# ABSTRACTS SECTION

In this section are given information on methods of synthetizing labelled compounds and related problems (analysis, purifying, radiodecomposition, storage). The references cover articles drawn from about 40 secondary periodicals and also from N.S.A. and C.A.

A point is made of singling out each of the above mentioned aspects in the abstracts, particularly where the greater part of the article deals with applications of labelled compounds. This Journal will likewise contain author and subject indexes for each volume.

The articles are abstracted by M.R.J. Lefort, Chemical Engineer and retrieved by the mechanized documentation system of the Centre of Information and Documentation (CID) of the Commission of the European Communities.

The work on this information project was started in May 1964 and interrupted for reasons beyond our control, after the last issue of 1966.

The gap between 1967 and 1971 will be filled by the publication of a supplement to the Journal containing about 2.500 references collected during that period. There will be extra-charge for this volume.

## CONTENTS

# 1 - G E N E R A L

72-254

AITKEN M.J.

Physics applied to archaeology I. Dating

Rep. Progr. Phys. 33 (1970) 10, 941-1000

N.S.A. 26 (1972) 194

The following techniques are outlined : radiocarbon dating, potassium-argon dating, uranium series dating, fission track dating and dating by chemical change

72-255

DALL'ACQUA G.F., LOSTIA G.B.

Prevention of radiation risks in hospitals. Note 1. Radioactive isotopes : characteristics and problems of protection.

Ig. Mod. 62 (1969) 651-64

N.S.A. 25 (1971) 52094

The physical characteristics of the radioisotopes commonly used in medical diagnosis and the biological effect produced by them are reviewed.

72-256

GONCALVES DA ROCHA A.F., MUGAYAR M.B.

Tests employing radioisotopes already incorporated in medical routine

Hospital Rio De Janeiro 76 (1969) 4, 1259-81

Biological Abstr. 52 (1971) 45843

Clinical laboratory tests based on radioisotope techniques are reviewed and briefly described.

72-257

HOFFMANN G., LADNER H.-A.

Radioisotopes in pharmacological and clinical biochemistry

Nuclear Medicine Suppl 8 (1970) 757 pp

N.S.A. 25 (1971) 55255

Among the topics discussed were isotope methods for function studies of the lungs, central nervous system and kidneys. The labelling of antibody is included The developments of new radiopharmaticals, dosimetry and semiconductor detector for in vivo measurement and whole-body counter are also reported.

72-258

HUNDESHAGEN H.

Investigation of stomach and pancreas by means of radioactive substances.

Krankenhaus Arzt 43 (1970) 4, 163-5

Excerpta Medica Radiology (1971) 347

The currently used techniques are reviewed.

72-259

KURANZ J.L.

Twenty-five years of isotopes in life sciences

Isotop. Radiat. Technol. 9 (1971) 1, 113-5

N.S.A. 25 (1971) 55107

The applications of radioisotope technology in the life sciences over the past 25 years are briefly discussed.

72-260

LINNEWEH F.

**Isotope utilization in the study of hereditary metabolic diseases.**

Monatsschr. Kinderheilk 118 (1970) 6, 191-4

C.A. 74 (1971) 850

Isotope utilization in the elucidation of metabolic diseases is demonstrated in cases of phenylketonuria, monosaccharide malabsorption, and galactokinase deficiency.

72-261

ROCCHICCIOLI - DELTCHEFF C.

**Isotopes**

Presses Universitaires de France (1971) 128 pp

N.S.A. 26 (1972) 171

Tracer techniques are studied and the various applications of radioisotopes examined.

72-262

ZUM WINKEL K.

**Pharmacological bases of nuclear medicine.**

Therapiewoche 21 (1971) 20, 1599-1600, 1602-4

N.S.A. 25 (1971) 44824

The chemical, physical, and biological properties of various radiopharmaceuticals are reviewed.

## 2 - S Y N T H E S I S

### 2.0 - GENERAL

72-263

ANONYMOUS

**Panel proceedings series. Radiation sensitivity of toxins and animal poisons.**

Unipub New York (1970) 118 pp

Biological Abstr. 52 (1971) 2047

Studies are reported on labelling of venoms with radioactive isotopes.

72-264

ADOLPHE M., DEYSSON G. LECHAT P.

**Maximum labelling index and the effect of drugs.**

Symposium sur les progrès des techniques nucléaires en pharmacodynamie Saclay Mars 11-13 (1970) 212-7

N.S.A. 25 (1971) 46668

Metabolic inhibitors (azathioprine, methotrexate, aminopterin, and chlormethine) and antimitotic steroidic drugs or non-steroidic drugs were labelled.

72-265

BECHER R., GREMMEL H.

Problems of erythrocyte marking: A contribution to spleen scintigraphy

Med. Welt 14 (1970) 611-4

Biological Abstr. 52 (1971) 12267

Various process of erythrocyte marking involving spleen scintigraphy were studied.

72-266

DAGG C.P., DAGG M.K.

Incorporation of radioactive teratogens by mammalian embryos.

Methods Teratological Stud. Exp. Anim. Man, Proc. Int. Worshop Teratology 2nd (1968) 255-8

C.A. 74 (1971) 94222

Procedures for demonstration of the incorporation of isotopically labelled teratogens into mammalian ambryos are described.

72-267

DZYEYEVA V.P., NASHTAKOW S.M.

The herbicidal action of sodium trichloroacetate obtained by a radiochemical method.

Vyestsi Akad Navuk Byelarus SSR Syer Biyal Navuk 3 (1970) 61-7

Biological Abstr. 52 (1971) 33080

The sodium trichloroacetate obtained by a radiochemical method does not differ in its action from the technical preparation produced by the chemical industry.

72-268

GALLANT J.L.

Special techniques in target preparation for Chalk River nuclear physics experiments

Third Intern. Symp. Res. Mat. Nucl. Measurements Gatlinburg (1971) 5 oct., 134-43

N.S.A. 25 (1971) 59639

Methods are described for preparation of H, $^{2}H$, and $^{3}H$ targets, and fabrication of $^{14}C$ targets.

72-269

HOFFMANN G., MEURET G.

Examination methods with radioisotopes in hematology

Med. Klin. 65 (1970) 21, 1015-9

Biological Abstr. 52 (1971) 12144

The methods for cell marking are discussed.

72-270

JYSSUM S., JYSSUM K.

Utilization of thymine, thymidine, and TMP by Neisseria meningitidis.

1. Growth response and uptake of labelled material.

Acta Pathol. Microbiol. Scand. Sect. B 78 (1970) 6, 683-91

C.A. 74 (1971) 61892

Labelled thymine, thymidine, and thymidine 5'-monophosphate were incorporated into meningococci to the extent of 5.6, 0.6, and 0,05 % respectively.

72-271

STOKKE O., BREMER J.

A simple method for preparation of methyl-labelled (-) carnitine

Biochim. Biophys. Acta 218 (1970) 3, 552-4

Biological Abstr. 52 (1971) 58713

The title compound was prepared from the commercially available non radioactive (-) carnitine.

72-272

URBANSKI T.S., REWIENSKA-KOSCIUK B., WEZRANOWSKI E., RADWAN M.

Problems in labelling large volumes of materials and separating tracers in metallurgy and metal technology.

Simp. Ispol'z Method. Mechenykh At. Soversh. Tekhnol. Protsessov Proizvod. Primen. Yad-Fiz.Method Anal. Sostava Veshchestva (1968) 261-70

C.A. 74 (1971) 15323

The methods of labelling of metallurgical materials, selection of isotopic indicators, and isolation of isotopic indicators are discussed.

72-273

WINCHELL H.S.

Dosimetry considerations for radioisotopically labelled organic compounds

CONF-691212 (1969) 8-11 Dec, 225-38

C.A. 73 (1970) 127528

The kinetic-analysis approach to estimates of tissue-concentration changes of radioisotopes contained in organic molecules was reviewed. Examples are given for labelled $CO_2$-$HCO_3^-$ deposition in bone and labelled amino acid incorporation in long-lived proteins.

## 2.1 - DEUTERIUM COMPOUNDS

### 2.1.0.- GENERAL

72-274

SCHNEIDER W., STERN M.J., ZANSE E.L.

Further studies on temperature dependences of isotope effects

J. Chem. Physics 52 (1970) 4, 2022-35

Chemischer Informationsdienst Anorganische Chemie (1970) 19-165

A large number of $^{13}C$-, $^{18}O$-, and D- isotope-exchange equilibria involving organic and inorganic molecules were investigated.

### 2.1.1 - ALIPHATIC COMPOUNDS

72-275

AARON H.S., SZAFRANIEC L.J., REIFF L.P.

Stereoselective synthesis and stereochemistry of optically active isopropyl methylphosphinothionate

J. Amer. Chem. Soc. 92 (1970) 21, 6391-2

C.A. 74 (1971) 12502

(S)-(-)-iso-Pr-methylphosphinothionate was deuterated in MeOD with total configuration retention.

72-276

BAILEY D.S., SAUNDERS W.H.Jr

Mechanisms of elimination reactions. XVI Stereochemistry of elimination from 2- and 3-hexyltrimethylammonium ions. An explanation of the syn-anti dichotomy

J. Amer. Chem. Soc. 92 (1970) 18 Nov, 6904-10

N.S.A. 25 (1971) 6309

In this study, 3-hexyl-4-d-, 3-hexyl-2-d-, and 2-hexyl-3-d-trimethylammonium iodides were stereospecifically deuterated and subjected to elimination reactions under a variety of conditions.

72-277

BLACKETT B.N., COXON J.M., HARTSHORN M.P., RICHARDS K.E.

Deuterium isotope effect for the boron trifluoride - catalyzed - rearrangement of 2-methyl-1,2-epoxypropane

Aust. J. Chem. 23 (1970) 4, 839-40

Chemischer Informationsdienst Organische Chemie (1970) 29, 182

The $BF_3$ - catalyzed rearrangement of 2-methyl-1,2-epoxypropane pielded isobutyraldehyde deuterated at C-1 (formed by hydride shift) or at C-2 (deuteride shift).

72-278

BULL H.G., KOEHLER K., PLETCHER T.C., ORTIZ J.J., CORDES E.H.

Effects of $\alpha$-deuterium substitution, polar substituents, temperature and salts on the kinetics of hydrolosis of acetals and ortho esters.

J. Amer. Chem. Soc. 93 (1971) 12, 3002-11

N.S.A. 25 (1971) 41800

Kinetic secondary deuterium isotope effects for the hydrolysis of ethyl orthoformate and substituted benzaldehyde diethyl acetals was studied.

72-279

BURCAT A., LIFSHTZ A.

Homogeneous exhange reaction : $CD_4 + CH_4 \rightarrow CH_3D + CD_3H$. Single pulse shock tube studies

J. Chem. Physics 52 (1970) 7, 3613-8

Chemischer informationsdienst Organische Chemie (1970) 27-176

The title reaction was investigated using the single pulse shock tube technique. Mixtures of $CH_4$, $CH_4$ and Ne were prepared and diluted in argon.

72-280

CALDWELL R.A.

Quantitative deuteration of a Grignard reagent. Preparation of 2-Buten-2-d.

J. Org. Chem. 35 (1970) 4, 1193-4

Chemischer Informationsdienst Organische Chemie (1970) 30, 306

The Grignard of (Z)-2-bromo-2-butene was obtained by bromination of cis-2-butene followed by treatment with KOH. The title compound was obtained by treatment of the Grignard reagent with $D_2O$.

72-281

CORVAL M.

Isotope effects during the electron-impact induced fragmentation of ethanol

Bull. Soc. Chim. Fr. (1970) 8/9 2871-82

C.A. 74 (1971) 3202

Compounds prepared and studied were : EtOH, MeCHDOH, $MeCD_2OH$, $CD_3CH_2OH$, $C_2D_5OH$ and $C_2D_5OD$.

72-282

DALSIN P.D.

Reactions of chlorodifluoromethane and dichlorofluoromethane with potassium t-butoxide in t-butyl alcohol and kinetics of deuterium exchange of substituded methyl acetates

Ohio State Univ. (1970) 166 pp Order N°71-17980

N.S.A. 26 (1972) 64

The kinetics of the methoxide ion catalyzed deuterium exchange of the α hydrogen atoms of substituted methyl acetates in methanol -O-d were investigated at 35 and 60° by an infrared technique.

72-283

DINH-NGUYEN N., RAAL A.

Contribution to the study of metal-catalysed reduction. Hydrogenation of methyl-cis-9-octadecenoate

J. Res. Inst. Catalys. Jap. 17 (1969) 3, 171-91

Bull. Signal. Sect. 170, 32 (1971) 3562

The isotope exchange between gaseous deuterium or hydrogen and acetic acid or deuterated acetic acid was studied.

72-284

GOLD V., GRIST S.

Deuterium solvent isotope effects in methanol solution. Part I. Fractionation factors for lyonium and lyate ions

J. Chem. Soc. B (1971) 8, 1665-70

N.S.A. 25 (1971) 57427

The deuterium fractionation factors for hydroxylic positions were determined by the nmr method for the methanolic hydrogen ion and the methanolic methoxide ion.

72-285

GRAY P., HOLLAND S.

Effect of isotopic substitution on the decomposition flame of hydrazine

Combust. Flame 14 (1970) 2, 203-215

C.A. 73 (1970) 29432

A comparison of flame speeds for the $N_2D_4$ system with those of $N_2H_4$ system. The speed of the hydrazine decomposition flame is halved when D is substituted for H.

72-286

HAUTECLOQUE S.

Reactions of $CCl_3$ radicals with $C_2H_6$ and $C_2D_6$. Isotope effect

Compt. Rend. Ser. C 272 (1971) 26, 2094-7

N.S.A. 26 (1972) 58

The rate constants and activation energies of the title reactions were measured from the study of $CCl_3Br$ photolysis in the presence of isotopic molecules.

72-287

HENRY P.M.

Palladium (II) - catalyzed exchange and isomerization reactions. I. The exchange of enol acetates with acetic acid catalyzed by palladium (II) chloride

J. Amer. Chem. Soc. 93 (1971) 16, 3853-9

N.S.A. 25 (1971) 54557

The Pd(II)-catalyzed exchange of $CH_2 = CHOCCD_3$ with $CH_3COOH$ was studied.

