مؤسسه تحقیقات و برنامه ریزی علمی و آموزشی
مرکز مدارک علمی
جمهوری اسلامی ایران

فهرست گزیده مقالات شیمی

(از شماره ۱ تا ۱۱۴)

دوره ۵

شماره ۱

۱۳۲

فروردین ۲۵۳۵

نشریه شماره ۴۰

از انتشارات مرکز مدارک علمی
تهران ـ خیابان شاهرضا ـ چهارراه کاخ ـ شمارهٔ ۴۶
صندوق پستی ۱۳۸۷ ـ ۱۱

شماره برگه مرکز خدمات کتابداری ۳۱۱۲ ـ ۵۰ م

این نشریه درچاپخانه مؤسسه تحقیقات و برنامه‌ریزی علمی و آموزشی بچاپ رسیده است

فهرست مطالب

جایزه نوبل در شیمی

جایزه نوبل سال ۱۹۷۵ در رشته شیمی مشترکا " به پروفسور جان کرن فورث (John Cornforth) بخاطر تحقیق در شیمی فضائی واکنشهای کاتالیزوری بوسیله آنزیم ها ، و پروفسور ولادیمیر پرلوگ (Vladimir Perlog)، بخاطر مطالعه و تحقیق در شیمی فضائی ملکولها و واکنشهای آلی ، اهداء شد . پروفسور جان کرن فورث در سپتامبر ۱۹۱۷ در استرالیا متولد شد و پس از گذراندن دوره لیسانس و فوق لیسانس علوم ، در سال ۱۹۳۹ در دانشگاه اکسفورد بمطالعه و تحقیق مشغول شد . در طول جنگ دوم جهانی ، عضو تحقیق در شیمی پنی سیلین بود و سپس به عضویت موسسه ملی تحقیقات پزشکی لندن درآمد و در حال حاضر عضو انجمن سلطنتی در دانشگاه ساسکس Sussex میباشد .

والادیمیر پرلوگ در سال ۱۹۰۶ در یوگسلاوی متولد شد و بعد از گذراندن تحصیلات مقدماتی در زادگاه خویش زاگرب (Zagreb) از دانشگاه صنعتی پراك با درجه دکترا فارغ‌التحصیل شد و در سال ۱۹۳۵ به زادگاهش بازگشت. نامبرده طی سالهای اخیر نشریات فراوانی در باره الکالوئید ها ، استروئید ها و آنتی بیوتیك ها به رشته تحریر درآورده است. این دانشمند عضو افتخاری انجمنهای علمی متعددی میباشد . نامبرده از سالها قبل به مطالعه و تحقیق در ساختمان شیمی فضائی ملکولها پرداخته و اکنون سرگرم تحریر کتابی تحت عنوان " مقالاتی در شیمی فضائی " است .

شیمی نظری ـ شیمی عمومی ـ شیمی فیزیك

کاغذچی ، طاهره ؛ سهرابی ، مرتضی . کلیاتی درباره پدیده های انتقال جرم همراه با واکنشهای شیمیائی . نشریه دانشکده فنی ، ۲(۲۰) ، دی ماه ۱۳۵۲ ، ۹۹ـ۱۱۱ ص .

در این مقاله مبحث انتقال ماده همزمان با فعل و انفعال شیمیائی در مورد سیستمهای گاز ـ مایع با فرض آنکه واکنش در فاز مایع انجام شود مورد مطالعه قرار می گیرد . معمولا واکنشهائی را که همراه با انتقال جرم صورت می‌گیرند با توجه به مکانیسم آنها به سه دسته کند ، سریع و آنی تقسیم می نمایند . درمورد واکنشهای کند میتوان از تغییرات غلظت در حول سطح مشترك گاز ـ مایع صرفنظر نمود و در نتیجه غلظت ترکیب شونده موجود در فاز مایع را ثابت کرده در فعل و انفعالات سریع ، زمان لازم برای واکنش شیمیائی خیلی کمتر از عمر متوسط عناصر سطحی است و در نتیجه مقیاس زمانی جذب شیمیائی بزمان نفوذ و یا بعبارت دیگر به شرایط هیدرودینامیکی فاز مایع بستگی ندارد . در این حالت واکنش معمولا در یك حوزه مشخص در داخل فاز مایع صورت می‌گیرد . در واکنشهای آنی جسم نفوذ کننده و جسم موجود در فاز مایع نمی توانند در مجاورت یکدیگر بطور مستقل وجود داشته باشند و در نتیجه حوزه واکنش به یك صفحه محدود خواهد گردید که محل آن تابعی از ضرایب نفوذ دو ترکیب شونده میباشد .

١٢_٥_٢

Bacarella, A.L.; Sutton, A.L. The Effect of Solvent of the Electrochemistry of Iron. Journal of Electrochemical Society, 122(1), 1975, 11-18.

