

Subject Index

- Abstraction**
hydrogen and deuterium, by Cl atoms from the chloromethyl group in gaseous ethyl chlorides, secondary kinetic isotope effects in, and the effects of isotopic substitution in the adjacent methyl group, 141
- Acridine**
and phenazine in solution, a study of the reactive excited states of using flash photolysis electron spin resonance and chemically induced dynamic electron polarization, 311
- Activation**
thermal, *vs.* nuclear tunnelling: structure-efficiency relationships in hydrogen photoabstraction reactions by ketones, 185
- Amines**
aliphatic, electron spin resonance studies on the radicals produced in the photoreduction of nitrobenzene by, 61
- Arylvinylenethioamides**
mechanism of photochemical reactions of, and photoisomerization of phenylvinylenethiomorpholide, 101
- 7-Azaindolines**
photronics of, 343
- α -Benzaldoxime**
photolysis of, and hydroxyl free-radical intermediacy in the photo-Beckmann rearrangement, 233
- Benzil**
photocleavage of, 109
- Bichromophoric systems**
phenyl-dienyl non-conjugated, photochemical reactions of, 259
symmetrical *N,N'*-dicarbazyl, intramolecular twisting without charge transfer to the electronically excited S_1 state in, 29
- Butane**
the role of pressure in the photo-sensitized decomposition of under continuous laser irradiation, 273
- tert*-Butylguaiacylcarbinol**
sensitized by 4-hydroxy-3-methoxyacetophenone, product analysis of the photo-oxygenation of, 363
sensitized by *p*-methoxypropio-phenone in oxygen-free dimethoxyethane, experimental and computer modelling study of the photochemical reaction of, 85
- Carbonyl ylide**
photogenerated from 2,2-dicyano-3-(2-naphthyl)-oxirane, transient spectral and kinetic behaviours of, 317
- Charge transfer**
photochemistry of in Os(OEP)-[P(OMe)₃]₂ (OEP \equiv octaethylporphine) in hexane-halocarbon mixtures, kinetic studies of the oxidative photosubstitution reaction in the, 287
- Chemiluminescence**
in the gas phase reaction of O₃ with furan, 1
- Chlorine**
secondary kinetic isotope effects in hydrogen and deuterium abstraction by Cl atoms from the chloromethyl group in gaseous ethyl chlorides: effects of isotopic substitution in the adjacent methyl group, 141
- Chlorobenzene**
in cyclohexane, photophysics of, 9
in ethanol-H₂O solutions, photochemistry of, 163
- 7-Chlorocoumarin**
and 7-methoxycoumarin: topochemical solid state photodimerization of non-ideally oriented monomers, 355
- Chloromethyl group**
in gaseous ethyl chlorides, secondary kinetic isotope effects in hydrogen and deuterium abstraction by Cl atoms from, and the effects of

