and its photochemical reaction with, 303 Charge separation influence of ionic strength on the efficiency of, 209 Chlorophyll aggregation of, and a spectroscopic study of solvent effects, 151 Complexes excited donor-acceptor, intramolecular alkene cycloaddition via. 245 **Computer analysis** of consecutive photochemical reactions. 25 Conformers rotational, in trans-diarylethylenes, spectroscopic resolution of in timeresolved fluorescence studies, 235 Cvanide  $CN(B^{2}\Sigma^{+})$  photofragment fluorescence following two-photon excitation of ICN with a KrF laser, 101 9-Cvanoanthracene fluorescence lifetimes and time-resolved spectroscopy of crystals of in the temperature range 77 - 300 K, 163 Cycloaddition intramolecular alkene, via excited donor-acceptor complexes, 245 2,6-Diaminopyridine evidence for perturbation of the pyridine non-bonding electron pair in. 267 trans-Diarylethylenes spectroscopic resolution of rotational conformers in by time-resolved fluorescence studies. 235 1.3-Dichlorotetrafluoroacetone the photo-oxidation of, and the mechanism of the reaction of CF<sub>2</sub>Cl with O<sub>2</sub>, 295 1.3-Dienes detection of the triplet-triplet absorption of by pulse radiolysis, 89 Difluorochlorobromo methane UV absorption spectrum and photo-

chemistry of, 277

© Elsevier Sequoia/Printed in Switzerland

Dimethylamine

quenching of the first excited singlet state of CF<sub>3</sub>-substituted benzenes by, 73

Diphenylbutadiene

and diphenylhexatriene and diphenyloctatetraene, laser flash study of the triplet states of, and a singlet mechanism for *trans*  $\rightarrow$  *cis* photoisomerization of  $\alpha, \omega$ -diphenylpolyenes in solution, 343

Diphenylhexatriene

and diphenylbutadiene and diphenyloctatetraene, laser flash study of the triplet states of, and a singlet mechanism for *trans*  $\rightarrow$  *cis* photoisomerization of  $\alpha, \omega$ -diphenylpolyenes in solution, 343

Diphenyloctatetraene

and diphenylbutadiene and diphenylhexatriene, laser flash study of the triplet states of, and a singlet mechanism for *trans*  $\rightarrow$  *cis* photoisomerization of  $\alpha, \omega$ -diphenylpolyenes in solution, 343

Exciplex

evidence for a mechanism involving an in the behaviour of triplet benzophenone in micellar solutions, 59 kinetic evaluations of photochemical

reactions mediated by, 313

**Excited** states

- the effect of changing the electronic configurations of the excited states on the rate constant of photocyclization of aryl ethylenes, 253
- problems arising during the determination of the lifetime of electronically excited molecules by fluorescence inhibition techniques under continuous excitation, 139
- quenching of electronically excited CS<sub>2</sub> (<sup>1</sup>A<sub>2</sub> and <sup>3</sup>A<sub>2</sub> states) by several collision partners, 13
- reactions of electronically excited (A  ${}^{1}\pi$ , v' = 13)  ${}^{13}C^{16}O$  and  ${}^{12}C^{18}O$ molecules with ground state CO-(X  ${}^{1}\Sigma^{+}$ ), 1

Fluorescence

CN(B  ${}^{2}\Sigma^{+}$ ) photofragment, following two-photon excitation of ICN with a KrF laser, 101

- lifetimes of, and time-resolved spectroscopy of 9-cyanoanthracene crystals in the temperature range 77 - 300 K, 163
- of mesoionics, the viscosity dependence of the quantum yield of, 55
- 1-naphthylamine, quenching of by paraquat, 271
- techniques for the inhibition of under continuous excitation, and problems arising during the determination of the lifetime of electronically excited molecules, 139
- time-resolved, studies of, and spectroscopic resolution of rotational conformers in *trans*-diarylethylenes, 235

Intermediate

biradical, in 7.6 eV photon-induced isomerization of liquid alkylcyclohexanes, 79

Intermediate neglect of differential overlap (INDO/S)

and modified neglect of differential overlap (MNDO), a study using in a theoretical description of conformational isomers in the azastilbenes, 329

Ionic strength

influence of on the efficiency of charge separation, 209

Iron

the mechanisms of photoredox systems involving Ru(bpy)<sub>3</sub><sup>2+</sup>, O<sub>2</sub> and Fe<sup>III</sup>, 37

**Isomerization** 

7.6 eV photon-induced, of liquid alkylcyclohexanes, biradical intermediates in, 79

Isomers

conformational, in the azastilbenes, theoretical description of, and a study using modified neglect of differential overlap (MNDO) and intermediate neglect of differential overlap/spectroscopic (INDO/S), 329