A study was made of the electrochemical behavior of the active iron electrode in acidic ethanol-water media. The pA (pH in pure water solvent) and potential dependence of the iron dissolution and hydrogen evolution reactions were determined. The results of this investigation served to resolve the role of water in the iron dissolution mechanism. Basic to the proposed mechanism was the validity of an "absolute acidity scale" for EtOH-HOH solutions. (16 Ref.)

١٢_٥_٣

Cante, C.J.; et al. Surface pH from Electrokinetic Potentials and Titration of Laurate Salts. Journal of Colloid and Interface Science, 50(1), 1975, 1-11.

Interfacial tension, electrophoretic mobility, and pH measurements were made during the potentiometric titration of aqueous lauric acid soap (K, Tris, AMP, and AMPD) solutions with hydrochloric acid in the presence and absence of a number of oils. The influence of a charged oil/water interface and molecular aggregate surfaces is significant at all K laurate soap concentrations. The general effect of the oil phase is to extract the lauric acid formed during the course of the titration. This is manifested by an upward shift in the titration curve in the presence of an oil compared to the no oil titration curve. The effect is best seen with potassium laurate since the alkanolamines buffer system tends to obscure the effect on the titration curve. The distribution coefficients of lauric acid were calculated for each oil from pH

data. Interfacial tension measurements showed the ability of the n-hexadecane and cyclohexane oil/water interfaces to support a mixed film of laurate-lauric acid while chloroform did not. This has implications on the stability of emulsions made with fatty acid/fatty acid soap mixtures. These highly charged oil/water interfaces attract cations from the bulk solution, thereby, markedly altering the ionic distribution. Surface pH values estimated from both pH and zeta potentials of the emulsions using the model of Hartly and Roe which assumes a Boltzmann ionic distribution at the oil/water interface. (17 Ref.)

١٢_٥_٤

Griffiths, T.R.; Potts, P.J. A New Computer-Based Method for Determination ΔH from Digilized Spectra: The Nikel(11)+ Chloride System in Dimethyl Sulphoxide. Journal of the Chemical Society, (4) 1975, 344-352.

A new method is described for calculating equilibrium quotients and enthalpy values from digitized spectra for two-species equilibria, based on the concept of internal linearity. The method is evaluated by comparing the results obtained with those reported earlier for the system nickel(11)+ chloride in dimethyl sulphoxide: the results agree well. Fourth-derivative curves of the digitized spectra are computed and permit definitive identification of the species present in solution at any one time, and hence the temperature range over which the two-species equilibrium $(NiCl_2(dmso)_2)^0 + Cl^- \rightleftharpoons (NiCl_3(dmso)_3)^-$ occurs can be precisely determined. The derivation of the relationship between ΔH and β, the internal linearity constant, and the computing principles employed, are given in the Appendix. (25 Ref.)

١٢_٥_٥

Guen, L. ; et al. Systeme CrI_2 - FeI_2. Diagramme de Phases Etude Structurale, Effect Jahn-Teller Cooperatif. Annales de Chimie, 10(1), 1975, 11-16.

Le diagramme de phases, etabli par A.T.D., met en evidence deux phases intermediaires nouvelles: β, monoclinique, de composition $\rho \simeq 0,30$ et γ, rhomboedrique, de composition $\rho \simeq 0,65$ (ρ = Fe/Fe + Cr). Description des structures cristallines a partir d'etudes sur monocristaux. Un effet Jahn-Teller cooperatif du a la configuration $3d^4$ du chrome II en champ faible ne se manifeste que dans CrI_2 dans la phase β. (6 Ref.)

١٢_٥_٦

Lewis, J.W.E. ; Singer, K. Thermodynamic Properties and Self-Diffusion of Molten Sodium Chloride : A Molecular Dynamics Study. Journal of the Chemical Society, 71, 1975, 41-53.

Molecular dynamics calculations are reported for liquid sodium chloride simulated by Born-Huggins-Mayer type pair potentials. Thermodynamic properties and self diffusion constants have been obtained for 22VT points ranging between 1000 and 2000K and between - 1 and 14 kbars. The agreement with experimental data is, on the whole, satisfactory. Algebraic expressions have been fitted to the calculated data for the pressure, internal energy, the (variation of the) Helmholtz free energy, and the ionic self diffusion constants. The variation of the pair correlation functions and of the velocity autocorrelation functions with V and T are examined. Some features of computer generated films showing the ionic motion are briefly discussed. (25 Ref.)

Pappas, S.P. ; Fischer, M. Photo-Chemistry of Pigments. Studies on the Mechanism of Chalking. Pigment and Resin Technology, 4(1), 1975, 3-10.