- isotopic substitution in the adjacent methyl group, 141
- Computer modelling**
and experimental study of the photochemical reaction of *tert*-butyl-guaiacylcarbinol sensitized by *p*-methoxypropiophenone in oxygen-free dimethoxyethane, 85
- Concentration**
dependence of quantum yields on, and excimer formation in the photochemistry of aliphatic ketones, 41
- Conformation**
ground state, importance of for the type of photoreaction: photochemistry of 2-vinylstilbenes, 327
- Conjugate diacids**
porphyrin, luminescence and hydrogen photogeneration from, and luminescence of porphyrins and metalloporphyrins, 205
- Cyclohexane**
photophysics of chlorobenzene in, 9
- Cycloreversion**
photochemical, of several endoperoxides of the tetracene series: reactions originating from upper excited singlet states S_n ($n > 3$), 17
- Decays**
non-exponential, application of the λ invariance test on, 171
- Decomposition**
photosensitized, of butane under continuous laser irradiation, the role of pressure in the, 273
- 6-Deoxy-1,2:3,4-di-O-isopropylidene- α -D-galactopyranose**
organic photochemical synthesis of, 128
- Deuterium**
and hydrogen, secondary kinetic isotope effects in the abstraction of by Cl atoms from the chloromethyl group in gaseous ethyl chlorides, and the effects of isotopic substitution in the adjacent methyl group, 141
- Dialkyl viologens**
micellar effects on the forward and the back photoelectron transfer from a water-soluble porphyrin to, 301
- N,N' -Dicarbazyl**
intramolecular twisting without charge transfer to the electronically excited S_1 state in the symmetrical bichromophoric system of, 29
- 2,2-Dicyano-3-(2-naphthyl)-oxirane**
transient spectral and kinetic behaviours of carbonyl ylide photogenerated from, 317
- Dimethoxyethane**
oxygen-free, experimental and computer modelling study of the photochemical reaction of *tert*-butyl-guaiacylcarbinol sensitized by *p*-methoxypropiophenone in, 85
- 2,3-Diphenylphenanthro[9,10-*b*]furan**
organic photochemical synthesis of, 124
- Dithizone**
in solution, photochromism and thermochromism of, 249
- Dynamic electron polarization**
chemically induced, and flash photolysis electron spin resonance, a study of the reactive excited states of acridine and phenazine in solution using, 311
- Efficiency**
relationships between structure and in hydrogen photoabstraction reactions by ketones: thermal activation *vs.* nuclear tunnelling, 185
- Electron spin resonance**
flash photolysis, and chemically induced dynamic electron polarization, a study of the reactive excited states of acridine and phenazine in solution using, 311
studies of the radicals produced in the photoreduction of nitrobenzene by aliphatic amines using, 61
- Endoperoxides**
several, of the tetracene series, the photochemical cycloreversion of in reactions originating from upper excited singlet states S_n ($n > 3$), 17
- Energy transfer**
method of for measurement of inter-system crossing yields, a kinetic analysis of, 179
- Ethanol**
photochemistry of chlorobenzene in solutions of H_2O and, 163
- Ethyl chlorides**
kinetic isotope effects in the photochlorination of gaseous ethyl chloride-2- d_1 , 151

- secondary kinetic isotope effects in hydrogen and deuterium abstraction by Cl atoms from the chloromethyl group in gaseous ethyl chlorides: effects of isotopic substitution in the adjacent methyl group, 141
- Ethylene**
vinylidene (3B_2) as an active intermediate in the photolysis of, 267
- Ethyl 6-oxohex-2-enoates**
organic photochemical synthesis of, 126
- Excimers**
formation of in the photochemistry of aliphatic ketones, 41, 49
- Excited states**
experimental determination of the low-lying A states of *trans*-stilbene, 215
reactions originating from upper excited singlet states S_n ($n \geq 3$): the photochemical cycloreversion of several endoperoxides of the tetracene series, 17
the reactive excited states of acridine and phenazine in solution: a flash photolysis electron spin resonance and chemically induced dynamic electron polarization study, 311
symmetrical bichromophoric systems: intramolecular twisting without charge transfer to the electronically excited S_1 state in N,N' -dicarbazyl, 29
is the vibrationally excited ground state involved in the gaseous photoisomerization of tetramethylethylene?, 387
- Fluorescence**
kinetics of the decay of, and excimer formation in the photochemistry of aliphatic ketones, 49
- Formation**
excimer, in the photochemistry of aliphatic ketones, 41, 49
- Furan**
gas phase chemiluminescent reaction of O_3 with, 1
- Glasses**
frozen aqueous, paramagnetic intermediates in the photolysis of purine free base in, 67
- Glassy matrices**
stabilization and photochemical reactions of thiyl radicals in at 77 K, 239
- Halocarbons**
kinetic studies of the oxidative photo-substitution reaction in the charge transfer photochemistry of Os-(OEP)[P(OMe) $_3$] $_2$ (OEP \equiv octaethylporphine) in mixtures of hexane and, 287
- Heptafluoropropanes**
($CF_3CF_2CTF_2$ and CF_3CTFCF_3), CO_2 laser isotope separation of tritium with, 131
- Hexane**
kinetic studies of the oxidative photo-substitution reaction in the charge transfer photochemistry of Os-(OEP)[P(OMe) $_3$] $_2$ (OEP \equiv octaethylporphine) in mixtures of halocarbon and, 287
- Hydrogen**
luminescence of porphyrins and metalloporphyrins: luminescence and hydrogen photogeneration from porphyrin conjugate diacids, 205
secondary kinetic isotope effects in hydrogen and deuterium abstraction by Cl atoms from the chloromethyl group in gaseous ethyl chlorides: effects of isotopic substitution in the adjacent methyl group, 141
structure-efficiency relationships in hydrogen photoabstraction reactions by ketones: thermal activation *vs.* nuclear tunnelling, 185
- Hydroxyl radical**
intermediacy of in the photo-Beckmann rearrangement: photolysis of α -benzaloxime, 233
- 4-Hydroxy-3-methoxyacetophenone**
product analysis of the photo-oxygenation of *tert*-butylguaiacylcarbinol sensitized by, 363
- 2-Imidazolidinethione**
photosensitized oxidation of, 375
- Intermediates**
active, in the photolysis of ethylene, vinylidene (3B_2) as, 267