72-288

HOYERMANN K., WAGNER H.G., WOLFRUM J., ZELLNER R.

Rate of the reaction of atomic hydrogen with acetylene. II. Reactions of deuterium with acetylene and hydrogen with acetylene $-d_2$.

Ber. Bunsenges Phys. Chem. 75 (1971) 1, 22-7

C.A. 74 (1971) 75879

The isotopic exchange reactions of D and H atoms with $C_2H_2$ and $C_2D_2$ respectively were observed by ESR spectroscopy in an isothermal flow system.

72-289

JARVIE A.W.P., HOLT A., THOMPSON J.

The mechanism of solvolysis of 2-halogenoalkylsilanes. Part. II Deuterium isotope effects.

J. Chem. Soc. B (1970) 4, 746-8

Chemischer Informationsdienst Anorganische Chemie (1970) 31-C06

The compounds $Me_3SiCH_2CD_2Br$, $Me_3SiCHDCH_2Br$, and $(CD_3)_2MeSiCH_2CH_2Br$ have been prepared by the addition of DBr to trimethylvinylsilane.

72-290

SMAKMAN R., DE BOER T.J.

Mass Spectra of cyclic sulfides

Advan. Mass Spectrom. 4 (1968) 357-67

C.A. 74 (1971) 75744

Tetra -, penta -, and hexamethylene sulfide were deuterated in all equivalent ring positions.

72-291

WOLFF R.E., GREFF M., Mc CLOSKEY J.A.

Mass spectra of long-chain hydroxy esters

Advan. Mass Spectrom. 4 (1968) 193-7

C.A. 74 (1971) 75741

The elimination of MeOH from long-chain hydroxy esters and their deuterium derivatives was studied.

72-292

YOUNG A.T., GUTHRIE R.D.

An improved procedure for preparation of t-butyl alcohol-O-d.

J. Org. Chem. 35 (1970) 3, 853

Chemischer Informationsdienst Organische Chemie (1970) 26, 212

In this new procedure, t-butyl orthoborate was obtained simply by refluxing boric acid in t-butyl alcohol-benzene with azeotropic removal of water. Addition of $D_2O$ to the ester gave t-butyl alcohol-O-d which could be removed from the reaction mixture by distillation.

## 2.1.2 - AROMATIC COMPOUNDS

72-293

BELL R.P., COX B.G.

Hydrogen isotope effects in the

inversion of (−)-menthone in mixtures of water and dimethyl sulphoxide

J. Chem. Soc. B (1970) 1, 194-6

Chemischer Informationsdienst Organische Chemie (1970) 14-115

Deuterated (−)-menthone was prepared by isotopic exchange between menthone and $D_2O$ in presence of KOH and dried dioxan. The product was purified by fraction crystallization from light petroleum.

72-294

BRASS H.J., DI PRETE R.A., EDWARDS J.O., LAWLER R.G., CURCI R., MODENA G.

Mechanisms of secondary phosphine oxide reactions.

Tetrahedron 26 (1970) 19, 4555-9

C.A. 74 (1971) 12367

Deuterium exchange between $Ph_2PHO$ and MeOD was investigated.

72-295

DUBOVL Yu G., ROZENBERG V.I., KROKHINA I.N., REUTOV O.A.

Effect of specific solvation of metal atom on transfer of the reaction center during deuteriodemetalation of benzylmercuric chloride

Zh. Org. Khim. 6 (1970) 7, 1519

Chemischer Informationsdienst Organische Chemie (1970) 47-029

It was shown that deuteriodemetalation of the title compound proceded via D incorporation when the solvent is absolute dioxane, dioxane - 5% $D_2O$ and $MeOCH_2CH_2OMe$.

72-296

BURTON G.W., DE LA MARRE P.B.D.

The alkaline dehydrochlorination of some naphthalene tetrachlorides and related compounds. Part II. 1,1,2,3,4 pentachlorotetralin.

J. Chem. Soc. B (1970) 5, 897-903

Chemischer Informationsdienst Organische Chemie (1970) 34-216

The rates and products of alkaline dehydrochlorination of 1,1,2,3,4-pentachlorotetralin and its 2- and 4- deuterioderivatives have been examined.

72-297

CALDIN E.F., JARCZEWSKI A., LEFFEK K.T.

Kinetics of proton and deuteron transfer reactions of 4-nitrophenylnitromethane with triethylamine and tri-n-butylamine in acetonitrile solvent.

Trans. Faraday Soc. 67 (1971) 1, 110-8

C.A. 74 (1971) 63672

The transfer reactions of proton and deuteron between $p\text{-}O_2NC_6H_4CH_2NO_2$ and $Et_3N$ and $Bu_3N$ were studied using the stopped-flow technique.

72-298

FUGANTI C., GHIRINGHELLI D., GRASSELLI P., MAZZA M.

Synthesis of 2,6-$\left[^2H\right]$-O-methylnorbelladine

Gazz. Chim. Ital. 100 (1970) 8/9 739-44

C.A. 74 (1971) 54037

The title compound was prepared from $4\text{-}PhCH_2OC_6H_4OH$.

72-299

GAJEWSKI J.J., SHIH C.N.

Mechanism and stereochemistry of the degenerate photochemical rearrangement of 1,2-dimethyle-

necyclobutanes. Possibility of vibrationally excited intermediates and the nonintervention of bicyclo [2.2.0] hex-1(4)-ene.

J. Amer. Chem. Soc. 92 (1970) 14, 4457-8

C.A. 73 (1970) 76710

Direct photolysis of 1,2-bis(dideuteriomethylene)cyclobutane in the gas phase or in cyclohexane-$d_{12}$ solution resulting in rapid intramolecular H-D exchange was studied.

72-300

JACKSON W.R., GRAY G.A., CHAMBERS V.M.A.

Stereochemistry of organometallic compounds. IX. Sodium borohydride reduction of oxymercury compounds.

J. Chem. Soc. C (1971) 1, 200-4

C.A. 74 (1971) 52897

5-Exo-deuterio substituted 7-anti-acetoxy-2-norbornene was obtained by reduction with $NaBD_4$ in THF of 3-acetoxy-5-norbornen-2-ylmercury chloride.

72-301

KENYON G.I., HEGEMAN G.D.

Mandelic acid racemase from pseudomonas putida. Evidence favoring a carbanion intermediate in the mechanism of action.

Biochemistry 9 (1970) Oct, 4036-43

N.S.A. 25 (1971) 93

Mandelic acid deuterated at the α-carbon position was obtained during the racemization of unlabelled D-(−)-mandelic acid by mandelic acid racemase in $D_2O$. No significant amount of $^{18}O$ was found to be incorporated into the mandelic acid when D-(−)-mandelic acid was enzymatically racemized in $^{18}O$-enriched water.

72-302

KIRMSE W., SCHEIDT F.

Deamination reactions VIII Ring opening of bicyclo [n.1.0.] alkanediazonium ions.

Chem. Ber. 103 (1970) 11, 3711-21

C.A. 74 (1971) 12678

In deuterated solvents, endo- and exo- bicyclo [5.1.0.] octane-8-diazonium ions incorporated deuterium.

72-303

LEFFLER J.E., WATTS G.B., TANIGAKI T., DOLAN E., MILLER D.S.

Triarylboron anion radicals and the reductive cleavage of boron compounds.

J. Amer. Chem. Soc. 92 (1970) 23, 6825-30

C.A. 74 (1971) 12286

Tris (p-deuteriophenyl) - and tris (3,5-dideuteriophenyl) boron were prepared.

72-304

LEVIN G., JAGUR-GRODZINSKI J., SZWARC M.

A simple and quantitative method of preparation of cis - stilbene and its deuterated analog, Ph - CD = CD - Ph

J. Org. Chem. 35 (1970) 5, 1702

Chemischer Informationsdienst Organische chemie (1970) 36-300

The title deuterated compounds were prepared by treatment of diphenylacetylene in tetrahydrofuran with metallic lithium followed by addition of deuterated methanol.

72-305

LOUKAS S.L., VARVERI F.S., VELKOU M.R., GREGORIOU G.A.

Deuterium isotope effects in the formolysis of threo-1-methyl-2-p tolylpropyl toluene-p-sulphonate and the question of non classical carbonium ion intermediates.

Tetrahedron letters 21 (1971)May 1803-6

NSA 25 (1971) 39482

The polarimetric formolysis rate constants for the title compound and its deuterated derivatives were measured and the isotope effects were calculated.

72-306

MOGER D., MINK G., NAGY F.

Catalytic hydrogenation (deuteration) of cyclohexene on platinum. IV. Aging of the catalyst during the reaction.

Magy. Kem. Foly 76 (1970) 8, 408-11

C.A. 74 (1971) 12670

The rate of the cracking reaction of cyclohexene decreases much faster than the rate of hydrogenation when the catalyst is poisoned with the cracking products.

72-307

MOGER D., MINK G., NAGY F.

Catalytic hydrogenation (deuteration) of cyclohexene on platinum III. Deuteration of cyclohexene on catalyst produced and pretreated by different methods.

Magy. Kem. Foly. 76 (1970) 8, 405-8

C.A. 74 (1971) 12668

The distribution of D among the deuterated products was determined by mass-spectrometry. This distribution depends on the preparation and pretreatment of the catalyst.

72-308

NEWMANN M.S., BEARD C.D.

Ether cleavage and 1-3-hydride shifts in reactions involving unsaturated carbonium ions.

J. Amer. Chem. Soc. 92 (1970) 26, 7564-7

Chemischer Informationsdienst Organische Chemie (1971) 11, 163

Ethyl 3-hydroxy-3-methylbutyrate $-d_6$ was obtained by stirring a mixture of acetone-$d_4$, ethyl bromoacetate, activitated Zn and pure dry tetrahydrofuran followed by hydrolysis. This ester was converted via the hydrazide, azide and oxazolidone to 5,5-dimethyl-N-nitrosooxazolidone-$d_6$

72-309

POCKER Y., HILL M.J.

Acid-catalyzed isomerization of cis-1-phenyl-1,3 butadiene and cis-1-methyl-3-phenyl allyl alcohol.

J. Amer. Chem. Soc. 93 (1971) Feb. 691-7

NSA 25 (1971) 18405

The rate of isomerization of cis-1-methyl-3-phenylallyl alcohol is accelerated in deuterio sulfuric acid by a factor of 2,5 over the aqueous acid but there is no deuterium incorporation except for the hydroxyl proton.

72-310

ROSSALL B., ROBERTSON R.E.

Sulfonyl chloride kinetics Part III. Nucleophilic interaction on the transition state for 4-x-benzenesulfonyl chloride solvolyses.

Can. J. Chem. 49 (1971) 1 May 1451-5

NSA 25 (1971) 41792

The kinetic solvent isotope effect measured for the title compound was shown to vary with Hammett values and with pH.

72-311

RUSSELL G.A., McDONNELL J.J., KESKE R.G.

Aliphatic semidiones XV. 2,3 semidiones derived from the bicyclo [n.1.0] alkanes.

J. Amer. Chem. Soc. 93 (1971) 24 Mar, 1452-66

NSA 25 (1971) 26254

A highly stereoselective hydrogen-deuterium exchange was reported in the α-methylene group in bicyclo [3.1.0] hexanesemidione in basic dimethyl sulfoxide solution

72-312

RUSSELL G.A., WITTLE P.R., KESKE R.G.

Aliphatic semidiones XVI. Semidiones derived from the bicyclo [n.1.1] alkanes.

J. Amer. Chem. Soc. 93 (1971) 24 Mar, 1467-70

NSA 25 (1971) 26255

Deuterium exchange was used to study hydrogenation reactions.

72-313

SNYDER E.I.

Secondary deuterium isotope effects in the diphenylketene α-methylstyrene cycloaddition.

J.Org. Chem. 35 (1970) 12, 4287-8

C.A. 74 (1971) 22298

The isotope effect in competitive reactions of α-methylstyrene and α-methyl-$d_3$-styrene with diphenylketene was measured by the falling drop method.

72-314

TEBBE F.N., PARSHALL G.W.

Hydride derivatives of niobocene and tantalocene.

J. Amer. Chem. Soc. 93 (1971) 15 3793-5

NSA 25 (1971) 51459

The H-D exchange between hydrogen and $C_6D_6$ is catalyzed by $[C_5H_5]_2NbH_3$.

72-315

WARSHEL A., BROMBERG A.

Oxidation of 4a,4b-dihydrophenanthrenes III. A theoretical study of the large kinetic isotope effect in deuterium in the initiation step of the thermal reaction with oxygen.

J. Chem. Physics 52 (1970) 3, 1262-9

Chemischer Informationsdienst Organische Chemie (1970)20-076

The kinetic isotope effect in the title oxidation is a consequence of the existence of quantum mechanical tunneling and the loss of zero-point energy.

72-316

WERSTIUK N.H., VANCAS I.

Bromination and chlorination of exo,exo-5,6- and endo,endo-5,6-dideuterionorbonene; mechanism of nortricyclyl bromide and chloride formation

Can. J. Chem. 48 (1970) 24, 3963-5

C.A. 74 (1971) 52694

When Br and Cl respectively are added to exo, exo-5,6-and endo, endo-5,6-dideuterionorbornene, deuterons are loss from C-6 and formed a tricyclic product.

## 2.1.3 - HETEROCYCLIC COMPOUNDS

72-317

BRESSEL U., KATRITZKY A.R., LEA J.R.

Kinetics and mechanism of electrophilic substitution of heteroaromatic compounds. Part XXIV. Acid catalysed hydrogen exchange of 2-haphthol and of some corresponding aza-, thia-, and oxo-derivatives.

J. Chem. Soc. B (1971) 1, 11-8

Chemischer Informationsdienst Organische Chemie (1971) 13-196

The acid catalysed hydrogen exchanges were studied between the title compounds and $D_2SO_4$, $CDCl_3$ and mixtures of $D_2SO_4$ and $CCl_4$.

72-318

DOLBIER W.R.Jr., DAI S-H.

Simultaneity of allene cyclo-additions. Reaction of tetracyanoethylene oxide with allene.