Studies on the photo-chemistry of a zinc oxide and three representative TiO_2 pigments are presented. Irradiation of these pigments in the presence of a furan-methanol solution yields 2-methoxy-5-oxo-2, 5-dihydrofuran (1). These findings constitute strong evidence for the intermediacy of singlet oxygen. Further support for singlet oxygen production was obtained by quenching studies. The extent of formation of singlet oxygen product 1 was found to correlate with known chalking tendencies of the TiO_2 pigments. The formation of hydrogen peroxide on irradiation of the TiO_2 pigments was also investigated and shown to correlate with their chalking tendencies. These results point up basic similarities in the photo-chemical behaviour of titanium and zinc oxide pigments. A scheme is presented for the generation of reactive oxidants, which relates the present findings to previous work on chalking. The relative chalking rates of anatase and rutile titanium dioxides, as well as the improvement of chalk resistance by surface treatment, are discussed within the framework of this scheme. The importance of singlet oxygen as a reactive oxidant, as well as an entity to consider in the control of chalking is discussed. The production of singlet oxygen is attributed to electronic energy-transfer from excited-state pigments, via electron-transfer and ion-annihilation processes, although alternative hypotheses are also considered. (44 Ref.)

١٢_٥_٨

Read, J.F. The Entropy Crisis. Canadian Chemical Education, 10(2), 1975, 6-7.

Since the total energy of the universe remains constant, there can be no shortage of energy. There is not an energy crists' but an "entropy crisis." The importance of entropy has frequently been underestimated, even though it is a concept which is taught in most high schools and developed at all universities. Often it is considered to be no more than a convenient substitution for the change of heat content at a specified temperature, or an expression used to rationalise why a reactant forms particular, disorderly products. Entropy is defined here using statistical considerations and its ramifications are then discussed. (7 Ref.)

١٢_٥_٩

Ruzo, L.O. ; Bunce, N.J. ; Safe, S. Photoreactions of Simple Halonaphthalenes in Solution. Canadian Journal of Chemistry, 53(5), 1975, 688-693.

The photolysis products and reaction quantum yields from a number of simple halonaphthalenes have been determined. Fluoronaphthalenes react from a singlet state to yield substitution products in nucleophilic solvents. Chloronaphthalenes and 1-bromonaphthalene afford mainly radical products (naphthalene and binaphthyls) through a triplet state, though some photonucleophilic substitution occurs with chloronaphthalene. Attempts at quenching lead to abnormal behavior, in that enhanced quantum yields for reaction are found with several potential triplet quenchers. Electron transfer processes are proposed to rationalize the observed products. (36 Ref.)

١٢_٥_١٠

Swartzen-Allen, S.L. ; Matijevic, E. Colloid and Surface Properties of Clay Suspensions: Electrophoresis and Cation Adsorption of Montmorillonite. Journal of Colloid and Interface Science, 50(1), 1975, 143-153.

The properties of dispersed Na^{+} and Cs^{+} montmorillonite clays in aqueous solutions of a number of simple and complex counterions have been studied by electrokinetic and adsorption measurements. It was found that Th^{4+} ion at pH 3.5 reverses the charge of the clay particles and so do the chelate ions $(Co(dipy)_3)^{3+}$ and $(Co(phen)_3)^{3+}$. Na^{+} montmorillonite is a much better adsorbent for Co^{3+} and for the chelate counterions than Cs^{+} montmorillonite. At saturation coverage and at the point of zero mobility (i.e.p.) the Na^{+} clay adsorbs more than twice the amount of chelate ions taken by the Cs^{+} clay. This was explained on the basis of different degrees of dispersity of the two clays. The uptake of chelates by Na^{+} montmorillonite at saturation exceeds considerably the cation exchange capacity of the clay indicating that mechanisms in addition to ion exchange are responsible for the adsorption of these complexes. (37 Ref.)

١٢_٥_١١

Utsugi, H. ; Horikoshi, H. ; Matsuzawa, T. Mechanism of Esterification of Alcohols with Surface Silanols and Hydrolysis of Surface Esters on Silica Gels. Journal of Colloid and Interface Science, 50(1), 1975, 154-161.

The mechanism of esterification of silanol groups of silica gel with alcohols and the hydrolysis of transesterification of the surface esters was investigated using optically active secondary alcohols or alcohols with different alkoxy groups. It was found that esterification, and transesterification proceeded with the silyl-oxygen fission; the surface ester was found to retain the configuration of the optically active alkoxy group. (11 Ref.)

۱۲_۵_۱۲

Betteridge, W. ; Hope, J. The Separation of Hydrogen from Gas Mixtures. Platinum Metals Review, 19(2), 1975, 50-59.

A pressure-cycling process has been developed by which hydrogen can be separated from gas mixtures using palladium sponge as an absorbent. At a temperature of 200°C, with pressure cycling between I and 35 bar, and a cycle time of 20 seconds, hydrogen of 99.5 per cent purity can be obtained from 75 per cent hydrogen-25 per cent nitrogen mixtures at a rate of 6 litres/hour per gram of palladium and a yield of 80 per cent. (10 Ref.)

۱۲_۵_۱۳

Burcat, A. Craking of Propylene in a Shock Tube. Fuel, 54(2), 1975, 87-93.