- hydroxyl free-radical, in the photo-Beckmann rearrangement: photolysis of α -benzaldoxime, 233
- paramagnetic, in the photolysis of purine free base in frozen aqueous glasses, 67
- Intersystem crossing**
a kinetic analysis of the energy transfer method for measurement of the yields by, 179
- Intramolecular twisting**
without charge transfer to the electronically excited S_1 state in the N,N' -dicarbazyl symmetrical bichromophoric system, 29
- Irradiation**
continuous laser, the role of pressure in the photosensitized decomposition of butane under, 273
- Isotope separation**
of tritium with heptafluoropropanes ($CF_3CF_2CTF_2$ and CF_3CTFCF_3) using a CO_2 laser, 131
- Ketones**
aliphatic, excimer formation in the photochemistry of, 41, 49
structure-efficiency relationships in hydrogen photoabstraction reactions by, and thermal activation *vs.* nuclear tunnelling, 185
- Kinetic analysis**
of the energy transfer method for measurement of intersystem crossing yields, 179
- Kinetic isotope effects**
in the photochlorination of gaseous ethyl chloride- $2-d_1$, 151
secondary, in hydrogen and deuterium abstraction by Cl atoms from the chloromethyl group in gaseous ethyl chlorides: effects of isotopic substitution in the adjacent methyl group, 141
- Kinetics**
of fluorescence decay: excimer formation in the photochemistry of aliphatic ketones, 49
of the oxidative photosubstitution reaction in the charge transfer photochemistry of $Os(OEP)-[P(OMe)_3]_2$ ($OEP \equiv$ octaethylporphine) in hexane-halocarbon mixtures, 287
- transient spectral behaviour and, of carbonyl ylide photogenerated from 2,2-dicyano-3-(2-naphthyl)oxirane, 317
- λ invariance test
application of on non-exponential decays, 171
- Laser**
 CO_2 , isotope separation of tritium with heptafluoropropanes ($CF_3CF_2CTF_2$ and CF_3CTFCF_3) using a, 131
the role of pressure in the photosensitized decomposition of butane under continuous irradiation by, 273
- Luminescence**
of porphyrins and metalloporphyrins: luminescence and hydrogen photogeneration from porphyrin conjugate diacids, 205
- Mechanism**
of photochemical reactions of arylvinylethioamides: photoisomerization of phenylvinylethiomorpholide, 101
- Metalloporphyrins**
and porphyrins, luminescence of, and luminescence and hydrogen photogeneration from porphyrin conjugate diacids, 205
- 7-Methoxycoumarin**
and 7-chlorocoumarin, topochemical solid state photodimerization of non-ideally oriented monomers of, 355
- 1-Methoxy-4-methylamino-9,10-anthraquinone**
organic photochemical synthesis of, 119
- p*-Methoxypropiophenone**
experimental and computer modelling study of the photochemical reaction of *tert*-butylguaiaicylcarbinol sensitized by in oxygen-free dimethoxyethane, 85
- Methyl group**
adjacent, secondary kinetic isotope effects in hydrogen and deuterium abstraction by Cl atoms from the chloromethyl group in gaseous ethyl chlorides, and the effects of isotopic substitution in the, 141