Tetrahedron Lett. (1970) 53, 4645-6

C.A. 74 (1971) 22295

The deuterated 3-methylenetetrahydrofuran tetracarbonitriles were obtained by the title reaction with $D_2C{:}C{:}CH_2$ .

72-319

HUSSAIN M., ROBERTSON J.S., WATSON T.R.

Mass spectra of hydroxyquinolizidines.

Org. Mass Spectrom. 4 (1970) Suppl. 109-19

C.A. 74 (1971) 75746

Hydroxyquinolizidines were specifically deuterated.

72-320

WECHTER W.J.

Nucleic acids.VII. Specific deuterium labelling of nucleosides, nucleotides, and oligonucleotides and the mechanistic consequences thereof.

Collect.Czech. Chem. Commun. 35 (1970) 7, 2003-17

Chemischer Informationsdienst Organische Chemie (1970) 38-174

Methods were developed for the acid and base catalyzed deuteration at C-8 of purines and at C-6 and/or C-5 of pyrimidines and applied to nucleosides, nucleotides, and dinucleotide phospnate.

## 2.1.4 - CARBOHYDRATES

72-321

BJORNDAL H., LINDBERG G., PILOTTI A., SVENSSON S.

Mass spectra of partially methylated alditol acetates. II. Deuterium labelling experiments.

Carbohyd. Res. 15 (1970) 3, 339-49

C.A. 74 (1971) 54128

## 2.1.5 - PEPTIDES, AMINO ACIDS, PROTEINS

72-322

ALLEN G.A.

Synthesis of selectively highly deuterated lysines.

Synthesis of certain intermediates for incorporation into oxytocin.

Cornell Univ. Ithaca (1969) 104 pp.

Univ. Microfilms Order N°70-497

C.A. 74 (1971) 3857

72-323

HAMMARSTROM S., SAMUELSSON B.

Biosynthesis of cerebrosides from 2-hydroxy acid ceramides. Use of deuterium labelled substrate and multiple ion detector.

Biochem. Biophys. Res. Commun. 41 (1970) 4, 1027-35

C.A. 74 (1971) 71555

Gas chromotography and mass spectrometric studies showed that mouse microsomes converted deuterated or tritiated N(2-hydroxydocosanoyl)-D-erythro-trans sphingosine into cerebrosides without hydrolysing the amide bond before galactosylation.

72-324

HAYATSU R., STUDIER M.H., ANDERS E.

Origin of organic matter in early solar system.IV. Amino acids : confirmation of catalytic synthesis by mass spectrometry.

Geochim. Cosmochim. Acta 35 (1971) 9, 939-51

NSA 25 (1971) 58576

The catalytic synthesis of the amino acids from CO, $ND_3$, and $D_2$ was confirmed by mass spectrometry.

72-325

ITOH K., MIYAGAWA I., CHEN C.S.

ESR study of an irradiated crystal of L-alanine : two new proton-deuteron exchange reactions.

J. Chem. Physics 52 (1970) 4, 1822-7

Chemischer Informationsdienst Organische Chemie (1970)20-091

Preparation of α-deutero-L-alanines was done as follows : α-deutero-d, l alanine was prepared from α-hydroxyimino propionic acid and the L-isomer was obtained by the use of D-amino acid oxydase, by decomposing the D-compound.

72-326

JOHANSEN J.T.

Modified method for determining hydrogen-deuterium exchange in proteins.

Biochim. Biophys. Acta 214 (1970) 3, 551-3

C.A. 74 (1971) 909

H-D exhange in proteins was measured by a gel filtration.technique in a column contained Sephadex G-25 which was allowed to swell in $D_2O$. A matched pair of $CaF_2$ cells was used, one cell as the reference cell and the other as the sample cell. Under appropriate conditions it was possible to separate completely protein from water.

72-327

KLEINER D., BURRIS R.H.

Hydrogenase of Clostridium pasteurianum. Kinetic studies and the role of molybdenum.

Biochim. Biophys. Acta 212 (1970) 3, 417-27

C.A. 74 (1971) 560

The isotopic exchange of deuterium between hydrogenase from C.pasteurianum and water in presence of permolybdic acid was studied.

72-328

KYOGOKU Y., YU B.S.

Selective binding of barbital to the adenine moieties of FAD and NAD.

Chem. Biol. Interactions 2 (1970) 2, 117-27

C.A. 74 (1971) 2389

The selective binding of barbital to the adenine moieties of FAD and NAD was studied by IR and NMR spectrography. It was shown that barbital selectively forms H bonds to the adenine part of FAD and NAD in $D_2O$ and DMSO-$^2H$ solutions.

72-329

SAMUELSSON B., HAMBERG M., SWEELEY C.C.

Quantitative gas chromatography of prostaglandin $E_1$ at the nanogram level : use of deuterated carrier and multiple-ion analyser.

Anal. Biochem. 38 (1970) 1,301-4

C.A. 74 (1971) 635

In this method, prostaglandin $E_1$ is converted to its Me ester and O-methyloxime derivative. The corresponding methoxime-$^2H_3$ derivative is added and the mixture is converted to the trimethylsilyl derivatives and is injected into a LKB-9000 gas chromatograph-mass spectrometer.

72-330

SCHMIDT J., BORG D.C.

Identification of radiation-induced hydrogen-addition radicals in adenine derivatives.

Radiat. Res. 46 (1971) Apr 36-51

NSA 25 (1971) 34652

Several crystalline N-9 substituted adenine derivatives were deuterated at C-8 or at easily-exchangeable positions. These compounds were exposed to hydrogen or deuterium atoms or to rays and the resulting free radicals were studied by electron spin spectroscopy.

## 2.1.6 - STEROIDS

72-331

WRZECIONO U., MURPHY C.F., OURISSON G., CORSANO S., EHRHARDT J.D LHOMME M.F., TELLER G.

Syntheses of labelled tetracyclic triterpenes.I. Lanosterol-, cycloartenol-, parkeol-, and 31-norcycloartenol [25-$^{14}C$ or 26, 27-$d_6$] II Lanosterol-2-t and cycloartenol-2-t.

Bull. Soc. Chim. Fr. (1970) 3 966-74

Chemischer Informationsdienst Organische Chemie(1970)28, 410

The syntheses of the title compounds are described in detail.

## 2.1.7 - MINERAL COMPOUNDS AND MISCELLANEOUS COMPOUNDS

72-332

DAVIS J., DRAKE J.E., GODDARD N.

Phosphine-borane derivatives. Part III. A proton magnetic resonance spectroscopic study of methyl- and silyl-phosphine with [$^1H_6$]- and [$^2H_6$]- diborane.

J. Chem. Soc. A (1970) 18,2962-4

Chemischer Informationsdienst Anorganische Chemie (1971) 6-007

The proton nmr spectra indicate that hydrogen-deuterium exchange occurs between silicon and boron sites in silyl-phosphine-borane but not between carbon and boron sites in methylphosphine-borane.

72-333

DAVIES N., SAUNDERS D., WALLBRIDGE M.G.H.

Exchange reactions of zirconium tetrakistetrahydroborates.

J. Chem. Soc. A (1970) 18, 2915-7

Chemischer Informationsdienst Anorganische Chemie (1971) 6-229

The exchange reactions of zirconium hydroborate with lithium hydroborate and deuterioborate in ether solution and in mixture $(ZrBH_4)_4$ - $Zr(BD_4)_4$ in the gas phase were studied.

72-334

DAVIS J., DRAKE J.E.

Phosphine-borane derivatives. Part II. Specifically deuteriated analogues of phosphine-borane.

J. Chem. Soc. A(1970)18, 2959-62

Chemischer Informationsdienst Anorganische Chemie (1971) 6-084

Deuteriated diborane and phosphine were prepared by the lithium aluminum deuteride reduction of boron trichloride and phosphorus trichloride respectively in anhydrous ether.

72-335

DRAKE J.E., DAVIS J.

Phosphine-borane derivatives.II. Specifically deuterated analogs of phosphine-borane.

J. Chem. Soc. A (1970) 18, 2959-62

C.A. 74 (1971) 17852

It was shown that no H-D exchange occurs in neat liquid samples of the patially deuterated ; $PH_3BD_3$ or $PD_3BH_3$ .

72-336

KELLER P.C.

A deuterium exchange study of the $B_9H_{14}$-ion.

Inorg. Chem. 9 (1970) 1, 75-8

Chemischer Informationsdienst Anorganische Chemie (1970) 10, 222

The 1,2,3,4 - $B_{10}H_{10}D_4$ was prepared by the aluminum chloride catalyzed reaction of deuterium chloride with decaborane in carbon disulfide.

72-337

SCHECHNER P., BURCAT A., LIFSHITZ A.

Kinetics of the homogeneous exchange reaction $NH_3 + D_2 \rightarrow NH_2D + HD$.

Single-pulse shock-tube studies

J. Chem. Physics 52 (1970) 1, 337-44

Chemischer Informationsdienst Anorganische Chemie (1970) 12-238

Mixtures of deuterium and $NH_3$ diluted in argon were prepared to investigate the title reaction.

## 2.2 - TRITIUM COMPOUNDS

### 2.2.0 - GENERAL

72-338

CORNFORTH R.H.

Isotope exchange accompanying reaction of borohydride anion with hydroxyl compounds. Convenient and cheap method for the preparation of tritium-labelled alcohols.

Tetrahedron 26 (1970) 19,4635-40

C.A. 74 (1971) 12526

Tritium-labelled alcohols were prepared by decomposition of $LiBH_4$ in THF by tritiated water.

This decomposition is accompanied by exchange of H attached

to B.

## 2.2.1 - ALIPHATIC COMPOUNDS

72-339

BEATTY J.W., WEXLER S.

Hydrogen displacement in n-butane by fast $T_2$ and $T_2^+$ collisions

J. Phys. Chem. 75 (1971) 16, 2417-26

N.S.A. 25 (1971) 51449

The translational energy dependences of the formation of tritiated n-butane resulting from collisions of beams of fast $T_2$ molecules and $T_2^+$ ions with a crossed sheath of n-butane molecules were measured in a "chemical accelerator".

72-340

BEST K.J., GRABKE H.J.

Catalysis of the isotope exchange reaction HTO + $H_2$ → HT + $H_2O$ on the intermetallic compound NiGa.

Ber. Bunsenges Phys. Chem. 75 (1971) 6, 524-32

N.S.A. 25 (1971) 51452

The title isotope exchange reaction was studied in flowing $H_2O$ - $H_2$ mixtures on Ni and Fe and on alloys NiGa at 500°.

72-341

GOLD V., ROLSTON J.H.

Kinetics of hydrogen isotope exchange reactions. Part XVIII. Aliphatic exchange induced by β-radiation on aqueous solutions of alcohols.

J. Chem.Soc. B (1970) 9, 1795-1800

Chemischer Informationsdienst Organische Chemie (1971) 5-148

The β-radiation-induced hydrogen exchange reaction has been observed for tritiated aqueous solution of t-butyl alcohol. The tritiated species obtained is t-butyl alcohol with tritium in the methyl groups.

72-342

GOLD V., ROLSTON J.H.

Kinetics of hydrogen isotope exchange reactions. Part XIX. Effect of added solutes on aliphatic tritium exchange of t-butyl alcohol (2-methyl-propan-2-ol) under the influence of β-radiation, and related experiments

J. Chem. Soc B (1970) 9, 1800-7

Chemischer Informationsdienst Organische Chemie (1971) 5-148

The effect of added solutes ($AgClO_4$, $CdSO_4$, $CuSO_4$, $NiSO_4$, and $H_2O_2$) on the tritium exchange is to decrease the exchange rate very sharply.

72-343

GOLD V., ROLSTON J.H.

Kinetics of hydrogen isotope exchange reactions. XX. Aliphatic exchange induced by γ-radiation on aqueous solutions of tert-butyl alcohol.

J. Chem. Soc B (1970) 9, 1808-11

C.A. 74 (1971) 17973

Hydrogen isotope exchange induced by γ-radiation from a $^{60}Co$ source was studied between tritiated tert-BuOH and $H_2O$.

72-344

WEISS B., STILLER R.L.

Synthesis of D-1-hydroxy-2-amino-3-ketooctadecane-4,5-$^3H$ hydrochloride.

J. Org. Chem. 35 (1970) 10, 3543-6

Chemischer Informationsdienst

(1971) 4, 204

The title compound was obtained by oxidation of N-carbobenzoxydihydrosphingosine-4,5-$^{3}H$ with chromic anhydride in pyridine followed by conversion to the title compound.

## 2.2.2 - AROMATIC COMPOUNDS

72-345

BANCROFT K.C.C., HOWE G.R.

Reactivity parameters and aromatic systems. Part I. Detritiation rates in fluoranthene.

J. Chem. Soc B (1970) 8, 1541-3

Chemischer Informationsdienst Organische Chemie (1970) 52-214

Rates of detritiation in trifluoroacetic acid have been measured for the five non-equivalent positions in the non-alternant hydrocarbon fluoranthenes. The preparation of tritiated fluoranthene is also described.

## 2.2.3 - HETEROCYCLIC COMPOUNDS

## 2.2.4 - CARBOHYDRATES

72-346

ALTMANN H., STEHLIK G.

Tracer studies on synthesis of free nucleotides in yeast after β-irradiation.

Stud. Biophys. 13 (1969) 1, 59-64

C.A. 74 (1971) 72433

The effect of β-rays on the synthesis of free nucleotides in yeast was studied using glucose-$^{3}H$ and glucose -$^{14}C$.

72-347

GILCK H.

Radioactivity determination of different tritium- and carbon-14 doubly labelled samples.

Beckman Rep. (1970) 1, 15-9

C.A. 74 (1971) 20246

Hamamelose doubly labelled samples biosynthesized with glucose -$^{3}H$ and glucose -$^{14}C$ was separed by 2-dimensional paper chromatography. The paper was counted for the isotopes and autoradiograms were taken on X-ray photopaper. Hamamelose was eluted from the chromatographic paper, transformed into the p-nitrophenylhydrazone and counted for radioactivity directly and after combustion.

72-348

SASAKI T., HAMURO J., CHIHARA G. AMANO H.

Radioautographic study on the distribution of a polysaccharide with antitumor activity in mice.