The high-temperature decomposition of propylene has been investigated in a single-pulse shock tube in the temperature range 1160-1700 K. The stable products observed were hydrogen, methane, ethylene, acetylene, ethane, allene and propyne. The rate of evolution of the different products was found to have a similar concentration-dependence except for ethane, which was found to be dependent only on the third-body concentration. A computer model of the kinetics is presented, according to which the first step of the propylene decomposition has a rate constant (calorie units) of :

K_1(Ar) (Mol/Cm^3S)=(10^{13} + 0.5) exp ((-74± 1) x 10^3/RT)

Gonenne, A. ; Lebowitz, J. Estimation of Molecular Weights of small Proteins on Polyacrylamide Gel Electrophoresis. Analytical Biochemistry, 64(2), 1975, 414-423.

Electrophoretic analysis of 19 globular proteins has demonstrated that the empirical linear relationship between the retardation coefficient, K_R, and molecular weight does not hold for small proteins. Instead, this relationship assumes a non-linear character in the low molecular weight range (MW < 50,000 daltons). Both the nonlinear and the linear portions of this correlation are consistent with the theoretical model of Rodbard and Chrambach (2). (38 Ref.)

۱۵ـ۵ـ۱۲

پرهامی ، پروانه • کاربرد اسپکترو فتومتری و روش دوزاژ مخلوط ها . دانشگاه تهران ، دانشکده داروسازی ، ۵۲ـ۱۳۵۱ ، ۷٤ ص • (پایانامه دکتری) •

در این پایانامه کاربرد اسپکترو فتومتری جهت کنترل و دزاژ داروهای زیر بحث شده است • مخلوط پروکائین هید روکلراید و تتراسیکلین هید روکلراید، پنی سیلین ، لومینال ، دیفن هید رآمین هید روکلراید ، آنتی پیریدین، ویتامین B_6 (پیرید وکسین هید روکلراید) • همچنین از دستگاه فوق میتوان جهت تعیین pH و pKa در محلولهای رقیق قابل تجزیه مانند اندیکاتورها استفاده نمود •

۱۶ـ۵ـ۱۲

تحصیلی ، علی • اندازه گیری غلظت رادیوم ـ ۲۲٦ در بعضی از محصولات کشاورزی استان مازندران • دانشگاه تهران ، دانشکده بهداشت ، ۵۰ـ۱۳٤۹ ، ٤۲ ص • (پایانامه فوق لیسانس) •

بررسی رادیوم-۲۲٦ موجود در نمونه های گیاهی استان مازندران به روش اماناسیون رادون ۲۲۲ ، ومقایسه آنها با نمونه های سایر کشورها نشان میدهد که بعضی نمونه ها دارای مقدار رادیومی در یک گرم خاکستر هستند که ۵ تا ۱۰ برابر سایر مناطق است • یک استثناء نمونه نارگیل است که در هندوستان میروید • باوجودیکه رادیوم خاک زیاد است این ماده غلظت زیاد رادیوم را نشان نمیدهد • استثناء دیگر گندم یک منطقه در شوروی است که تصور میشود کمی جذب رادیوم بعلت غلظت زیاد مواد معدنی در خاک باشد • گرچه غلظت رادیوم در خاک عامل مشخص‌کننده تجمع این رادیونوکلئید در گیاهان نیست ولی تصور میشود مقدار املاح خاک در این مورد مهم باشد •

۱۲ـ۵ـ۱۷

طغرل ، فرشته ؛ دانش‌پژوه ، حبیب‌الله • اندازه‌گیری اسید های آمینه آزاد و پروتئین در زیره سیاه • نشریه دانشکده علوم ، فروردین ماه ۱۳۵۳ ، ۶۳ ص •

امکان استفاده از گیاهان موجود در ایران از نظر پروتئین موجود در آنها امری طبیعی بنظر می‌رسد و برای این منظور زیره سیاه را مورد مطالعه قرار گرفته است• میوه این گیاه (دانه آن) بیشتر از نظر اسانس و چربی مورد توجه بوده و بررسی های کیفی و کمی درباره آن انجام یافته است ، در این مقاله میوه مزبور از نظر مقدار کل اسید های آمینه و پروتئین بررسی شده و مقدار آن ۱۴/۷۵ درصد وزن دانه خشك محاسبه شده است که از نظر مقدار کل با پروتئین گوشت حیوانات قابل مقایسه می‌باشد • ضمنا زیره سیاه بمناسبت بوی مطبوعی که دارد مصرف آن برخلاف گوشت برخی از حیوانات یا پروتئین های سنتتیك حاصله از نفت با ذائقه و سلیقه مردم سازگارتراست و هم اکنون نیز همراه با غذا بعنوان چاشنی مصرف می‌شود •