Isotope effect

in reactions of electronically excited (A  ${}^{1}\pi$ , v' = 13)  ${}^{13}C^{16}O$  and  ${}^{12}C^{18}O$ molecules with ground state CO-(X  ${}^{1}\Sigma^{+}$ ), 1 Ketones

- aromatic, the photoreaction of poly-(ethylene glycol)s with, and chain length and temperature effects on hydrogen abstraction kinetics, 337
- quencher effect of thiophene and its monomethyl derivatives on photoreduction and photocycloaddition reactions of, 95

## **Kinetics**

- and absorption coefficients of the BrO radical using molecular modulation, 189
- of exciplex-mediated photochemical reactions, 313
- hydrogen abstraction, chain length and temperature effects on, and the photoreaction of poly(ethylene glycol)s with an aromatic ketone, 337
- of the photochlorination of perfluoro-2butene under intermittent light, 229

#### Laser

KrF, CN(B  $^{2}\Sigma^{+}$ ) photofragment fluorescence following two-photon excitation of ICN with a, 101

Lifetime

- of electronically excited molecules by fluorescence inhibition techniques under continuous excitation, problems arising during the determination of the, 139
- fluorescence, and time-resolved spectroscopy of 9-cyanoanthracene crystals in the temperature range 77 - 300 K, 163
- Luminescence
  - a study of in the photoexcitation of SO<sub>2</sub> between 180 and 210 nm, 109

## Mechanism

- exciplex, evidence for an in the behaviour of triplet benzophenone in micellar solutions, 59
- of photoredox systems involving Ru-(bpy)<sub>3</sub><sup>2+</sup>, O<sub>2</sub> and Fe<sup>III</sup>, 37
- of the reaction of  $CF_2Cl$  with  $O_2$ , and the photo-oxidation of 1,3-dichlorotetrafluoroacetone, 295
- singlet, for trans  $\rightarrow$  cis photoisomerization of  $\alpha, \omega$ -diphenylpolyenes in solution, and a laser flash study of the triplet states of diphenylbutadiene, diphenylhexatriene and diphenyloctatetraene, 343

**Mesoionics** the viscosity dependence of the fluorescence quantum yield of, 55 **Metalloporphyrins** sensitized photoreduction of methyl viologen by, 173 Methyl viologen sensitized photoreduction of by metalloporphyrins, 173 Micelles solutions of, the behaviour of triplet benzophenone in, and the evidence for an exciplex mechanism, 59 Modified neglect of differential overlap (MNDO) and intermediate neglect of differential overlap/spectroscopic (INDO/S), a study using for a theoretical description of conformational isomers in the azastilbenes, 329 Molecular modulation absorption coefficients and kinetics of the BrO radical using, 189 Monomethyl thiophenes and thiophene, quencher effect of on

photoreduction and photocycloaddition reactions of ketones, 95

**1-Naphthylamine** 

fluorescence quenching of by paraquat, 271

#### Oxygen

attempted photo-oxidation of  $H_2O$  to  $O_2$  using zinc(II) porphyrins, 183

- the mechanisms of photoredox systerms involving Ru(bpy)<sub>3</sub><sup>2+</sup>, O<sub>2</sub> and Fe<sup>III</sup>, 37
- O<sub>2</sub> detection in photochemical experiments, 321
- the photo-oxidation of 1,3-dichlorotetrafluoroacetone: mechanism of the reaction of CF<sub>2</sub>Cl with O<sub>2</sub>, 295

### Paraquat

- fluorescence quenching of 1-naphthylamine by, 271
- Perfluoro-2-butene
  - the kinetics of the photochlorination of under intermittent light, 229
- Perturbation
  - of the pyridine non-bonding electron pair in 2,6-diaminopyridine, evidence for, 267

371

Photochemical reaction with CO, the photolysis of bis(fluoroxy)difluoromethane (CF<sub>2</sub>(OF)<sub>2</sub>) and, 303 consecutive, computer analysis of, 25 exciplex-mediated, kinetic evaluations of, 313 Photochemistry of alizarin adsorbed on a glass surface, 357 and UV absorption spectrum of CF<sub>2</sub>ClBr, 277 Photochlorination of perfluoro-2-butene under intermittent light, the kinetics of, 229 **Photocyclization** of aryl ethylenes, the effect of changing the electronic configurations of the excited states on the rate constant of. 253 **Photocycloaddition** and photoreduction of ketones. quencher effect of thiophene and its monomethyl derivatives on, 95 Photodecomposition determination of quantum yields of, 133 Photoexcitation of SO<sub>2</sub> between 180 and 210 nm, and a study of luminescences, 109 **Photoisomerization** trans  $\rightarrow cis$ , of  $\alpha, \omega$ -diphenylpolyenes in solution, a singlet mechanism for, and a laser flash study of the triplet states of diphenylbutadiene, diphenylhexatriene and diphenyloctatetraene, 343 **Photolysis** of bis(fluoroxy)difluoromethane (CF<sub>2</sub>-(OF)<sub>2</sub>) and its photochemical reaction with CO, 303 gas phase, of propylene at 8.4 and 10.0 eV, 123 of propionaldehyde in air, the wavelength and pressure dependence of, 215Photo-oxidation attempted, of H<sub>2</sub>O to O<sub>2</sub> using zinc(II) porphyrins, 183 of 1,3-dichlorotetrafluoroacetone, and the mechanism of the reaction of CF<sub>2</sub>Cl with O<sub>2</sub>, 295 Photoreaction of poly(ethylene glycol)s with an aro-