Gann 61 (1970) 6, 589-91

C.A. 74 (1971) 97726

The polysaccharide was labelled with $^{3}H$ and injected into mice.

## 2.2.5.- PEPTIDES, AMINO ACIDS, PROTEINS

72-349

ALLEN L.M., WOLFE R.G.

Tryptophan tritiation in supernatant malate dehydrogenase from pig heart.

Biochem. Biophys. Res. Commun. 41 (1970) 6, 1518-22

C.A. 74 (1971) 72065

Supernatant pig heart malate dehydrogenase treated with tritia-

ted NAD or malate coprecipitated tightly bound tritiated coenzyme when $HClO_4$ was added. Nearly all the radioactivity was removed by dialysis leaving a small amount in tryptophan-containing peptides.

72-350

AMLACHER E., BIERWOLF D., SCHOLTZ G.

Distribution of 9, 10-dimethyl-1,2-benzanthracene in Ehrlich ascites tumor cells after partial extraction of lipids as studied by electron microscopic autoradiography.

Arch. Geschwulstforsch. 36 (1970) 1, 19-29

C.A. 74 (1971) 21340

Ehrlich ascites carcinoma cells were incubated with tritiated 9,10-dimethyl-1,2-benzanthracene and examined by electron microscopic autoradiography.

72-351

BLASCHKE G.

Biosynthesis of alkaloids.3. Mechanism of diphenyl coupling in the biosynthesis of aporphine alkaloids.

Acta Pharm. (Weinheim) 303 (1970) 4, 358-63

Chemischer Informationsdienst Organische Chemie (1970) 27-383

Tritiated corytuberine and tritiated bulbocapnine were biosynthetized by Corydalis cava fed with tritiated reticulin.

72-352

BOUTEILLE M.

Simultaneous labelling of proteins (antibodies) and amino acid (leucine) incorporation by cytochemistry and ultrastructural autoradiography in rabbit plasmocytes.

C.R. Acad. Sci. Ser. D 271 (1970) 19, 1697-9

C.A. 74 (1971) 97077

Ergastoplasm-containing antobodies formed before leucine-$^3H$ administration incorporates amino acids into new polypeptide chains.

72-353

BRAHIM F., OSMOND D.G.

Migration of bone marrow lymphocytes demonstrated by selective bone marrow labelling with thymidine-$^3H$.

Anat. Rec. 168 (1970) 2, 139-60

Biological Abstr. 52(1971) 18029

Labelled lymphocytes monocytes and large lymphoid cells were formed by injection of thymidine -$^3H$ into the femoral and tibial marrow of guinea pigs.

72-354

BRUSTAD T., JONES W.B.G., NAKKEN K.F.

Binding of an organic nitroxide free radical to radiation-induced desoxyribonucleic acid (DNA) radicals under anoxic conditions

Int. J. Radiat. Phys. Chem. 3 (1971) 1, 55-61

NSA 25 (1971) 51994

Radiation-induced DNA-$^3H$ 2,2,6,6-tetramethyl-4-piperidone-N-oxyl (TAN) complexes were separated from TAN on a Sephadex G-25 column.

72-355

BRUSTAD T.

Covalent binding of an organic nitroxide free radical to radiation-induced lysozyme transients under anoxic conditions.

Int. J. Radiat. Phys. Chem. 3 (1971) 1, 63-9

The radiation induced complex formation between lysozyme and tritiated 2,2,6,6 -tetramethyl -4-piperidone-N-oxyl (TAN) under anoxic conditions was studied. The complexes were purified on a Sephadex G-25 column.

72-356

CONNELL D.I., RICHERS L.A., DI PAOLO J.A.

Radioautographic analysis of 7, 12-dimethylbenz(α) anthracene -$^{3}$H incorporation and cell survival of Syrian hamster embryo cells during exposure to nucleic acid inhibitors.

J. Nat. Cancer Inst. 46 (1971) 1, 183-93

Biological Abstr. 52 (1971) 61792

Cell cultures derived from S. hamster embryos continuously incorporated the title compound into nuclei during a 7-hr exposure to the carcinogen.

72-357

CRAIG C.T., JONES G.H.

The analysis of exchanges in tritium labelled meiotic chromosomes.I.Schistocerca gregaria.

Heredity 25 (1970) 2, 223-32

Nuclear Medicine (1971) 241

The DNA of S.gregaria germ line chromosomes was tritiated at the last spermatogonial S shape.

72-358

CROWDER L.A., GOODNIGHT C.J.

Leiobunum longipes : radioautographic localization of 5-hydroxytryptamine.

Trans. Amer. Microsc. Soc. 89 (1970) 3, 375-83

Biological Abstr. 52 (1971) 26347

Chromatographic separation and scintillation counting were used for the verification of incorporation of tritiated 5-hydroxytryptamine in the gut and nervous tissues of L. longipes.

72-359

CUEVAS-SOSA A.

Human chromosomology : random association of acrocentrics.

Genetica 41 (1970)4, 626-34

Biological Abstr. 52 (1971) 48793

Lymphocytes from 1 normal male and 1 normal female were labelled with $^{3}$H-thymidine.

72-360

DAS K.C., HOFFBRAND A.V.

Studies of folate uptake by phytohaemagglutinin- stumulated lymphocytes.

Brit.J. Haematol. 19 (1970) 2, 203-21

Biological Abstr. 52 (1971)18033

The cellular uptake of $^{3}$H-folic acid,$^{3}$H PteGlu, $^{14}$C-5-methyltetrahydrofolic acid, and 5[methyl-$^{14}$C]-$H_4$ PteGlu by cultures of lymphocytes with and without PHA was measured both by liquid scintillation counting and by autoradiography.

72-361

DE CAPOA A., ROCCHI A.

Autoradiographic identification of a 13-21 translocation.

Cytogenetics 9 (1970)5,396-400

Biological Abstr.52 (1971)54752

A case of D/G translocation was studied autoradiographically after terminal labelling of leukocyte culture with $^{3}$H-thymidine

72-362

DESAI L.S.

Studies on the nucleic acids of

human lymphocytic cells : acetylation of histones.

Arch. Biochem. Biophys. 141 (1970) 2, 552-6

Biological Abstr. 52 (1971)58896

Distribution of $^{3}H$-acetate indicated that lysine-rich histones were the least, while arginine rich histones were the most extensively acetylated.

72-363

ELDEFRAWI M.E., ELDEFRAWI A.T. O'BRIEN R.D.

Mode of action of nicotine in the housefly.

J. Agr. Food Chem. 18 (1970) 6 1113-6

C.A. 74 (1971) 29395

Labelled nicotine and muscarone were bound reversibly to the same protein possibly at acetyl choline receptors in extracts of housefly heads.

72-364

EVANS H.H., EVANS T.E.

Methylation of the deoxyribonucleic acid of Physarum polycephalum at various periods during the mitotic cycle.

J. Biol. Chem. 245 (1970) 23, 6436-41

C.A. 74 (1971) 29172

The methylation of major nuclear DNA was studied by incorporation of methionine-methyl-$^{3}H$ .

72-365

GREEN M.R., BEHR G.F.

Incorporation of thymidine-$^{3}H$ into mitochondria. Localization of autoradiographic label to individual mitochondria.

J. Histochem. Cytochem. 18 (1970) 5, 354-60

C.A. 73 (1970) 22058

Electron microscopy was used in this method for the quantitative evaluation of radioactive labelling in small biological objects.

72-366

GUIDOLLET J., OZIOL S., LOUISOT P.

Transcortin biosynthesis. Role of cyclic adenosine-3'5'-monophosphate in cellular biosynthetic mechanisms.

Clin. Chim. Acta 30 (1970) 3, 689-95

C.A. 74 (1971) 73817

It was shown that cyclic AMP enhanced the incorporation of D-glucosamine-6-$^{3}H$ into the hepatic glycoproteins in vitro.

72-367

GUIDOLLET J., OZIOL S., LOUISOT P.

Biosynthesis of transcortin. Role of 3',5'-adenosine monophosphate in the cellular mechanism of biosynthesis.

Clin. Chim. Acta 30 (1970) 3, 689-95

Biological Abstr. 52 (1971) 60214

The injection of 3',5'-AMP increases the corticosteroid-binding activity of transcortin and the incorporation of D -(6-$^{3}H$) glucosamine into hepatic glycoproteins.

72-368

HANAFUSA H., HANAFUSA T.

Noninfectious RSV ( Rous sarcoma virus) deficient in DNA polymerase.

Virology 43 (1971) 1, 313-6

C.A. 74 (1971) 61841

It was shown that the incorporation of thymidine-$^{3}H$ triphosphate by RAV-2-enzymes was inhibi-

ted by a mixed incubation with RSV α-(0) preparations.

72-369

HARRIS G., PELE S.R.

Incorporation of $^{3}$H-thymidine into the spleens of intact mice during the immune response to sheep erythrocytes (SRC).

Immunology 19 (1970) 6,865-78

C.A. 74 (1971) 2277

The incorporation of $^{3}$H-thymidine into nuclear DNA of non-dividing cells in mouse spleen was studied.

72-370

HELMSING P.J.

Protein synthesis of polytene nuclei in vitro.

Biochim. Biophys. Acta 224 (1970) 2, 579-87

C.A. 74 (1971) 71581

Isolated polytene nuclei of Drosophila hydei incorporated $^{3}$H - labelled leucine, lysine, histidine, and valine into nuclear proteins.

72-371

HOKFELT T., LJUNGDAHL A.

Cellular localization of labelled γ-aminobutyric acid $^{3}$H -GABA in rat cerebellar cortex : an autoradiographic study.

Brain Res. 22 (1970) 3, 391-6

C.A. 74 (1971) 1950

Slices of rat cerebellar cortex were incubated with $^{3}$H -GABA.

72-372

HUNG LAM THANH, MORGAT J.L.

Method for preparing molecules labelled with tritium.

Brevet français 2,039,530

N.S.A. 25 (1971) 54693

Tritiated polypeptides were prepared by iodidation of the polypeptides by iodine monochloride and catalytic removal of halogens by gaseous tritium in the presence of a catalyst on an alkaline support.

72-373

IVERSEN J.G., BENESTAD H.B.

The presence of non-recirculating long-lived lymphocytes in rat blood.

Scand. J. Haematol 7 (1970) 5, 368-73

Biological Abstr. 52 (1971) 52987

Selective labelling of long-lived lymphocytes was obtained by daily injections of $^{3}$H-thymidine for a period of 2 - 3 weeks.

72-374

JAN K.Y., BOYES J.W.

Incomplete synchrony of labelling in homologues of the autosomal pairs.

Can. J. Genet. Cytol. 12 (1970) 4, 927-33

Biological Abstr. 52 (1971) 54719

Thymidine-methyl-$^{3}$H incorporation into the 3rd instar larval brain cells and subsequent autoradiography revealed that the co-labelling index for the 2 homologues of a pair is correlated to some extent with the labelling rate for that particular pair.

72-375

KING R.J.B., SMITH J.A., STEGGLES A.W.

Estrogen-binding and the hormone responsiveness of tumors.

Steroidologia 1 (1970) 2, 73-88

Biological Abstr.52 (1971) 55711

The binding of [6,7-$^3$H] estradiol to hormone responsive and unresponsive tumors was studied.

72-376

KOSUNEN T.U.

Radioautographic study of cellular mechanisms in delayed hypersensitivity IV. Distribution of injected lymph node, spleen, thymus and bone marrow cells.

Immunology 19 (1970) 1, 117-24

Biological Abstr. 52 (1971) 25985

Mononuclear cells were labelled in vitro with $^3$H-leucine and injected i.v. into sensitized, syngeneic recipients. The localization of injected cells was studied by radioautographs.

72-377

KREIBICH G., HECKERT E.

Active principles of croton oil. X. Preparation of tritium labelled croton oil factor $A_1$ and other tritium labelled phorbol derivatives.

Z. Krebsforsch. 74 (1970) 4, 448-56

C.A. 74 (1971) 802

Croton oil factor $A_1$-acetyl $^3$H was prepared by acetylation of 12-O-tetradecanoylphorbol 20-acetate and 12-O-tetradecanoylphorbol 20-trityl ether in position 13 with acetic anhydride-$^3$H and removal of the protecting groups in position 20.

72-378

KRISHAN A., HSU D.

Binding of colchicine-$^3$H to vinblastine- and vincristine-induced crystals in mammalian tissue culture cells.

J. Cell Biol. 48 (1971) 2, 407-10

C.A. 74 (1971) 97590

Autoradiographic studies on cells in tissue culture which were incubated with methoxycolchicine labelled with $^3$H and then incubated with vinblastine or vincristine showed that these alkaloids form crystals with the specific microtubular protein.

72-379

LAWSON T.A., DZHIOEV F.K.

Binding of o-aminoazotoluene in proliferating tissues.

Chem.-Biol. Interactions 2 (1970)

C.A. 74 (1971) 74172

The incorporations of labelled thymidine and tritium-labelled o-aminoazotoluene into liver DNA RNA and protein were studied.

72-380

LEDERER B., BUETTERICH D., MOORE G.W., MITTERMAYER C.

Autoradiographic studies on the incorporation rate of $^3$H-thymidine during the S phase of the mitotic cycle.

Beitr. Pathol. Anat. Allg. Pathol. 141 (1970) 1, 75-80

C.A. 74 (1971) 19315

The incorporation rate of thymidine-$^3$H into the DNA of the nucleus of L-cells during the S phase of the mitotic cycle was determined.

72-381

LEVER J.D., SPRIGGS T.L.B., GRAHAM J.D.P., IVENS C.

The distribution of $^3$H-noradrenaline and acetylcholinesterase (ACHE) proximal to constrictions of hypogastric and splenic nerves in the cat.

J. Anat. 107 (1970) 3, 407-19

Biological Abstr. 52 (1971) 3856

High concentrations of noradrenaline were detected by a formol-fluorescence technique.

72-382

RICE R.H., MEANS G.E.

Radio labelling in vitro of proteins.

J. Biol. Chem. 246 (1971) 3, 831-2

C.A. 74 (1971) 72689

Labelled proteins in which $^{3}H$- or $^{14}C$-methyl groups are attached to the protein amino group were prepared by reductive alkylation.