۱۲ـ۵ـ۱۸

کسرائی ، مسعود • جداکردن بعضی از ترکیبات گوگرد با روش الکتروفورز• نشریه دانشکده علوم ، ۶(۲) تیرماه ۱۳۵۳ ، ۱۰۷ـ۱۱۶ ص •

در این مطالعه سعی شده است که با استفاده از روش الکتروفورز آنیونهای سولفات ، سولفیت و سولفور را با به کاربردن 35S به عنوان ردیاب• ازهم و برروی کاغذ جدا کرد • محلول الکترولیتی که بکار رفته است از محلول 1M استات سدیم و 1M هیدراکسید سدیم در ۱۲/۵ = PH تشکیل می شود •

در بعضی شرایط بجای استات سدیم ، سیترات سدیم مصرف شده است. سرعت یونها برروی کاغذ بطرف اند به ترتیب $S^{=} > SO_4^{=} > SO_3^{=}$ می باشد . در بعضی شرایط بجای محلول آبی از فرم آمید استفاده شده است. نتایج حاصل نشان می دهند که بااین روش براحتی میتوان انیونها را در مدت نسبتا کوتاهی از هم جدا کرد ، ولی اشکال عمده اکسید شدن یون سولفور در محلولهای رقیق می باشد ، بطوریکه این روش را تا حد زیادی نامطلوب می سازد . برای جلوگیری از اکسید شدن نسبی سولفور باید از محلولهای غلیظ تر استفاده کرد که خود در توان جدا کنندگی این روش اثر سوء می گذارد .

۱۲ـ۵ـ۱۹

مرتضوی ، سید رضا . تجسس و تعیین مقدار کاتیونها بروش قطره ای . دانشگاه تهران ، دانشکده داروسازی ، ۴۹ـ۱۳۴۸ ، ۱۵۶ ص .
(پایان نامه فوق لیسانس)

در واکنشهای قطره ای کاتیونها و آنیونهای مختلف را بوسیله معرف های آلی تجسس و تعیین مقدار مینمایند ، بدون آنکه استعمال مقدار زیادی محلول و یا معرف لازم باشد و یا اینکه به غلظت زیاد آنها احتیاج باشد . بدین جهت باین نوع تجسس واکنش لکه گذاری نام میدهند دراین پایان نامه روش تجسس و تعیین مقدار ، حد حساسیت ، غلظت حد ، برای کاتیونهای مختلف ، شرح داده شده است .

١٢_٥_٢٠

Bancrjee, D.K. ; Basu, D. Purification of Normal Human Urinary N-Acetyl-β-Hexosaminidase A by Affinity Chromatography. The Biochemical Journal, 145(1), 1975, 113-118.

N-Acetyl-β-hexosaminidase A was purified 1000-fold from human urine by chromatography on DEAE-Sephadex followed by concanavalin A-Sepharose affinity chromatography. The optimal pH range was 4.4-4.5 for both the N-acetylglucosamine and N-acetylgalactosamine derivatives. The K_m values were 0.51 mM and 0.28 mM respectively for the N-acetylglucosamine and N-acetylgalactosamine derivatives. The glycoprotein nature of the urinary enzyme was established by its affinity towards concanavalin A as well as by the presence of sialic acid, galactose, glucose, mannose and hexosamines in the molecule. (41 Ref.)

١٢_٥_٢١

Clayton, T.E. ; Foster, W.W. ; Harrison, T.S. The Determination of Arsenic in Iron, Steel, and Oxide Materials: An Assessment of two Procedures. Laboratory Practice, 26(5), 1975, 333-335.

As current standard procedures for arsenic determination in iron and steel are tedious in routine application, two likely alternatives were investigated. In Nall's extraction of the chloride, formation of arseno-molybdate and reduction to molybdenum blue the photometric reading observed is shown to be critically dependent upon solution acidity. Minimum heating for redissolution after evaporation is also advised. The East Moors Works method for steel, based on Vasak and Sedivec's liberation of arsine and absorption in silver diethyldithiocarbamate dissolved in pyridine, to form a stable red complex for photometric mea-

surement, is also examined and is modified for oxide materials. The effects of fresh batches of absorbent reagents on the calibration and blank are indicated. Whilst each method gives good results on standard samples, the latter is preferred for its overall speed, simplicity and convenience. (0 Ref.)

١٢_٥_٢٢

DiNello, R.K. ; Dolphin, D.H. Analytical Chromatography of Hemins on Silica Gel. Analytical Biochemistry, 64(2), 1975, 444-449.

The analytical chromatography of proto, meso, hemato, and diacetyldeutero hemins, and of Mn^{III} Co^{III} , and Fe^{III} meso-porphyrins by tlc on silica gel is described. (6 Ref.)

١٢_٥_٢٣

Medzihradsky, F. ; Dahlstrom, P.J. Concurrent Determination of Narcotic Drugs in Plasma by Gas Chromatography. Pharmacological Research Communications, 7(1), 1975, 55-69.

