Subject Index

Absorption spectroscopy

atomic, kinetic study of electronically excited tin atoms by, 37

Absorption spectrum

vacuum ultra-violet, of anhydrous nitric acid, 321

Absorptions

transient, of cyanine dyes in gelatin and adsorbed to silver halide films, 403

Aliphatic amines

quenching of 2-pentanone singlets by, 467

Ammonia

at 147, 123.6 and 104.8 nm, light emission of the photofragments produced by photolysis of, 417

Ammonin•d₃

at 147, 123.6 and 104.8 nm, light emission of photofragments produced by photolysis of, 417

Aromatic thicketones

spectroscopic and photochemical properties of, 225

Arsenic atoms

electronically excited, $As(4^2D_J, 4^2P_J)$, kinetic study by time-resolved attenuation of atomic resonance radiation, 1

Atomic absorption spectroscopy kinetic study of electronically excited tin atoms by, 37

Atomic resonance radiation

kinetic study of electronically excited arsenic atoms by time resolved attenuation of, 1

kinetic study of electronically excited tin atoms by time-resolved attenuation of, 305

Attenuation

time-resolved, of atomic resonance radiation, kinetic study of electronically excited arsenic atoms by, 1

time-resolved, of atomic resonance radiation, kinetic study of electronically excited tin atoms by, 305

Benzaldehydes

 o-methyl substituted, dispersed in durene single crystals, photoenolization of, 383 Benzenes

excited singlet-state, in the vapour phase, electronic quenching of, 337 isolated substituted, electronic relaxation in, 365

Benzylidene aniline

cis-trans isomerization of, 241 u.v. and n.m.r. spectra of cis-, 241 n-Butane

with 8.4 and 10.0 eV photons, primary processes in the photolysis of, 151

t-Butanol and t-butyl methyl ether in cyclohexane, intermolecular elimination of small molecules in photolysis of, 267

Cadmium resonance radiation phase-shift study of quenching and trapping of, 285

Carbazole

symmetry of active vibrations in fluorescence and phosphorescence spectrum of, 133

Carbon monoxide

photochemistry of gaseous hydrogen peroxide-carbon monoxide, 115 photolysis of hydrogen peroxide in the presence of, 455 photolysis of nitrous acid in the presence of, 291

Carbon tetrachloride

reaction of 2-pentanone triplets with, 237

Carbonyl fluoride

kinetics of photochemical fluorination of, 97

Chemical reactions

of excited hydroxycoumarins in different solvents, rate parameters in, 55

Cinnamic acid dimers

 α -truxillic and β -truxinic acid, photochemical scission of, 163

Cyanides

formation of $CN(B^2\Sigma)$ in electron impact dissociation of, 273

Cyanine dyes

in gelatin and adsorbed to silver halide films, transient absorptions of, 403

Cyclobutanone

at 147.0 nm and 123.6 nm in the gas phase, photolysis of, 45

Cyclohexane

intermolecular elimination of small molecules in photolysis of t-butanol and t-butyl methyl ether in, 267

Cyclopentene

at 147.0 nm and 123.6 nm, gas-phase photolysis of, 13

Depletion effects

in photochemical systems, 215

Dibenzofuranne

symmetry of active vibrations in fluorescence and phosphorescence spectrum of, 133

Dibenzothiophene

symmetry of active vibrations in fluorescence and phosphorescence spectrum of, 133

Depolymerization

benzene photosensitized, of α-truxillic acid, 171

9,10-Diphenylanthracene

as a fluorescence quantum yield standard, 315

Dissociation

electron impact, of cyanides, formation of $CN(B^2\Sigma)$ in, 273

Durene single crystals

photoenolization of o-methyl substituted benzaldehydes dispersed in, 383

Electron energy transfer

in the gas phase: quenching of $O_2(^1\Sigma_g^+)$, 409

Electron impact dissociation

of cyanides, formation of $CN(B^2\Sigma)$ in, 273

Electron transfer processes

in photolysis of ferrocene in solution, 189

Electrons

hydrated, photochemical generation of, from aqueous solutions of phenolates, 89

Electronic impact dissociation

of cyanides, formation of $CN(B^2\Sigma)$ in, 273

Electronic quenching

of excited singlet-state benzenes in the vapour phase, 337 in isolated substituted benzenes, 365

Energy transfer

electronic, in the gas phase: the quenching of $O_2(^1\Sigma_g^*)$, 409

Eximer emission

from pyrene, solvent effect on, 247

Ferrocene

in solution, electron transfer processes in photolysis of, 189

Fluorescence quantum yield standard 9,10-diphenylanthracene as a, 315

Fluorescence spectrum

of carbazole, dibenzofuranne, dibenzothiophene, symmetry of active vibrations in, 133