- 2-Methyl-3-phenyl-1*H*-cyclopenta[1]-phenanthren-1-one**
 organic photochemical synthesis of, 122
- Micellar effects**
 on the forward and the back photoelectron transfer from a water-soluble porphyrin to dialkyl viologens, 301
- Nitrobenzene**
 electron spin resonance studies on the radicals produced in the photo-reduction of by aliphatic amines, 61
- Nuclear tunnelling**
 thermal activation *vs.*, and structure-efficiency relationships in hydrogen photoabstraction reactions by ketones, 185
- Octaethylporphine complex**
 $\text{Os}(\text{OEP})[\text{P}(\text{OMe})_3]_2$ (OEP = octaethylporphine), kinetic studies of the oxidative photosubstitution reaction in the charge transfer photochemistry of in hexane-halocarbon mixtures, 287
- Osmium**
 kinetic studies of the oxidative photosubstitution reaction in the charge transfer photochemistry of $\text{Os}(\text{OEP})[\text{P}(\text{OMe})_3]_2$ (OEP = octaethylporphine) in hexane-halocarbon mixtures, 287
- Oxidation**
 photosensitized, of 2-imidazolidinethione, 375
- Oxygen**
 experimental and computer modelling study of the photochemical reaction of *tert*-butylguaiacylcarbinol sensitized by *p*-methoxypropio-phenone in oxygen-free dimethoxyethane, 85
- Ozone**
 gas phase chemiluminescent reaction of with furan, 1
- Paramagnetism**
 intermediates showing in the photolysis of purine free base in frozen aqueous glasses, 67
- Phenazine**
 and acridine in solution, a study of the reactive excited states of using flash photolysis electron spin resonance and chemically induced dynamic electron polarization, 311
- Phenylvinylethiomorpholide**
 photoisomerization of, and the mechanism of photochemical reactions of arylvinylethioamides, 101
- Photoabstraction**
 hydrogen, by ketones, structure-efficiency relationships in, and thermal activation *vs.* nuclear tunnelling, 185
- Photo-Beckmann rearrangement**
 hydroxyl free-radical intermediacy in the, and the photolysis of α -benzaloxime, 233
- Photochemical reactions**
 of arylvinylethioamides, mechanism of, and photoisomerization of phenylvinylethiomorpholide, 101
 importance of the ground state conformation for the type of in the photochemistry of 2-vinylstilbenes, 327
 of phenyl-dienyl non-conjugated bi-chromophoric systems, 259
 stabilization and, of thiyl radicals in glassy matrices at 77 K, 239
 of *tert*-butylguaiacylcarbinol sensitized by *p*-methoxypropio-phenone in oxygen-free dimethoxyethane, experimental and computer modelling study of, 85
- Photochemistry**
 of aliphatic ketones, excimer formation in, 41, 49
 charge transfer, of $\text{Os}(\text{OEP})[\text{P}(\text{OMe})_3]_2$ (OEP = octaethylporphine) in hexane-halocarbon mixtures, kinetic studies of the oxidative photosubstitution reaction in the, 287
 of chlorobenzene in ethanol-H₂O solutions, 163
 of 2-vinylstilbenes: importance of the ground state conformation for the type of photoreaction, 327
- Photochlorination**
 of gaseous ethyl chloride-2-*d*₁, kinetic isotope effects in, 151
- Photochromism**
 and thermochromism of dithizone in solution, 249