A method has been developed for the concurrent determination by gas-liquid chromatography of 9 CNS drugs in human plasma. Whereas cocaine, codeine, cyclazocine, levallorphan , methadone and pentazocine, alone or in combinations of 2 or more of the drugs, were directly determined after a single extraction, nalorphine and naloxone were converted into their silyl derivatives prior to gasliquid chromatography. The recovery of the drugs, present at concentrations of 0.25 - 4 µg/ml, was 80 % to 100 % . The lower limit of sensitivity ranged from 3 ng to 6 ng, corresponding to concentrations in plasma of 0.05 µg/ml and 0.13 µg/ml, respectively. The procedure offers reliability and simplicity required for routine applications. (14 Ref.)

١٢_٥_٢٤

Shekhtman, R.I. ; et al. Separation of Pairs of Cis-and Trans Isomers of Unsaturated Sulphur Compounds by Gas Chromatography of Graphitized Carbon Black. Journal of Chromatography, 104(2), 1975, 409-416.

The conditions for the quantitative gas chromatographic analysis have been found for mixtures of cis-and trans-isomers of 1,2-diethyldithioethene, 1-ethoxy-2- (ethylthio)ethane, 1,2-diphenyldithioethene, 1-phenylsulphonyl 1-2-(phenylthio) ethene, ethyl ω-styryl sulphide and ethyl ω-styryl sulphone. The preparative isolation of the cis- and trans-isomers of 1-ethoxy-2-ethylthioethenes has been performed. (26 Ref.)

١٢_٥_٢٥

Tyler, J.E. ; Dibdin, G.H. Gas Chromatography of Volatile Fatty Acids: Method Involving Separation from Biological Material by Vacuum Distillation. Journal of Chromatography, 105(1), 1975, 71-77.

A method is described for the quantitation of C_2-C_5 volatile fatty acids present in biological tissues. It involved recovery of the acids from their biological matrix by vacuum micro-distillation at room temperature, followed by gas phase separation of aqueous solutions on orthophosphoric acid-modified Phasepak Q columns. The subsequent gas chromatographic procedure resolved iso from normal isomers and showed a linear response for each volatile acid over the range 10-400 ng. There was no evidence of ghosting, isomer peak broadening, or peak tailing. Relative molar response values were shown to be linear with carbon number for all the volatile fatty acids studied. (12 Ref.)

۱۲ـ۵ـ۲۶

براتعلی ، ترابعلی • تهیه و خواص فلوئورور منگنز II مکعبی ساده • نشریه دانشکده علوم ، ۶(۲) ، تیرماه ۱۳۵۳ ، ۱۰۳ـ۱۰۶ ص •

در بررسی اثر فلوئورور آمونیم بر نیترات منگنز II یك نوع فلوئورور منگنز II بدست آمد که دارای ساختمان مکعبی ساده و برنگ ارغوانی روشن است• پارامتر ان بوسیله محاسبه A = ۴/۲۵A تعیین گردید • این فلوئورور در طبیعت موجود نمیباشد • بررسی اثر حرارت در محیط ازت خالص نشان داد که ساختمان و رنگ این فلوئورور تا ۱۸۰°C ثابت می‌ماند و در این درجه بصورت مخلوطی از فلوئورور منگنز II کوبیك ساده و کواد راتیك در میآید • در ۲۰۰°C تبدیل به فلوئورور منگنز II کواد راتیك میگردد و رنگ آن سفید تیره است و سپس تا ۹۰۰°C ساختمان و رنگ آن تغییر نمی‌کند • فلوئورور منگنز II که در آزمایشگاهها و در صنعت بروشهای مختلف تهیه می‌شود دارای ساختمان کواد راتیك است و چون کاملا خالص نیست ، نمیتواند در تحقیقات دقیق مورد استفاده قرار گیرد • اما از فلوئورور منگنز II مکعبی ساده در تحقیقات دقیق میتوان استفاده کرد •

۱۲ـ۵ـ۲۷

رئیس‌شبری ، اکبر • مطالعه اسپکتروگرافی مادون قرمز مشتقات کربونیل نیکل مولیبدن • نشریه دانشکده علوم ، ۶(۱) ، فروردین ۱۳۵۳ ، ۶۱ـ۶۲ ص •

در انواع کربونیل ها بویژه در مثال کربونیل های از نوع $Ni(CO)_4$ و $Mo(CO)_6$ در برخی از شرایط فیزیکی یا شیمیائی می‌توان قسمتی یا تمامی عوامل کربونیل را توسط لیگند هایی از نوع Al_3 استخلاف کرد • در ساختمان

الکترونی این نوع لیگند ها (که در آنها I متعلق به عناصر گروه پنجم جدول تناوبی : I=N, P, As, Sb, Bi و A رادیکالها یا اتمهایی از نوع F ; Cl یا A=R, Ar, OR, OAr, Sr, SAr) می‌باشند یک زوج الکترون برای تشکیل پیوند در مثال کربونیل ها بصورت M - L مانند (CO) وجود دارد • در این بررسی ، علاوه براینکه چندین ترکیب جدید سنتز شده است ، مشخصات آن ها نیز توسط IR مورد مطالعه قرار گرفته است • (کتابشناسی ۱۲)