Fluorination

photochemical, of carbonyl fluoride, kinetics of, 97

Fluorocarbons

reactions of electronically excited O(¹D) atoms with, 325

Garton lamp

application as photolysis source operating in the vacuum ultraviolet, 107

Hexafluorobiacetyl vapour

photochemistry of, 27

Hydrated electrons

from aqueous solutions of phenolates, substituent effects in photochemical generation of, 89

Hydrocarbons

rate constants for hydroxyl radical reactions with, 115

Hydrogen atom reactions

with hydrogen peroxide, rate constants for, 115

Hydrogen peroxide

in the presence of carbon monoxide, photolysis of, 455

photochemistry of gaseous hydrogen peroxide-carbon monoxide system,

rate constants for hydrogen atom reactions with, 115

Hydroxycoumarins

excited, in different solvents, rate parameters in chemical reactions of, 55

Hydroxyl radical reactions

with hydrocarbons, rate constants for,

Infra-red laser enhanced reactions chemistry of vibrationally excited O_3 reactions with NO and $O_2(^1\Delta)$, 71

Infra-red laser radiation

in molecular gas mixtures, selectivity of chemical reactions stimulated by, 249

Intermolecular elimination

of small molecules in the photolysis $(\lambda = 185 \text{ nm})$ of t-butanol and t-butyl ether in cyclohexane, 267

Ionisation potential

photolysis of methyl-3-butene-1 below and above the, 123

Isomerization

cis-trans, of benzylidene anilene, 241

Kinetics

of electronically excited arsenic atoms, $\Lambda s(4^2D_J,4^2P_J)$, study by timeresolved attenuation of atomic resonance radiation, 1

of electronically excited tin atoms, $\operatorname{Sn}(5^1D_2)$, study by atomic absorption spectroscopy, 37

of electronically excited tin atoms, $Sn(5^1S_0)$, study by time-resolved attenuation of atomic resonance radiation, 305

of excited molecules, 27

of photochemical fluorination of carbonyl fluoride, 97

Laser radiation

infra-red, in molecular gas mixtures, selectivity of chemical reactions stimulated by, 249

Light emission

of photofragments produced by photolysis of ammonia and ammonind₃ at 147, 123.6 and 104.8 nm, 417

Luminescence

of SO2 in vacuum U.V., 441

Mercury-photosensitized reaction of tetrahydrothiophene-1,1-dioxide, 199

Methyl-3-butene-1

photolysis of, below and above the ionisation potential, 123

3-Methyl-3-penten-2-one

Z-E photoisomerization of, 471

Molecular gas mixtures

selectivity of chemical reactions stimulated by infra-red laser radiation in, 249

Nitric acid

anhydrous, vacuum ultra-violet absorption spectrum of, 321

Nitric oxide

chemistry of vibrationally excited O₃ reactions with, 71

Nitrous acid

gaseous, photolysis of, 175 in the presence of carbon monoxide and sulphur dioxide, photolysis of, 291

N.m.r. spectrum

of cis-benzylidene aniline, 241

Non-radiative decay

evidence for, in Z-E photoisomerization of 3-methyl-3-penten-2-one, 471

Optical densities

high accuracy spectrofluorimeter for determination of relative quantum yields within a broad range of, 431

Organic molecules

unsaturated, photoperoxidation of, 393

Oxciplex relaxation dissociative, 393

Oxygen

singlet delta, chemistry of vibrationally excited ozone reactions with, 71 singlet sigma, quenching of, 409

Oxygen atoms

electronically excited, reactions with fluorocarbons, 325

Ozone reactions

vibrationally excited, with NO and $O_2(^1\Delta)$, 71

2-Pentanone

gas and liquid phase photochemistry of, 143

2-Pentanone singlets

quenching of, by aliphatic amines, 467

2-Pentanone triplets

reaction with carbon tetrachloride, 237

Phase-shift

of quenching and trapping of Cd 228.8 nm resonance radiation, 285 Subject Index 479

Phenolates

aqueous solutions of, substituent effects in photochemical generation of hydrated electrons from, 89

Phosphorescence spectrum

of carbazole, dibenzofuranne, dibenzothiophene, symmetry of active vibrations in, 133

Photochemical generation

of hydrated electrons from aqueous solutions of phenolates, substituent effects in, 89