72-383

UWA H.

Changes in RNA-, DNA-, and protein-synthetic activity during the formation of anal-fin processes in ethisterone-treated females of Oryzias latipes.

Develop. Growth Differ. 11 (1969) 2, 77-86

Genetics Abstr. 02 (1970) 8014

The incorporations of $^{3}H$-uridine $^{3}H$-thymidine, and $^{3}H$-leucine were investigated in the process forming regions of the anal-fin rays of the ethisterone treated of females of O. latipes.

72-384

VERZAR-PETRI G.

Histoautoradiographic study of the localization of tritiated vincamine in Vinea minor.

Bot. Kozlem 57 (1970) 2, 125-7

C.A. 74 (1971) 1126

The incorporation of tritiated vincamine borate into shoots of V.minor was investigated. Sites of radioalkaloid uptake into the plant tissue are described.

See also :

72-323

Biosynthesis of cerebrosides from 2-hydroxy acid ceramides. Use of deuterium labelled substrate and multiple ion detector.

## 2.2.6 STEROIDS

72-385

ANDERSON C.H.

Autoradiographic analysis of the uptake of tritiated estradiol by the rat.

Univ. of Kansas Lawrence (1969) 83 pp. Univ. Microfilms Order N° 70-10992

C.A. 74 (1971) 28338

72-386

CASTANIER M., SCHOLLER R.

Radioimmunologic determination of plasma estrone and 17$\beta$-estradiol.

C.R. Acad. Sci. Ser. D 271 (1970) 20, 1787-9

C.A. 74 (1971) 94834

A mixture of plasma and estrone and 17$\beta$- estradiol both labelled with $^{3}H$ was shaken with ether. After centrifugation, the supernatant was decanted, evaporated and the residue dissolved in $C_6H_6$-MeOH containing 2dyes as markers. The hormones were eluted from a micro-column of Sephadex LH 20.

72-387

CHENG SU CHIAU

In vitro biosynthesis of corticosteroids from radiocholesterol and the effects of metopirone on various enzymic reactions.

McGill Univ. Montreal (1969)

C.A. 74 (1971) 30573

72-388

FELT V., BENES P.

Cholesterol esterase (esterifying and hydrolysing) activity in blood serum, liver, kidney and aorta in rabbit atherosclerosis.

Enzymol. Biol. Clin. 11 (1970) 6, 511-20

Biological Abstr. 52 (1971) 47343

The esterification of 4-$^{14}$C-cholesterol and the hydrolysis of 7-$^{3}$H cholesterolpalmitate in experimental atherosclerosis was investigated.

72-389

HAGEN A.A.

Formation of 15$\alpha$-hydroxyestriol from 4-($^{14}$C)-17$\beta$-estradiol and 6,7-($^{3}$H) - estriol by an anencephalic.

J. Clin. Endocrinol. Metab. 30 (1970) 6, 763-8

C.A. 73 (1970) 74799

The title compound labelled with $^{3}$H and $^{14}$C was biosynthesized by injection of 4-$^{14}$C-17$\beta$ estradiol and 6,7-$^{3}$H estriol into a human anencephalic newborn. Urine was collected, hydrolized with $\beta$-glucoronidase and sulfatase and extracted with $Et_2O_2$.

72-390

LIPPMAN V., LIEBERMAN S.

Steroidal free radicals as possible intermediates in the biosynthesis of $C_{19}\Delta^{16}$-steroids.

Proc. Nat. Acad. Sci. US 67 (1970) 4, 1754-60

C.A. 74 (1971) 72166

Tritiated androsta-4,16-dien-3-one was obtained by in vitro incubations of 1,2-$^{3}$H labelled deoxycorticosterone with homogenates of boar testis tissue.

## 2.2.7 - MINERAL COMPOUNDS AND MISCELLANEOUS COMPOUNDS

72-391

BIRO J., FEHER I.

Investigation of ZrT aerosols.

Health Phys. 19 (1970) 1, 113

Nuclear Medecine (1971) 655

The mechanism of the ZrT intake was investigated by analyzing the activity versus diameter distribution of the particles detached from the target. A quantitative autoradiographic method was used.

## 2.3 - CARBON-14 COMPOUNDS

### 2.3.0 - GENERAL

72-392

BOWES G.C., BAERG A.P.

Tracer method for $^{14}$C calibration.

Int. J. Appl. Radiat. Isotop. 22 (1971) 7, 431-4

NSA 25 (1971) 51401

The suitability of various carbon sources, their preparation and problems are discussed. Oxalic acid was primarily used. Sources preparation of $^{60}$Co and $^{134}$Cs are described.

### 2.3.1 - ALIPHATIC COMPOUNDS

## 2.3.2 - AROMATIC COMPOUNDS

72-393

COOMBS M.M., JAITLY S.B., CRAWLEY F.E.H.

Potentially carcinogenic cyclopenta(α)phenanthrenes.IV. Synthesis of 17-ketones by the Stobbe condensation.

J. Chem. Soc. Sect C Org. Chem. 9 (1970) 1266-71

Biological Abstr. 52 (1971) 3414

The synthesis of ketones labelled with $^{14}C$ in ring D and in the 11-methyl group is described.

72-394

SHAH R.H., LOEWUS F.

Synthesis of 1-O-methyl-$^{14}C$-DL-myo-inositol (methyl-$^{14}C$-bornositol) and 5-O-methyl-$^{14}C$-myo-inositol (methyl-$^{14}C$-sequoyitol)

J. Label. Compounds 6 (1970) 4, 333-9

The title compounds were prepared by methylation of blocked myo-inositol derivatives with methyl-$^{14}C$ iodide and KOH hydroxide.

## 2.3.3 - HETEROCYCLIC COMPOUNDS

## 2.3.4 - CARBOHYDRATES

See also :

72-347

Radioactivity determination of different tritium- and carbon-14 doubly labelled samples (Gilck)

## 2.3.5 - PEPTIDES, AMINO ACIDS, PROTEINS

72-395

HAVRANCK M., KOPECKA-SCHADTOVA H VERES K.

Synthesis of L-glutamine-5-$^{14}C$, L-glutamic acid -5-$^{14}C$, and L-ornithine -5-$^{14}C$.

J. Label. Compounds 6 (1970) 4, 345-54

The title compounds were prepared from L-α-benzyloxycarbonyl amino-γ-cyano-$^{14}C$-butyric acid obtained by alkylation of $K^{14}CN$ with the Me ester of L-α-benzyloxycarbonylamino-γ-bromobutyric acid.

See also :

72-382

Radiolabelling in vitro of proteins (Rice)

72-402

Labelling of the free pyrimidine nucleotides in rat liver by [$^{32}P$]phosphate and [$^{14}C$] orotate (Genchev)

## 2.3.6 - STEROIDS

72-396

JELLINCK P.H., BROWN B.J.

A simple enzymatic method for the synthesis of 2-hydroxy [4-$^{14}C$] estradiol .

Steroids 17 (1971) 1,133-40

Biological Abstr.52(1971) 58729

The title compound was prepared by a simple method using mushroom thyrosinase in the presence of NADH.

See also :

72-388

Cholesterol esterase (esterfying and hydrolysing) activity in blood serum, liver, kidney and aorta in rabbit atherosclerosis

72-389

Formation of 15α-hydroxyestriol from 4-[$^{14}$C]-17β -estradiol and 6,7-[$^{3}$H] -estriol by an anencephalic.

72-331

Syntheses of labelled tetracyclic triterpenes.I. Lanosterol-, cycloartenol-, parkeol-, and 31-norcycloartenol [25-$^{14}$C or 26,27-$d_6$].II. Lanosterol-2-t and cycloartenol-2-t

## 2.3.7 - MINERAL COMPOUNDS AND MISCELLANEOUS COMPOUNDS

## 2.4 - HALOGEN LABELLED COMPOUNDS

72-397

BELTRAME P., BELTRAME P.L.
CARBONI G., CEREDA M.L.

Stereochemistry and kinetics of nucleophilic substitution of activated 1,1-diaryl-2-halogenoethylenes. Part II.

J. Chem. Soc. B (1970) 4, 730-33

Chemischer Informationsdienst Organische Chemie (1970) 31-187

The isotope exchange between labelled lithium [$^{36}$Cl] chloride and 2-chloro-1-p-nitrophenyl-1-phenylethylene in dimethylformanide was investigated. The geometrical isomers retained their configuration.

72-398

FUJITA T., ORIMO H.,
YOSHIKAWA M.

Parathyroid hormone-hydrolyzing enzymes in human kidney.

Endocrinol Jap. 17 (1970) 3, 203-6

Biological Abstr. 52 (1971)54299

The hydrolyzing activity of $^{125}$I-labelled bovine parathyroid hormone was studied by the measurement of the trichloroacetic acid-soluble $^{125}$I released.

72-399

JOHANNESSON J.K.

Radiochemical determination of trace amounts of chloride.

J. Radioanal. Chem. 6 (1970) 1, 27-31

N.S.A. 25 (1971) 46441

Trace amounts of chloride were determined by treating a nonvolatile chloride with a known amount of $^{36}$Cl-labelled hydrochloric acid evaporating to dryness and measuring the radioactivity of the residue.

72-400

OSHIUMI Y.

Diagnostic use of radioisotopes with scintigraphy.

Hiroshima Igaku 23(1970) 1,67-74

N.S.A. 25 (1971) 46927

A review is presented of literature on uses of radioisotopes in clinical diagnosis. $^{131}$I-macroaggregated albumin and $^{203}$Hg-mercurihydroxypropane were used for tumor scanning.

72-401

SUNER A., MITTA A.E.A.

Preparation of iodine-131-labelled rose bengal.

Argent. Com. Nac. Energ. At. (Informe) CNEA-234 (1969) 8 pp.

C.A. 74 (1971) 927

Rose bengal was labelled with $^{131}I$ in ethanolic medium (pH 4, 55°) with a yield of 99%.

## 2.5 - PHOSPHORUS-32 COMPOUNDS

72-402

GENCHEV D.D.

Labelling of the free pyrimidine nucleotides in rat liver by $[^{32}P]$phosphate and $[^{14}C]$-orotate.

Dokl.Bolg.Akad.Nauk 23 (1970) 3, 323-6

C.A. 73 (1970) 96188

The liver of albino rats injected with phosphate-$^{32}P$ or oronate-$^{14}C$ were homogenized with $HClO_4$ and hydrolyzed with potato apyrase. The nucleotides obtained were fractionated on a Dowex-1 for ate column and purified by paper chromatography.

72-403

HEWISH D.R., WHELDRAKE J.F., WELLS J.R.E.

Incorporation of phosphorous-32 into ribosomal RNA, transfer RNA and inosotol hexaphosphate in germinating pea cotyledons.

Biochem. Biophys. Acta 228 (1971) 2, 509-16

C.A. 74 (1971) 95517

The title compounds were labelled with radioactive phosphate.

72-404

KOCH M., CHRABENDROTH M., JESKE A.

Investigations on the use of 32-phosphorus-labelled Dimefox.

Z. Naturforsch. Teil B. 24 (1969) 12, 1605-9

Biological Abstr. 52 (1971) 48236

The title compound was prepared from red $^{32}P$.

## 2.6 - SULFUR-35 COMPOUNDS

72-405

BALHARRY G.J.E., NICHOLAS D.J.D.

ATP-sulfurylase in spinach leaves.

Biochim. Biophys. Acta 220 (1970) 3, 513-24

C.A. 74 (1971) 94599

Labelled ATP-sulfurylase was formed from sulfate $[^{35}SO_4^{2-}]$ in extracts of Spinacea oleracea.

72-406

DEDEK W., WENZEL K.D. GRAHL R.

Studies on the penetration of the fungistatic $^{35}S$-4-chlorobenzyl-isothiocyanate into animal skin. I. Studies in vitro on beef hide.

Z. Naturforsch. Teil B 25 (1970) 2, 217-9

Biological Abstr. 52 (1971) 46483

The effect of different solvent on the penetration of $^{35}S$-4-chlorobenzylisothiocyanate into animal skin was measured by autoradiography.

## 2.7 - OXYGEN LABELLED COMPOUNDS

72-407

BRANNIGAN L.H., TARBELL D.S.

The hydrolysis of cyclic vinyl ethers. An $^{18}O$ study of the hydrolysis of 2-alkyl-2,3,4,5,6,7-hexahydrobenzofurans.

J.Org.Chem. 35 (1970) 3, 639-43

Chemischer Informationsdienst Organische Chemie (1970) 25, 216

The title hydrolysis followed by recyclization leads to no loss of the $^{18}O$ label. The 2-(2'-methoxypropyl) cyclohexanone was labelled at the carbonyl oxygen by standing at room temperature in 80% acetic acid containing $^{18}O$ enriched water.

72-408

BROOMHEAD J.A., LAUDER I., NIMMO P.

Acid-catalysed oxygen-18 exchange, racemisation and aquation studies with the trisoxalatocobaltate (III) anion in aqueous solution.

J.Chem.Soc. A (1971) 4, 645-50

Chemischer Informationsdienst Organische Chemie (1971) 21-048

Kinetic data on the acid-catalysed exchange of oxygen between the trisoxalatocobaltate (III) ion and solvent water obtained by use of $^{18}O$ are reported.

72-409

CHADWELL C.B., ELSWICK T.C.

Neutron emission rate reduction in $PuO_2$ by oxygen exchange.

MLM-1844 (1971) 6 pp

N.S.A. 25 (1971) 57655

$^{238}Pu^{16}O_2$ depleted in $^{18}O$ and $^{17}O$ was produced on a routine production basis by a gas phase-packed bed method.

72-410

CLARK T.C., GARNETT S.H., KISTIAKOWSKY G.B.

Exchange reaction of $^{18}O$ atoms with $CO_2$ and with $SO_2$ in shock waves.

J.Chem.Physics 52 (1970) 9, 4692-8

Chemischer Informationsdienst Anorganische Chemie (1970) 31-361

The reactions : $^{18}O + S^{16}O_2 \rightarrow S^{16}O^{18}O + {}^{16}O$ and $^{18}O + C^{16}O_2 \rightarrow C^{16}O^{18}O + {}^{16}O$ were studied.