۱۲_۵_۲۸

کسرائی ، مسعود • مقایسه حالت شیمیائی گوگرد (^{35}S) و فسفر (^{32}P) در بلور کلرور پتاسیم • نشریه دانشکده فنی ، ۲(۳۰) ، دی ماه ۱۳۵۳ ، ۱۴۷_۱۵۷ ص •

در این مقاله حالت شیمیائی (ظرفیت شیمیائی) دو رادیوایزوتوپ ^{35}S و ^{32}P درحالت جامد و محلول مقایسه شده است • اثر ناخالص ها و پرتوهای یونیزه کننده بر روی تغییر حالت شیمیائی آنها مورد مطالعه قرار گرفته است • چون تعداد اتمهای ^{35}S و ^{32}P بوجود آمده در شبکه کلروپتاسیم در یک تابش دهی معمولی ، نسبت به اتمهای ناخالص و ناکاملی‌های بلوری ، ناچیز است • اثر ناخالص ها و ناکاملی ها می‌تواند برروی تغییر حالت شیمیائی مورد بحث قابل ملاحظه باشد • نتایج نشان میدهد که تنها بطریق تئوری نمی توان حالت شیمیائی این دو رادیوایزوتوپ را پیش‌بینی کرد • مقایسه حالت شیمیائی این دو رادیوایزوتوپ نشان می‌دهد که در بیشتر حالات فسفر بحالت اکسیده شده و گوگرد به‌حالت اکسیده شده و نیز احیاء شده مشاهده شده است •

١٢_٥_٢٩

Bali, A. ; Malhotra, K.C. Behaviour of Some Niobium (V), Tantalum (V) and Molybdenum (VI) Compounds in Disulphuric Acid. Australian Journal of Chemistry, 28(3), 1975, 481-489.

Pentaoxides and oxychlorides of niobium and tantalum and ammonium metaniobates and tantalates form $H(NbO(HSO_4)_4)$ and $H(TaO(HSO_4)_4)$ while pentahalides form $H(M(HSO_4)_6)$ when dissolved in disulphuric acid. These acids behave as non-electrolytes in this solvent. At higher concentrations, there is indication of polymerization. Ammonium molybdate and molybdenum pentaoxide form $MoO_2(HSO_4)_2$ while molybdenum pentachloride forms $H(Mo(HSO_4)_6)$ when dissolved in disulphuric acid. (28 Ref.)

١٢_٥_٣٠

Bosnich, B. ; Jackson, W.G. ; Lo, S.T.D. Dissymmetric Arsine Complexes. Cobalt Hydrides. Inorganic Chemistry, 14(7), 1975, 1460-1468.

General methods for the preparation of arsinecobalt hydrides are given and the problems associated with isolating them are discussed. It is shown that, electronically, all the derivatives are formally cobalt(III) complexes despite the dichotomous chemical properties observed with some of the hydrides. No correlation between the variations in the hydride chemical shifts and the ligand field strengths of the axial ligands is found and the possible reasons for this are suggested. An aquo group trans to a hydrido ligand is labilized to the extent that its exchange is observable on an NMR time scale. The presence of two hydrido ligands confers stereochemical nonrigidity to the cis-(Co(diars)2(H)2) ClO4 system at room temperature. (25 Ref.)

١٢_٥_٢١

Calvo, C. ; Faggiani, R. Structure of Nickel Orthophosphate. Canadian Journal of Chemistry, 53(10), 1975, 1516-1520.

$Ni_3P_2O_8$ crystallizes in the monoclinic system with space group $P2_1/c$ with a = 5.830(2), b = 4.700(2), c = 10.107(4) Å, B = 91.22(2)°, and Z = 2. The structure was refined by full-matrix least squares methods to a final R value of 0.035 using 986 symmetry independent reflections. The structure is isotypic with that of sarcopside, which in turn is related to that of olivine with vacant cation sites ordered. The Ni ions are octahedrally coordinated in two types of sites with average Ni-O bond lengths of 2.081 and 2.067 A. The mean P-O bond length is 1.547 Å although the tetrahedron shows some unususally large distortions with bond lenghts ranging from 1.521 to 1.595 Å. (19 Ref.)

١٢_٥_٢٢

Eaton, D.R. ; Zaw, K. The Structure and Stability of Ni(II) Complexes of Thiourea and Related Ligands. Canadian Journal of Chemistry, 53(5), 1975, 633-643.