matic ketone, and chain length and

temperature effects on hydrogen abstraction kinetics, 337 Photoredox systems involving Ru(bpy)<sub>3</sub><sup>2+</sup>, O<sub>2</sub> and Fe<sup>III</sup>, the mechanisms of, 37 Photoreduction and photocycloaddition of ketones, the quencher effect of thiophene and its monomethyl derivatives on, 95 sensitized, of methyl viologen by metalloporphyrins, 173 Poly(ethylene glycol)s the photoreaction of with an aromatic ketone, and chain length and temperature effects on hydrogen abstraction kinetics, 337 **Porphyrins** zinc(II), attempted photo-oxidation of  $H_2O$  to  $O_2$  using, 183 Propionaldehyde the wavelength and pressure dependence of the photolysis of in air, 215 Propylene gas phase photolysis of at 8.4 and 10.0 eV, 123 Pulse radiolysis detection of the triplet-triplet absorption of 1,3-dienes by, 89 Quantum yield fluorescence, of mesoionics, the viscosity dependence of, 55 photodecomposition, determination of, 133 Quencher effect of thiophene and its monomethyl derivatives on photoreduction and photocycloaddition reactions of ketones, 95 Quenching of electronically excited  $CS_2$  (<sup>1</sup>A<sub>2</sub> and  $^{3}A_{2}$  states) by several collision partners, 13 of the first excited singlet state of CF<sub>3</sub>-substituted benzenes by dimethylamine, 73 fluorescence, of 1-naphthylamine by paraquat, 271 **Rate constant** of photocyclization of aryl ethylenes, the effect of changing the elec-

tronic configurations of the excited states on the, 253

Resolution

spectroscopic, of rotational conformers in *trans*-diarylethylenes in timeresolved fluorescence studies, 235

Ruthenium

the mechanisms of photoredox systems involving Ru(bpy)<sub>3</sub><sup>2+</sup>, O<sub>2</sub> and Fe<sup>III</sup>, 37

Singlet states

- quenching of the first excited singlet state of  $CF_3$ -substituted benzenes by dimethylamine, 73
- singlet mechanism for trans  $\rightarrow$  cis photoisomerization of  $\alpha, \omega$ -diphenylpolyenes in solution: laser flash study of the triplet states of diphenylbutadiene, diphenylhexatriene and diphenyloctatetraene, 343

Solvent effects

spectroscopic study of, and the aggregation of chlorophyll, 151

Spectroscopy

- of solvent effects, and the aggregation of chlorophyll, 151
- time-resolved, and fluorescence lifetimes of 9-cyanoanthracene crystals in the temperature range 77 - 300 K, 163

Substituted benzenes

quenching of the first excited singlet state of CF<sub>3</sub>-substituted benzenes by dimethylamine, 73

Sulphur dioxide

photoexcitation of between 180 and

210 nm, and a study of luminescences, 109

Surface

glass, photochemistry of alizarin adsorbed on a, 357

Thiophene

and its monomethyl derivatives, quencher effect of on photoreduction and photocycloaddition reactions of ketones, 95

- **Triplet states** 
  - the behaviour of triplet benzophenone in micellar solutions: evidence for an exciplex mechanism?, 59

detection of the triplet-triplet absorption of 1,3-dienes by pulse radiolysis, 89

singlet mechanism for trans  $\rightarrow$  cis photoisomerization of  $\alpha, \omega$ -diphenylpolyenes in solution: laser flash study of the triplet states of diphenylbutadiene, diphenylhexatriene and diphenyloctatetraene, 343

Viscosity

dependence on of the fluorescence quantum yield of mesoionics, 55

Water

attempted photo-oxidation of  $H_2O$ to  $O_2$  using zinc(II) porphyrins, 183

Zinc

attempted photo-oxidation of H<sub>2</sub>O to O<sub>2</sub> using zinc(II) porphyrins, 183