72-411

DOKIYA M., JOHNSTON R.D., BASOLO F.

Carbon monoxide exchange reaction of O-phenanthrolinechromium tetracarbonyl.

Inorg.Chem. 9 (1970) 4, 996-8

Chemischer Informationsdienst Organische Chemie (1970) 25,136

The title exchange reaction was followed by I.R. spectrography.

72-412

GERSTER R.

Attempt to interpret the kinetics of isotope exchange between $C^{18}O_2$ and the water of a leaf : experiments in the dark.

Planta 97 (1971) 2, 155-72

N.S.A. 25 (1971) 46479

The mathematical analysis of the kinetics of isotope exchange between $CO_2$ enriched with $^{18}O$ and the water of an aerial leaf kept in darkness was compared

with measurements carried out on a great number of leaves.

72-413

HAAKE P., ALLEN G.W.

Alkaline hydrolysis of phosphine oxides in homogeneous solution. Nature of the pentacoordinate phosphorus intermediate.

Tetrahedron Lett. (1970) 35, 3113-6

C.A. 73 (1970) 87169

One $^{18}O$ is incorporated into $Ph_2P(O)O^-$ when $Ph_2(PHCH_2)PO$ is hydrolyzed in a mixture of 0,1M KOH and $Me_2SO_4$ $H_2{}^{18}O$.

72-414

JEE VANANDAM M., GUPTA A.R.

Oxygen isotope effects in the synthetic reversible oxygen carrier systems : cobalt dihistidine-oxygen systems.

J. Inorg. Nucl. Chem. 32 (1970) 5, 1749-50

C.A. 73 (1970) 29423

In the cobalt dihistidine-O system in aqueous medium at 0° and 24°, the gaseous phase was enriched in $^{18}O$. The single stage separation factor has a large value.

72-415

SCHAEFFER H.A., OEL H.J.

Mass spectrometric method for the determination of oxygen self diffusion in glasses.

Z. Naturforsch. 25A (1970) 1, 59-64

Physikalische Berichte 49 (1970) 7, 2322

Isotope exchange ($^{18}O_2$) between two different glasses was studied using a mass spectrometric method.

See also :

72-301

Mandelic acid racemase from pseudomonas putida. Evidence favoring a carbanion intermediate in the mechanism of action. (Kenyon)

72-274

Further studies on temperature dependences of isotope effects.

## 2.8 - NITROGEN-15 COMPOUNDS

72-416

DOUGLAS P.G., FELTHAM R.D., METZGER H.G.

Reactions of coordinated ligands Synthesis of a new dinitrogen complex.

J. Amer. Chem. Soc. 93 (1971) 1, 84-90

C.A. 74 (1971) 53940

The synthesis of $^{15}N$- labelled trans-$\left[RuN_2Cl(das)_2\right]$ and trans-$\left[RuClN_2(das)_2\right]\left[PF_6\right]$ was described. {das = o-phenylenebis dimethylarsine}.

72-417

FRIED M.

Use of isotopes in agronomic soil science.

Agrochimica 15 (1971) 2/3, 125-37

N.S.A. 25 (1971) 46670

Fertilizers were labelled with $^{15}N$ to make direct measurements of the uptake of nutrients from fertilizers by crop plants.

72-418

SALIMOVA K.M., SEMIOKHIN I.A., PANCHENKOV G.M.

Separation of hydrogen and nitrogen isotopes in the dissociation and synthesis of ammonia in a silent electric discharge.

Russ. J. Phys. Chem. 44 (1970) 10, 1446-8

N.S.A. 25 (1971) 44431

The ammonia formed in a silent discharge is depleted in deuterium and enriched in $^{15}N$.

## 2.9 - CARBON-13 AND CARBON-11 COMPOUNDS

72-419

FLAUMENHAFT E., UPHAUS R.A., KATZ J.J.

Isotope biology of carbon-13. Extensive incorporation of highly enriched $^{13}C$ in the alga Chlorella vulgaris.

Biochem. Biophys. Acta 215 (1970) 3, 421-9

C.A. 73 (1970) 127993

The green alga C.vulgaris was grown on $^{13}CO_2$ (95% $^{13}C$) in $H_2O$ and $D_2O$ media.

72-420

LAMB J.F., JAMES R.W., WINCHELL H.S.

Recoil synthesis of high specific activity $^{11}C$-Cyanide.

Int. J. Appl. Radiat. Isotop 22 (1971) 8, 475-9

N.S.A. 25 (1971) 54683

Large quantities of $^{11}CN^-$ were obtained by the $^{11}N(p,\alpha)^{11}C$ reaction with bombardment of solid $LiNH_2$ or of a gas target containing 99% $N_2$ and 1% $H_2$.

72-421

LIFTON J.F., WELCH M.J.

Preparation of glucose labelled with 20-minute half-lived carbon-11.

Radiat. Res. 45 (1971) 1, 35-40

C.A. 74 (1971) 61347

$^{11}C$-labelled glucose can be made by adopting the biosynthetic method used for synthesis of $^{14}C$-labelled glucose.

72-422

WARREN J.D., CLARK R.J.

Metal carbonyl-trifluorophosphine systems. VIII. Spectral studies and the fluxional nature of butadienetricarbonyliron(0)

Inorg.Chem. 9 (1970) 2, 373-9

Chemischer Informationsdienst (1970) 17-355

The title product was labelled with $^{13}C$ by irradiation under an environment of $^{13}CO$. An AH-6 100O-W General Electric uv was used.

See also

72-274

Further studies on temperature dependences of isotope effects.

## 2.10 - TECHNETIUM LABELLED COMPOUNDS

72-423

ATKINS H.L.

$^{99m}Tc$ pertechnetate uptake and scanning in the evaluation of thyroid function.

Semin. Nucl. Med. 1 (1971) 3, 345-55

NSA 25 (1971) 46914

A method of determining thyroidal uptake from the scintiscan is described.

72-424

BENJAMIN P.P.

Incorporation of $^{99m}TcO_4$ into proteins.

J. Nucl. Med. 11 (1970) 6, 300

Excepta Medica Radiology (1971) 111

The mechanism of reaction of $^{99m}Tc$ with albumin and the development of a general method of labelling of different proteins with $^{99m}Tc$ were studied.

72-425

COHEN M.B.

Reducing particle size in technetium-99m-sulfur colloid preparation.

J. Nucl. Med. 11 (1970) 12, 767

C.A. 74 (1971) 72393

The particle size of $^{99m}Tc$-sulfur colloid were reduced by reheating in a boiling water bath for 2 min.

72-426

ECKELMAN W.C., RICHARDS P.

Instant technetium-99m [diethylenetriaminepentaacetic acid]

J. Nucl. Med. 11 (1970) 12, 761

C.A. 74 (1971) 72392

The labelled title compound was obtained by addition of pertechnetate saline solution.

The $^{99m}Tc$-DTPA was stable for at least 4 hr.

72-427

El GARHY M., MEGAHED Y.M., KASSEM A.A., ABDULLAH D.

The kinetics of $^{99m}Tc$ labelling of tyrosine.

Strahlentherapie 139 (1970) 3, 316-7

Excepta Medica Radiology (1971) 125

The preparation of $^{99m}Tc$-tyrosine is reviewed. The product was purified on Sephadex.

72-428

FICKEN V., HALPERN S., SMITH C.Jr, MILLER L., BOGARDUS C.Jr

$^{99m}Tc$ sulfur colloid macroaggregates. A new lung-scanning agent

Radiology 97 (1970) 2, 289-95

Biological Abstr. 52 (1971) 22760

The title compound was prepared by modification of the method used to form $^{99m}Tc$ sulfur colloid followed by glutaraldehyde stabilization of the radiopharmaceutical.

72-429

GATES G.F., DORE E.K.

Delayed $^{99m}Tc$ brain scanning for detection of brain tumors.

J. Nucl. Med. 11 (1970) 6, 321-2

Excepta Medica Radiology (1971) 226

The usefulness of delayed $^{99m}Tc$ brain scanning in the detection of brain tumors was evaluated.

72-430

HALPERN S., GOLDEN M., WALSH C.

Evaluation of the lung scintiphoto as a screening test for pulmonary disease.

Nucl. Med. 10 (1971) 2, 135-45

NSA 25 (1971) 55297

The manufacture of a $^{99m}Tc$ lung scanning agent with sulfur colloid macroaggregates is

described.

72-431

HUBERTY J.P.

$^{99m}$Tc-sulfur colloid absorbed on ferric hydroxide macroaggregates for lung perfusion imaging.

Int. J. Appl. Radiat. Isotop. 22 (1971) 7, 425-7

N.S.A. 25 (1971) 49226

A simple 10-min technique for the preparation of the title compound for imaging in lung perfusion studies is described.

72-432

PERSSON R.B.R., NAVERSTEN Y.

$^{99m}$Tc sulfide colloid preparation for scintigraphy of the reticuloendothelial system.

Acta Radiol. Ter. Phys. Biol. 9 (1970) 567-76

N.S.A. 25 (1971) 46920

The preparation of $^{99m}$Tc sulfide colloid for bone marrow and liver scintigraphy is described.

72-433

WOLF F., KROENERT E.

Scintigraphic diagnosis by means of shortlived radionuclides .

Electromedica (1969) 2, 33-7

N.S.A. 25 (1971) 58060

The properties of $^{99m}$Tc and $^{113m}$In are described.

See also

72-443

A new measurement of the coronary output by rubidium-86.

## 2.11 - INDIUM-113 LABELLED COMPOUNDS

72-434

ADATEPE M.H., WELCH M., EVANS R. G., POTCHEN E.J.

Clinical application of the broad spectrum scanning agent : $^{113m}$In.

Amer. J. Roentgenol. Radium Ther. Nucl. Med. 112 (1971) 4, 701-6

NSA 25 (1971) 49234

The complexing ability of the $^{113m}$In obtained by elution a $^{113}$Sn generator system with HCl allows for one-step chemical preparation of organ specific scanning agents.

72-435

ANGHILERI L.J.

Effects of anions on the binding of cations by human serum albumin.

Int. Z. Klin. Pharmakol. Ther. Toxicol. 3 (1970) 3, 271-6

C.A. 74 (1971) 278

The labelling of human serum albumin with $^{114}$In and the effect of various organic and inorganic anions on HSA were investigated by cation and anion exchange analysis.

72-436

FUENZALIDA S., BENNETT L.R., LARSON J.M.

$^{111}$In : a new radioisotope for cysternoscintillography.

Rev. Biol. Med. Nucl. 3 (1971) 1, 25-9

NSA 25 (1971) 58052

A method for the preparation of the $^{111}$In-albumin with a high specific activity is described

72-437

GARNETT E.S., BAYLY R.J., MARLOW C.G.

Pyrogen-free $^{113}In^{m}$ scanning agents.

Brit. J. Radiol. 42 (1969) 501, 709-10

Physis in Medecine and Biology (1971) 512

Gelatin-free labelled $^{113m}In$ useful as scanning agents for blood pool, lung and liver was prepared.

72-438

GOODWIN D.A., GOODE R., BROWN L. IMBORNONE C.J.

$^{111}In$-labelled transferrin for the detection of tumors.

Radiology 100 (1971) 1, 175-9

NSA 25 (1971) 44851

Preparation and use of $^{111}In$-labelled transferrin are described.

72-439

HEEP J., KRAUSS O., LORENZ W.J. et al

New nuclear medical methods for localization of the placenta

Geburtsh. Frauenheilk 30 (1970) 1, 24-37

Excepta Medica Radiology (1971) 736

Carrier free $^{113m}In$ HSA and $^{68}Ga$ HSA were used in placentography.

The examinations were performed both with a scanner and with an Anger camera with a diverging collimator.

See also :

72-433

Scintigraphic diagnosis by means of shortlived radionuclides

## 2.12 - MISCELLANEOUS LABELLED COMPOUNDS

72-440

ALDRIDGE W.,

Interaction of trialkyl tin compounds with the oxidative phosphorylation system in mitochondria.

Eff. Metals Cells, Subcellular Elem. Macromol. Proc. Publ. Rochester Conf. Toxicity, 2 nd (1969) 255-74

C.A. 74 (1971) 97368

Chemically binding of triethyl tin-$^{113}Sn$ and trimethyltin-$^{113}Sn$ and proteins which combine with triethyltin are reviewed.

72-441

BOVINGTON C. H., JONES A.L.

Tracer study of the kinetics of dissolution of lead sulfate.

Trans. Faraday Soc. 66 (1970) 8, 2088-91

Ceramic Abstr. (1971) 0068A

72-442

CRAFT T.F., EICHHOLZ G.G.

Mechanism of rapid filtration in a uniform filter bed.

Water Resour. Res. 6 (1970) 2, 527-37

Biological Abstr. 52 (1971) 11409

The pattern of removal in a deep sand filter under rapid flow conditions were carried out using $^{137}Ce$ labelled vermiculite particles.

72-443

DI MATTEO J., VACHERON A., SABAUT D., KELLERSHOHN C., DE VERNEJOUL P., MESTAN J.

A new measurement of the coronary output by rubidium 86

Arch. Mal. Coeur Vaiss. 63 (1970) 12, 1657-62

Biological Abstr. 52 (1971)59225

In this method red blood corpuscules were marked by $^{99m}Tc$ and $^{86}Rb$.

72-444

DUCOUSSO R., BEREZIAT G., PERRAULT G., PASQUIER C.

Effect of lanthanum lung burden on early clearance induced by a DTPA aerosol.

Health Phys. 21 (1971) 1, 21-9

NSA 25 (1971) 46696

Labelled liquid aerosols were prepared from solutions of different concentration of $LaCl_3$ labelled with $^{140}La$.

72-445

FAWWAZ R.A.

Preparation and evaluation of various radioactive metalloporphyrins for selective lymphatic ablation.

Berkeley Univ. of California (1970) 148 pp University microfilms Order N° 71-9809

NSA 25 (1971) 42312

The preparation, the kinetics and in vivo distribution of a variety of radioisotopic metallo hematoporphyrins were investigated. $^{109}Pd$ chelated to hematoporphyrin or protoporphyrin IX showed the greatest promise for selective lymphatic ablation.