- Photocleavage**
of benzil, 109
- Photodimerization**
topochemical solid state, of non-ideally oriented monomers of 7-chlorocoumarin and 7-methoxycoumarin, 355
- Photoelectron transfer**
the forward and the back, from a water-soluble porphyrin to dialkyl viologens, micellar effects on, 301
- Photogeneration**
hydrogen, and luminescence from porphyrin conjugate diacids: luminescence of porphyrins and metalloporphyrins, 205
transient spectral and kinetic behaviours of carbonyl ylide produced from 2,2-dicyano-3-(2-naphthyl)-oxirane by, 317
- Photoisomerization**
gaseous, of tetramethylethylene: is the vibrationally excited ground state involved? , 387
of phenylvinylethiomorpholide: mechanism of photochemical reactions of arylvinylethioamides, 101
- Photolysis**
of α -benzaldoxime: hydroxyl free-radical intermediacy in the photo-Beckmann rearrangement, 233
of ethylene, vinylidene (3B_2) as an active intermediate in the, 267
of purine free base in frozen aqueous glasses, paramagnetic intermediates in, 67
- Photonics**
of 7-azaindoles, 343
- Photo-oxygenation**
of *tert*-butylguaiacylcarbinol sensitized by 4-hydroxy-3-methoxyacetophenone, product analysis of the, 363
- Photophysics**
of chlorobenzene in cyclohexane, 9
- Photoreduction**
of nitrobenzene by aliphatic amines, electron spin resonance studies on the radicals produced in the, 61
- Porphyrins**
and metalloporphyrins, luminescence of, and luminescence and hydrogen photogeneration from porphyrin conjugate diacids, 205
water-soluble, micellar effects on the forward and the back photoelectron transfer from to dialkyl viologens, 301
- Pressure**
the role of in the photosensitized decomposition of butane under continuous laser irradiation, 273
- Product analysis**
of the photo-oxygenation of *tert*-butylguaiacylcarbinol sensitized by 4-hydroxy-3-methoxyacetophenone, 363
- Purine**
free base of in frozen aqueous glasses, paramagnetic intermediates in the photolysis of, 67
- Quantum yields**
concentration dependence of, and excimer formation in the photochemistry of aliphatic ketones, 41
intersystem crossing, a kinetic analysis of the energy transfer method for measurement of, 179
- Singlet states**
reactions originating from upper excited singlet states S_n ($n > 3$): the photochemical cycloreversion of several endoperoxides of the tetracene series, 17
symmetrical bichromophoric systems: intramolecular twisting without charge transfer to the electronically excited S_1 state in N,N' -dicarbazyl, 29
- Spectral behaviour**
transient, and kinetics of carbonyl ylide photogenerated from 2,2-dicyano-3-(2-naphthyl)-oxirane, 317
- Stabilization**
and photochemical reactions of thiyl radicals in glassy matrices at 77 K, 239
- trans*-Stilbene**
experimental determination of the low-lying excited A states of, 215
- Structure**
relationships between efficiency and in hydrogen photoabstraction reactions by ketones: thermal activation *vs.* nuclear tunnelling, 185

Substitution

isotopic, secondary kinetic isotope effects in hydrogen and deuterium abstraction by Cl atoms from the chloromethyl group in gaseous ethyl chlorides, and the effects of in the adjacent methyl group, 141
 oxidative photo-, kinetic studies of in the charge transfer photochemistry of Os(OEP)[P(OMe)₃]₂ (OEP ≡ octaethylporphine) in hexane-halocarbon mixtures, 287

Tetracene series

the photochemical cycloreversion of several endoperoxides of the in reactions originating from upper excited singlet states S_n (n > 3), 17
 2,3,5,9b-Tetrahydro-1*H*-imidazo[4,3-*a*]-isoindol-5-one
 organic photochemical synthesis of a, 117

Tetramethylethylene

gaseous photoisomerization of, is the vibrationally excited ground state involved? , 387

Thermal activation

vs. nuclear tunnelling: structure-efficiency relationships in hydrogen photoabstraction reactions by ketones, 185

Thermochromism

and photochromism of dithizone in solution, 249

Thiyl radicals

stabilization and photochemical reactions of in glassy matrices at 77 K, 239

3-Tolyl-2-isopropylamino-2-cyclohexenone
 organic photochemical synthesis of, 115
 Trimethylphosphite complex

Os(OEP)[P(OMe)₃]₂ (OEP ≡ octaethylporphine), kinetic studies of the oxidative photosubstitution reaction in the charge transfer photochemistry of in hexane-halocarbon mixtures, 287

Tritium

CO₂ laser isotope separation of with heptafluoropropanes (CF₃CF₂CTF₂ and CF₃CTFCF₃), 131

Tunnelling

nuclear, *vs.* thermal activation: structure-efficiency relationships in hydrogen photoabstraction reactions by ketones, 185

Vinylidene (³B₂)

as an active intermediate in the photolysis of ethylene, 267

2-Vinylstilbenes

photochemistry of, and the importance of the ground state conformation for the type of photoreaction, 327

Yields

intersystem crossing, a kinetic analysis of the energy transfer method for measurement of, 179
 quantum, concentration dependence of, and excimer formation in the photochemistry of aliphatic ketones, 41