Photochemical properties

of aromatic thicketones: xanthione, 225

Photochemical scission

of cinnamic acid dimers: α-truxillic and β-truxinic acid, 163

Photochemical systems

depletion effects in, 215

Photochemistry

gas and liquid phase, of 2-pentanone, 143

of gaseous hydrogen peroxide-carbon monoxide system, 115

of hexafluorobiacetyl vapour, 27

of SO₂ in vacuum U.V.: luminescence studies, 441

Photoenolization

of o-methyl substituted benzaldehydes dispersed in durene single crystals, 383

Photofragments

produced by photolysis of ammonia and ammonin-d₃ at 147, 123.6 and 104.8 nm, light emission of, 417

Photoisomerization

Z–E, of 3-methyl-3-penten-2-one, 471 Photolysis

flash, of propene: application of a Garton lamp as a photolysis source operating in the vacuum ultraviolet, 107

gas-phase, of cyclopentene at 147.0 nm and 123.6 nm, 13

of ammonia and ammonin-d₃ at 147, 123.6 and 104.8 nm, light emission of photofragments produced by, 417

of cyclobutanone at 147.0 nm and 123.6 nm in the gas phase, 45

of ferrocene in solution, electron transfer processes in, 189

of gaseous nitrous acid, 175

of hydrogen peroxide in the presence of carbon monoxide, 455

of methyl-3-butene-1 below and above the ionisation potential, 123

of n-butane with 8.4 and 10.0 eV photons, primary processes in, 151

of nitrous acid in the presence of carbon monoxide and sulphur dioxide, 291

of t-butanol and t-butyl methyl ether in cyclohexane, intermolecular elimination of small molecules in, 267

vacuum ultra-violet, 45

Photoperoxidation

of unsaturated organic molecules, 393

Polybutadiene

U.V. stabilization of, 349

Primary processes

in photolysis of n-butane with 8.4 and 10.0 eV photons, 151

Propene

flash photolysis of, 107

Pyrene

solvent effect on eximer emission from, 247

Quantum yields

relative, high accuracy spectrofluorimeter for determination of, 431

Quenching

electronic, of excited singlet-state benzenes in the vapour phase, 337

of Cd 228.8 nm resonance radiation, 285

of $O_2(^1\Sigma_g^+)$, electronic energy transfer in the gas phase, 409

of 2-pentanone singlets by aliphatic amines, 467

Radiation

atomic resonance, kinetic study of electronically excited arsenic atoms by time-resolved attenuation of, 1

Radical reactions

hydroxyl, with hydrocarbons, 115 Rate constants

for hydroxyl radical reactions with hydrocarbons and for hydrogen atom reactions with hydrogen peroxide, 115

Rate parameters

in chemical reactions of excited hydroxycoumarins in different solvents, 55

Relaxation

dissociative oxciplex, 393 electronic, in isolated substituted benzenes, 365

Resonance radiation

atomic, kinetics of electronically excited tin atoms by time-resolved attenuation of, 305

Cd 228.8 nm, phase-shift study of quenching and trapping of, 285

Silver halide films

transient absorptions of cyanine dyes in gelatin and adsorbed to, 403

Solvent effect

on eximer emission from pyrene, 247 Spectrofluorimeter

high accuracy, for determination of relative quantum yields within a broad range of optical densities, 431

Spectroscopic properties

of aromatic thioketones: xanthione, 225 Stabilization

U.V., of polybutadiene, 349

Sulphur dioxide in vacuum U.V., photochemistry of, 441 photolysis of nitrous acid in the pre-

sence of, 291
Tetrahydrothiophene-1,1-dioxide

mercury-photosensitized reaction of,

Tin atoms

199

electronically excited, Sn(5¹D₂), kinetic study by atomic absorption spectroscopy, 37 electronically excited, Sn(5¹S₀), by time-resolved attenuation of atomic resonance radiation, kinetics of, 305

Transient absorptions

of cyanine dyes in gelatin and adsorbed to silver halide films: temperature dependence, 403

Trapping

of Cd 228.8 nm resonance radiation, 285

α-Truxillic acid

benzene photosensitized depolymerization of, 171

photochemical scission of cinnamic acid dimers, 163

β -Truxinic acid

photochemical scission of cinnamic acid dimers, 163

Ultra-violet spectrum of cis-benzylidene anilines, 247

Vibrations

active, in fluorescence and phosphorescence spectrum of carbazole, dibenzofuranne, dibenzothiophene, symmetry of, 133

Xanthione

spectroscopic and photochemical properties of aromatic thicketones, 225