72-446

FILIP A.

Labelling of fine-grained particles with lanthanum-140

Int. J. Appl. Radiat. Isotop. 21 (1970) 9, 525-30

C.A. 73 (1970) 136435

Fine-grained river particles and cellulose fibers were labelled by simply contacting a concentrated suspension of material in water with $^{140}La(NO_3)_3$ solution

72-447

HARBST H., ZUM WINKEL K.

Clinical importance of the study of the lymphatic system with radioisotopes.

Rev. Biol. Med. Nucl. 3 (1971) 1 11-7

NSA 25 (1971) 58055

Citrates labelled with $^{67}Ga$ were used in the examination of the lymphatic system.

72-448

HIGASHI T., HISADA T., et al

Diagnosis of malignant tumor with Ga-citrate (2nd report)

Radioisotopes 19 (1970)7,311-8

Biological Abstr. 52 (1971) 20930

The preparation and clinical uses of $^{67}Ga$-citrate are reported.

72-449

HURLEY P.J., COOPER M., REBA R.C POGGENBURG K.J., WAGNER H.N.Jr.

$^{43}KCl$ : a new radiopharmaceutical for imaging the heart.

J. Nucl. Med. 12 (1971)7,516-9

NSA 25 (1971) 46919

Scans or gamma camera images of the myocardium were obtained by use of $^{43}KCl$.

72-450

IWIG J.

Some practical considerations on pancreatic scanning

Electromedica 4 (1970) 258-60

NSA 25 (1971) 58061

A technique for scintigraphy of the pancreas following the intravenous injection of $^{75}Se$-selenomethionine is described.

72-451

KISHORE K., VENKATESWARLU K.S.

Thermal annealing and solid state isotope exchange of $^{51}Cr$ in potassium trisoxalato chromate (III) trihydrate.

Radiochem. Radioanal. Lett. 7 (1971)5/6, 263-8

NSA 25 (1971) 57490

The title compound was doped with $^{51}Cr$.

72-452

LANE W.B.

Production of synthetic fallout at Camp Parks.

Isotop. Radiat. Technol. 8 (1971) 4, 408-12

NSA 25 (1971) 48753

The preparation of sand labelled with $^{140}Ba$-$^{140}La$ and with 90 Y for use in synthetic-fallout studies is described together with the facility where the preparation is made.

72-453

LOPEZ F.L., GRAHAM E.R.

Isotopic exchange studies of micronutrients in soils

Soil Sci. 110 (1970) 1, 24-30

C.A. 73 (1970) 76193

Isotopic exchange studies of $^{54}Mn$, $^{59}Fe$, and $^{65}Zn$ between three soil samples of silt loam in water are reported.

72-454

TOELGYESSY J., VARGA S., JESENAK V.

Preparation, properties, and uses of radioactive kryptonates $^{85}Kr$ in chemistry.

A(Conf.49) P 556 (1971) 6 sep. 28 pp

NSA 25 (1971) 51384

Theoretical problems of incorporation and release of $^{85}Kr$ from solid carriers, construction of a device for preparation of radioactive kryptonates by ionic bombardment and new methods for preparation of radioactive kryptonates are reviewed.

See also :

72-463

Radiochemical study of the stability of selenomethionine-$^{75}Se$

72-392

Tracer method for $^{14}C$ calibration

72-439

New nuclear medical methods for localization of the placenta

72-400

Diagnostic use of radioisotopes with scintigraphy

## 3 - RADIODECOMPOSITION, STABILITY STORAGE

72-455

MEYNS W., DE MOOR P.

Kinetics of dissociation of 17β-hydroxy steroids from the steroid-binding β-globulin of human plasma.

J. Clin. Endocrinol. Metab. 32 (1971) 2, 147-54

C.A. 74 (1971) 95064

The rates of dissociation of $^{3}H$-labelled 17β-hydroxy steroids bound to steroid-binding β-globulin (SBβG) were studied.

72-456

HIBBERT F., LONG F.A., WALTERS E.A.

Proton transfer from cyanocarbon acids. II. General-base-catalyzed detritiation and bromination of malononitriles. Rates of the reverse reactions.

J. Amer. Chem. Soc. 93 (1971) 12, 2829-35

N.S.A. 25 (1971) 41798

The title detritiation and bromination are general-base-catalyzed reactions whose slow step is a proton transfer from the cyanocarbon acid.

72-457

HIBBERT F., LONG F.A.

Proton transfer from cyanocarbon acids.III. Primary and solvent kinetic isotope effects in the ionization of malononitriles.

J. Amer. Chem. Soc. 93 (1971) 12, 2836-40

NSA 25 (1971) 41799

The detritiation of malonitrile-1-t and tert-butylmalononitrile-1-t and the bromination of the 1-H and 1-D malononitriles in the solvents $H_2O$ and $D_2O$ are characterized by unusual isotope effects.

72-458

LEE C.C., HAHN B-S., LAM L.K.M., WOODCOCK D.J.

Isotopic scramblings accompanying acetolysis in the 2-norbornyl system.

Can. J. Chem. 48 (1970) 24, 3831-9

C.A. 74 (1971) 52661

In the acetolysis of labelled exo- or endo-2-norbornyl brosylate in HOAc-NaOAc isotopic scramblings could occur not only in the solvolysis reaction but also prior and subsequent to the reaction.

72-459

RYBAKOW Z., CIFKA J.

Study of the stability and radio chemical purity of some radiopharmaceuticals. 3. Labelled diiodofluorescein.

J. Label. compounds 6 (1970) Jul-Sep 240-9

The thermal and radiation stability of diiodofluorescein was studied by separation and identification of the decomposition products by paper chromatography.

72-460

WOOD G.O., WHITE J.M.

Hot atom reactions in the photolysis of deuterium chloride at 1849 Å

J. Chem. Physics 52 (1970) 5 2613-21

Chemischer Informationsdienst Anorganische Chemie (1970)22-241

Photodecomposition of DCl was followed by mass-spectrometric analysis of the $D_2$ formed.

The purification of DCl was also described.

See also :

72-345

Reactivity parameter and aromatic systems. Part I. Detritiation rates in fluoranthene.

72-463

Radiochemical study of the stability of selenomethionine-$^{75}Se$ .

## 4 - PURIFICATION, SEPARATION

72-461

ANONYMOUS

An enquiry into the purity of commercial radiochemicals

Pure appl. Chem. 21 (1970) 1, 85-90

Bull. Signal. Sect. 170 32 (1971) 2708

The results of an enquiry into the purity of commercial radiochemicals are presented.

72-462

BARAKAT M.F., ABDEL-KERIM F.M.

Investigation of the polymers formed in reactor irradiated benzene or toluene together with AlN.

J. Inorg. Nucl. Chem. 33 (1971) 8, 2301-9

NSA 25 (1971) 57456

The polymers formed in neutron irradiated benzene or toluene mixed with AlN for carbon recoil generation were separated and analyzed.

72-463

BESNARD M., FRAPART P., COHEN Y.

Radiochemical study of the stability of selenomethionine $^{75}Se$ .

Int. J. Appl. Radiat. Isotop. 22 (1971) 8, 469-74

NSA 25 (1971) 54698

The separation of selenomethionine - $^{75}Se$/selenious acid/ selenomethionine oxide was obtained by ascending chromatographs using paper Whatman N° 1 and n butanol/acetic acid/ethanol/water (10/1/.3/3)

72-464

BUKRINSKAYA A.G., NIKOLAEVA O.G. GRIGOREVA M.S., ZHDANOV V.M.

Two types of polyribosomes in cells of Ehrlich ascites carcinoma.

Dokl. Akad. Nauk SSSR 194 (1970) 6, 1425-8

C.A. 74 (1971) 71642

Radiolabelled polyribosomes from Ehrlich ascites carcinoma were separated on sucrose density gradient centrifugation.

72-465

CAPPUGI G., NASSI P., TREVES C., RAMPONI G.

Use of amino acid analyser for identification of tritium labelled carboxy-terminal amino-acid.

Experientia 27 (1971) 2, 237-9

C.A. 74 (1971) 95190

The C- terminal amino acid resi-

dues of eledoisin, Glu-Val-Phe, and bovine pancreatic R-Nase specifically labelled with tritium were separated by column chromotography using a Unichrom amino acid analyzer followed by spectrophotometric measurement.

72-466

DEHLINGER P.J., SCHIMKE R.T.

Effect of size on the relative rate of degradation of rat liver soluble proteins.

Biochem. Biophys. Res. Commun. 40 (1970) 6, 1474-80

C.A. 74 (1971) 1767

Proteins of rat liver labelled by a double isotope method were separated on Sephadex G-200 both in the presence and absence of Na dodecyl sulfate.

72-467

DI CORCIA A., FRITZ D., BRUNER F

The use of high efficiency packed colums for gas-solid chro matography.III. Separation of deuterium substituted compounds.

J. Chromatogr. 53 (1970) 2, 135-41

Biological Abstr. 52 (1971)51796

Gas-solid chromatography with packed columns was used for the separation of some polar and nonpolar isotopic pairs. Graphitized carbon black modified with proper amounts of suitable liquid phases was used.

72-468

FLEMING R.M., CLARK W.G.

Quantitative thin-layer chromatographic estimation of labelled dopamine and norepinephrine their precursors and metabolites

J. Chromatogr. 52 (1970) 2, 305-12

C.A. 74 (1971) 30567

Mixtures of $^{14}C$- and $^{3}H$-labelled dopamine, norepinephrine, their precursors and metabolites were separated and estimated by 2-dimensional thin - layer chromatography on Avicel (microcrystal line cellulose powder) plates, elution from the cellulose with $H_2O$ and liquid scintillation counting.

72-469

GIVOL D., WEINSTEIN Y., GORECKI M., WILCHEK M.

A general method for the isolation of labelled peptides for affinity labelled proteins.

Biochem. Biophys. Res. Commun. 38 (1970) 4; 825-30

Nuclear Medicine (1970) 6348

This method is based on the affinity of the native protein to the ligand that was used for labelling of the same protein.

72-470

GOETZL E.J., METZGER H.

Affinity labelling of a mouse myeloma protein which binds nitrophenyl ligands. Sequence and position of a labelled tryptic peptide.

Biochemistry 9 (1970)20,3862-71

Biological Abstr. 52 (1971)37343

The nitrophenyl binding mouse myeloma protein 315 was affinity labelled and a 33 amino acid labelled peptide was isolated and sequenced.

72-471

HAMBERG M., ISRAELSSON U.

Metabolism of prostaglandin $E_2$ in guinea pig liver. I. Identification of seven metabolites.

J. Biol. Chem. 245 (1970)19, 5107-14

C.A. 73 (1970) 127277

Seven metabolites were isolated

by reversed-phase partition chromatography and thin-layer chromatography after incubation of $^{3}H$-labelled prostaglandin $E_2$ with the soluble fraction of homogenates of guinea pig liver.

72-472

HOBKIRK R., NILSEN M.

Separation of monoglucosiduronate conjugates of estrone and 17β-estradiol by DEAE-Sephadex chromatography.

Anal. Biochem. 37 (1970) 2, 337-44

C.A. 74 (1971) 634

$^{3}H$-labelled estrone-3-glucosiduronate, 17β-estradiol-17-glucosiduronate were purified and separated by chromatography on Celite columns followed by a linear NaCl gradient on DEAE-Sephadex.

72-473

MARTIN-LAVAL C., VAGUE P.

Simple method for purification of radioiodinated growth hormone by microgranular silica.

C.R. Soc. Biol. 164 (1970) 2, 338-41

C.A. 74 (1971) 28337

Labelled growth hormone was purified by adsorption of microgranular silica.

72-474

THAUER R.K., RUPPRECHT E., JUNGERMANN K.

Separation of [$^{14}C$]- formate from carbon dioxide fixation metabolites by isoionic- exchange chromatography.

Anal. Biochem. 38 (1970) 2, 461-8

C.A. 74 (1971) 20188

Formate-$^{14}C$ was separated from $CO_2$, alanine, aspartate, acetate, lactate and pyruvate by chromatography on a small column of Dowex-2 formate with formic acid as eluent.

## 5 - ANALYSIS

### 5.0 - GENERAL

72-475

BALAKHOVSKII I.S., DLUSSKAYA I.G

Radioisotopic methods for determining hormones based on their capacity to combine with specific proteins.

Labo. Delo (1971) 2, 67-9

C.A. 74 (1971) 94810

A review with 43 references

72-476

BENAKIS A.

Application of liquid scintillation methods to the study of drug metabolism.

Symposium sur les progrès des techniques nucléaires en pharmacodynamie Saclay 11-13 mars (1970) 133-42

NSA 25 (1971) 46667

The various methods used are described and examples of applications given. The radioactivity

of $^{14}CO_2$ eliminated by expiration was measured.

72-477

BOSSHARD C., PIRINGER O., GAEUMANN T.

Quantitative analysis of gas chromatograms of partially separated material mixtures.

Helv. Chim. Acta 54 (1971) 4, 1059-68

NSA 25 (1971) 41746

This method for the qualitative and quantitative analysis of gas chromatograms with considerably overlapping peaks is based on the assumption of know retention indices and peak shapes. Its application to mixtures of deuteriated hydrocarbons is indicated

72-478

BRANSOME E.D.Jr., GROWER M.F.

Liquid scintillation counting of tritium and carbon-14 on solid supports : a warning.

Anal. Biochem. 38 (1970) 2,401-8

C.A. 74 (1971) 20245

The efficiency of counting a $^{14}C$-labelled molecule is decreased when the molecule is small enough to penetrate into the matrix of a solid support.

The decrease is most dramatic with $^{3}H$-labelled samples.

72-479

DEDEK W.

Radioisotopes in pesticide research. IV [and] V.

Isotopenpraxis 6 (1970) jul, 204-14

NSA 25 (1971) 42239

Papers published from 1967 to 1969 on general methods of analysis of labelled insecticides, fungicides, herbicides and other pesticides are reviewed.

72-480

DZUBOW L.M., GARFINKEL D.

A simulation study of brain compartments. II. Atom-by-atom simulation of the metabolism of specifically labelled glucose and acetate.

Brain Res. 23 (1970) 3, 407-17

Biological Abstr. 52 (1971)27337

An atom-by-atom version of a 2-compartment model based on accumulated tracer kinetic data was constructed and compared with experimental data.

72-481

FRIED J.

Mean, geometric mean, or median grain count in cell cycle studies.

Exp. Cell Res. 59 (1970)3, 447-51

Biological Abstr. 51 (1970) 105078

The arithmetic mean grain count in radioautographs of labelled cells is compared with the median and the geometric means.

72-482

GREENWALT T.J., PAIGE J.C., ETOH N., STEANE E.A.

Autoradiography of diffusible compounds in human nonnucleated erythrocytes : studies with tritiated glucose and adenine.

Blood J. Hematol. 35 (1970) 5, 624-36

Biological Abstr. 52 (1971)6333

This simple method for autoradiography of diffusible substances in erythrocytes is based on retarding diffusion from the red corpuscules during fixation and

processing the bifunctionalaldehyde, rapid drying and applying by nuclear emulsion as a dried preformed film.

72-483

ICE R.D., DUGAN M.A.

Beta radiopharmaceutical identification by quench analysis.

J. Nucl. Med. 12 (1971) 8, 552-4

NSA 25 (1971) 52135

An unknown beta-emitting radiopharmaceutical can be identified by counting the sample with added amounts of chloroform establishing the degree of quench associated with the chloroform, calculating the slope when plotted against a $^{45}Ca$ standard and locating the slope on the calibration curve.

72-484

ISOI K., ISHIDA K., IKEDA Y.

Study on detection methods of $^{14}C$- labelled compounds.

Mukogawa joshi Daigaku Kiyo, Shizenkagakuhen 17 (1970) Aug., 357-9

NSA 25 (1971) 57752

Chromatoscanners, autoradiography and liquid scintillation counters were used to detect substances labelled with $[^{14}C-(U)]$ - phenylalanine.

## 5.1 - DETERMINATION OF ACTIVITY

72-485

ALPERS D.H., GLICKMAN R.

Method for determination of specific activity of proteins in polyacrylamide cells.

Anal. Biochem. 35 (1970) 2, 314-20

Biological Abstr. 52 (1971)41139

In this method, the gels are made utilizing ethylene diacrylate as a cross-linking agent which permits the gel to be dissolved in 1 N NaOH. Protein is then determined by standard methods and NCS is used as a solubilizer for liquid scintillation.

72-486

ANDERSON G.C., ZEUTSCHEL R.P.

Release of dissolved organic matter by marine phytoplankton in coastal and offshore areas of the Northeast Pacific Ocean.

Limnol. Oceanogr. 15 (1970) 3, 402-7

Biological Abstr. 52 (1971) 1289

A method using liquid scintillation counting techniques is described. This method allows sample preparation to by done simply and accurately at sea.

72-487

BOHME E.

Guanyl cyclase. Formation of guanosine-3':5'-monophosphate in the kidneys and other tissues of the rat.

Eur.J.Biochem. 14 (1970) 3, 422-9

Biological Abstr. 52 (1971) 36700

Guanyl cyclase activity was determined in crude tissue extracts by measuring $^{14}C$-Guo-3':5'-P formed from $^{14}C$-GTP.

72-488

CHUDY M., POVINEC P., SELIGA M. SARO S.

$^{14}C$ in atmosphere and biosphere.

Radioisotopy 11 (1970) 5, 935-51

N.S.A. 25 (1971) 57364

The activity of atmospheric carbon dioxide and biological

samples is measured using a gas-filled proportional counter.

72-489

D'ADAMO D., DE BORTOLI M., DOMINICI G.

Sampling of $^{3}H$-water vapor by molecular sieves and measurement with a multiple coincidence liquid scintillator.

Minerva Fisiconucl. 14 (1970) Jan-Mar, 31-7

NSA 25 (1971) 54798

In this selective sampling procedure for water vapor in air, the moisture is trapped in a column of 3A molecular sieve. The $^{3}H$ concentration is measured in a liquid scintillator by three photomultiplier tubes.

72-490

DIAB I.M., ROTH L.J.

Autoradiographic differentiation of free, bound, pure, and impure thymidine-$^{3}H$.

Stain Technol. 45 (1970) 6, 285-91

C.A. 74 (1971) 20274

Intestinal tissue from animals injected with $^{3}H$-thymidine were examined by conventional autoradiograms using fixed, solvent dehydrated paraffin-embedded tissus an by an autoradiographic method utilizing dry-mounted, freeze-dried frozen sections.

72-491

FROHOFER H.

Microanalytical determination of carbon and hydrogen, $^{14}C$, tritium and deuterium in a stream of nitrogen.

Z. Anal. Chem. 253 (1971) 2, 97-102

NSA 25 (1971) 57349

In this procedure, the organic substances are combusted in a stream of oxygen. Halogens and sulphur are absorbed by the combustion catalyst whereas nitrogen oxides are reduced on a copper surface. The combustion products $CO_2$ and $H_2O$ are determined gravimetrically or absorbed and counted in a liquid scintillation counter. Deuterium is quantitatively determined by measuring the intensity of the OD-signal at 2500 $cm^{-1}$ with an infrared spectrometer.

72-492

HEILINK A., POLAK H.L.

New radiometric titration method based on separation by means of ion-exchange. IV. The determination of thallium.

J. Radioanal. Chem. 7 (1971)2, 261-9

NSA 25 (1971) 54448

In this new radiometric titration method, the phase separation is achieved by means of a strongly basic anion exchanger in the solution.

72-493

HELLUNG-LARSEN P.

Liquid scintillation counting of $[^{3}H]$- and $[^{32}P]$- RNA in slices of polyacrylamide gels.

Anal. Biochem. 39 (1971)2, 454-61

C.A. 74 (1971) 72682

Slices of polyacrylamide gels cross-linked with bisacrylamide were digested with Nuclear Chicago Solubilizer a mixture of quaternary $NH_4^+$ compounds in toluene, and counted in a new dioxane based scintillation liquid.

72-494

KITANI K., TAPLIN G.V.

Biliary excretion of $^{99m}Tc$ albumin microaggregate degradation products (A method for measuring Kupffer cell digestive function)

UCLA-12-831(1971) 21 pp

NSA 25 (1971) 51972

The direct observation, via scintillation camera imaging, of the hepatobiliary excretion of a $^{99m}Tc$ compound following the intravenous injection of $^{99m}Tc$ albumin microaggregates is described.

72-495

KRAINCANIC M., JOVANOVIC M., DJURDJEVIC D., SINADINOVIC J., G. KOSTIC

The application of some physicochemical methods in the study of thyroid iodoproteins.

Acta Biol. Iugoslav Ser. C. Iugoslav Physiol. Pharmacol Acta 6 (1970) 3, 477-82

Biological Abstr. 52 (1971)48451

Gel filtration through Sephadex G-200 columns was applied as a investigation method of the iodoproteins in the blood and (protein-bound I) $Pb^{131}I$ determinations.

72-496

KRITCHEVSKY D., MALHOTRA S.

Recovery of lipids from thin-layer chromatography for radioassay.

J. Chromatogr. 52 (197o) 3,498-9

C.A. 74 (1971) 28689

Complete radiorecovery of all classes of lipids from thin-layer chromatography plates was obtained by a combination of a multipurpose scintillator (Aquasol) and elution.

72-497

KRIVIAN V.

Radio-release technique for determining traces of elements. Determination of mercury.

Z. Anal. Chem. 253 (1971) 3, 192-4

NSA 25 (1971) 51399

A radio-release method for the determination of mercury is described.

72-498

SIBATANI A.

Precipitation and counting of minute quantities of labelled nucleic acids as cetyltrimethylammonium salt.

Anal. Biochem. 33 (1970) 2, 279-85

Bull. Signal. Sect. 320, 31 (1970) 11139

A method is described for quantitative precipitation of nanogram quantities of nucleic acids from solutions containing cetyltrimethylammonium bromide and EDTA.

72-499

ZAICHIK V.E., TKACHEV A.V.

A method of double autoradiography.

Byull. Eksp. Biol. Med. 70 (1970) 10, 118-21

Biological Abstr. 52 (1971)51810

A method of double autoradiography for containing combined autograms of 2 different isotopes contained in one preparation is described.

72-500

ZHUKOVSKAYA L.P., KARAVAEV F.M., SOKOLOVA I.A.

Preparation of gas samples from carbonates and their solutions for the measurements of the activity of $^{14}C$.

Radioklimiya 13 (1971) 1, 163-4

NSA 25 (1971) 57358

The $^{14}C$ in the salt sample or solution is completely converted to $CO_2$ which is introduced in exactly known amounts to proportional counters.

## 5.2 - APPARATUS

72-501

BIRYULIN Yu.F., KOLESNIKOV N.V.

Stabilization of the amplification factor of a scintillation counter for recording carbon-14

Prib. Tekh. Eksp. (1970) 4,100-1

C.A. 74 (1971) 8763

The stabilization of the amplification channel of a scintillation counter for recording the soft $\beta$-radiation of $^{14}C$ was investigated.

72-502

CHAPMAN D.I., MARCROFT J.

The use of Triton X-100 in the liquid scintillation counting of $^{14}C$ with particular reference to plasma and urine.

Int. J. Appl. Radiat. Isotop. 22 (1971) 6, 371-7

N.S.A. 25 (1971) 46436

A liquid scintillant based toluene and Triton X-100 was investigated for counting carbon-14 labelled compounds in plasma, urine, and aqueous solutions of salts.

72-503

FLYGER H., SORENSEN A., BOTTER J.L.

A monitor design for airborne radioiodine.

Health Phys. 19 (1970) 1, 138

Nuclear Medicine (1971) 555

In this monitoring system a continuous air flow is filtered on a bed of impregnated carbon and the activity in the bed is monitored continuously by a single channel scintillometer.

72-504

FRANCOIS B., LIMANDAS M.

Counting tritiated water.

Int. J. Appl. Radiat. Isotop. 22 (1971) 10, 632-3

N.S.A. 25 (1971) 57363

Five commonly used scintillating media for counting tritiated water in aqueous solutions : Bray solution, toluene-triton, Ne240$^R$ and Ne 250$^R$ and Instagel$^R$ were compared. It was concluded that for medical use Instagel is to be recommended.

72-505

GUTKOWSKI R.F., DWORKIN H.J.

Simplified radiochromatographic purity check.

J. Nucl. Med. 12 (1971) 7, 513-5

N.S.A. 25 (1971) 51396

A radiochromatogram-well-adapter was developped to assess the purity of kit-made radiopharmaceuticals such as $^{99m}Tc$-labelled-sulfur-colloid.

72-506

HERTEL W., SACHER V. ROHRLICH M.

Combined detection of $^{14}C$-labelled proteins and amino acids after column chromatography on Sephadex. II.

Fresenius'Z. Anal. Chem. 252 (1970) 2/3, 147-51

C.A. 74 (1971) 28659

The eluate passes successively through a scintillation coil arranged in a special probe

chamber and collected with a rate meter, an uv spectrophotometer and a flow glass electrode.

72-507

HIROTAKE K.

Present status of radioisotope applications in nuclear medicine in Japan.

Radioisotopes Tokyo 19 (1970) 102-7

Physics in Medicine and Biology (1971) 362

This report includes the present state of instrumentation in nuclear medicine in Japan.

72-508

JACOBSEN D.W., WANG C.H.

High-resolution radiorespirometer for continuous determination of respiratory carbon-$^{14}C$ dioxide.

Anal. Biochem. 39 (1971) 2, 402-11

C.A. 74 (1971) 72570

This high-resolution radio respirometer consists of 4 separate flow-ion chamber electrometer detection systems and an Ar flow scheme to give faster turnover of respiratory gases in the ion chamber.

72-509

LANGE D.,SCHENCK P., SCHNABEL K. AMMANN W., SCHEER K.E.

Double tracer scintigraphy with the Anger camera.

Therapiewoche 21 (1971) 20, 1606 1609-10

N.S.A. 25 (1971) 44855

In this technique, the Anger camera was used to measure simultaneously $^{113m}In$-labelled HSA and $^{99m}Tc$-labelled pertechnetate administrated simultaneously for diagnosis of a brain tumor.

72-510

SEIMIYA T.

Kinetic studies of absorbed films of tritium-labelled sodium stearate at the air/water interface.

Bull. Chem. Soc. Jap. 43 (1970) 9, 2680-9

C.A. 73 (1970) 123818

An ultra-thin-windowed Geiger-Mueller tube was used to follow the absorption of T-labelled Na stearate at the air/water interface.

## 5.3 - DEGRADATION

72-511

CHAPMAN D.A., PARKS C.R.

Determination of $^{14}C$, $^{3}H$ and $^{35}S$ in rubber vulcanizates. A new degradation method for liquid scintillation counting.

Anal. Chem. 43 (1971) 10, 1242-5

N.S.A. 25 (1971) 44339

In this method, vulcanizates containing $^{14}C$, $^{3}H$, or $^{35}S$ are degraded directly in counting vials by tert-butyl hydroperoxide in p-xylene solution using osmium tetroxide as a catalyst.

72-512

FEATHER M.S., HARRIS J.F.

Mechanism of conversion of hexoses into 5-(hydroxymethyl)-2-furaldehyde and metasaccharinic acid.

Carbohyd. Res. 15 (1970)2,304-9

C.A. 74 (1971) 23083

Alkaline degradation of D-glucose in $D_2O$ gave saccharinic acids labelled at C-3 but conversion of D-glucose or D-fructose into the litle compound in $D_2O$-$D_2SO_4$

did not incorporate of D into the title compound.

## 6 - MISCELLANEOUS

72-513

ANONYMOUS

IATA restricted articles regulations. 14th edition effective 1st June 1971.

IATA (1971) 164 pp

NSA 25 (1971) 42456

Regulations governing the air transport of restricted articles including radioactive materials are presented.

72-514

DANGER G.H.C.

Protection from radioactive chemicals.

Process. Biochem. 6 (1971) 6, 19-20

NSA 25 (1971) 52093

Precautions involve speeding up the experimental operation, keeping the distance from the material to a maximum, use of shielding monitoring and use of minimum quantities of radioactive material.