A number of Ni(II) complexes of thiourea, N-methylthiourea, N, N′ - dimethylthiourea, N-naphthylthiourea, N, N′ - diethylthiourea, and ethylene thiourea have been studied in acetone solution by proton magnetic resonance, magnetic susceptibility measurements, and conductivity measurements. In solution these complexes have tetrahedral, square planar, and octahedral geometries. In many cases equilibria between compounds with different geometries exist. Such equilibria have been studied as a function of temperature. The factors determining the relative stability of Ni(II) compounds with different geometries are discussed. In the present series of compounds it is concluded that the charge on the metal ion has the predomi-

nant influence in determining geometry. Some qualitative results on ligand exchange rates and mechanisms are also reported. (25 Ref.)

١٢_٥_٢٢

Hartman, M. Sulphur Dioxide Reactivity of Commercial Lime Stones. Collection of Czechoslovak Chemical Communications, 40(5), 1975, 1466-1477.

A differential reactor with a fixed bed of limestone particles was used to measure their conversion to calcium sulphate in flue gas containing sulphur dioxide. The flue gas fed to the reactor was generated by combustion of propane and metered addition of SO_2. The conversions of nine naturally occurring limestones were studied in terms of exposure time, particle size and temperature. The conversions of commercial high-grade limestones attained under the favourable experimental conditions are generally low and range from 19 to 41%. The differences in conversion can be related neither to differences in chemical composition nor to the porosity of the calcined limestones. Temperature and particle size have a moderate effect on conversion. Electron microprobe analysis shows that sulphur, present as sulphate, is uniformly distributed within particles reacted under the favourable conditions. The cause of the low conversion of calcium oxide to sulphate seems to be the strong diffusional resistance developed in the interior of particles during the course of the reaction. (27 Ref.)

١٢_٥_٣٤

Maslen, E.N. ; et al. Crystal Structure of Bis (Hydrazine)-Bis (Hydrazine Carboxylato) Cobalt (II). Australian Journal of Chemistry, 28(4), 1975, 739-744.

The crystal structure of the title compound ($Co(N_2H_4)_2(NH_2NHCO_2)_2$) has been determined at 295 K from X-ray diffractometer data and refined by full-matrix least squares to a residual of 0.059 for the 4985 independent reflections within the limit $2\theta < 100^{\circ}$ (Mo Kα radiation). Crystal data: monoclinic, $P2_1/a$, a 9.551(2), b 7.352(2), c 8.110(1) Å, β 122.38(1)°, Z 2. The compound is isostructural with the zinc analogue. The cobalt atom lies on a centre of symmetry; it is six-coordinate, being surrounded by monodentate hydrazine (Co-N, 2.178(2) Å) and bidentate hydrazinecarboxylate ligands (Co-O 2.064(2) A; Co-N, 2.198(2) Å). (21 Ref.)

١٢_٥_٣٥

Nixon, J.F. ; Swain, J.R. Trifluorophosphine Complexes of the Platinum Metals. Platinum Metals Review, 19(1), 1975, 22-29.

The chemistry of the trifluorophosphine complexes of the transition metals, and of the platinum metals in particular, is of increasing importance. This article describes some of the more recent developments in trifluorophosphine complexes of the platinum metals, including their syntheses, structures, reactions, and potential as homogeneous catalysts. (36 Ref.)

١٢_٥_٢٦

Plummer, J.F. ; Schram, E.P. Lewis Base Properties of Platinum (O) Complexes: Adducts Between Platinum and Titanium Tetrachloride. Inorganic Chemistry, 14(7), 1975, 1505-1512.

Treatment of tris- and tetrakis (triphenylphosphine) platinum (O) complexes with titanium tetrachloride affords bis (titanium tetrachloride) tris(titanium tetrachloride - triphenylphosphine) platinum (O)(I). Thermolysis of I results in the formation of tris (titanium tetrachloride-triphenylphosphine) platinum (O) (II). Reaction of I with triphenylphosphine or methyldiphenylphosphine also affords II. Treatment of I with boron trichloride affords titanium tetrachloride. Subsequent thermolysis of the reaction residue results in the evolution of additional titanium tetrachloride, boron trichloride-triphenylphosphine adduct, and bis(titanium tetrachloride-triphenylphosphine) platinum(O). (29 Ref.)

١٢_٥_٢٧

Sigel, H. Ternary Cu^{2+} Complexes: Stability, Structure, and Reactivity. Angewandte Chemie, 75(6), 1975, 399-402.

The driving forces leading to the formation of ternary Cu^{2+} complexes are outlined; they are (i) statistical reasons, (ii) neutralization of charge in the mixed-ligand complexes. (iii) steric factors (bulky groups, ring size of chelates), and (iv) formation of π bonds. The last point is important for achieving a large stability, as well as for the observation of discriminating qualities. An additional stability increase may possibly be achieved through a direct interaction between the two ligands bound to the same metal ion, i.e. Schiff base formation, hydrogen bonding or a charge-transfer relation. The latter leads to distinct structures, i.e. metal ion-bridged charge-transfer complexes. The relation between stability and

structure on the reactivity of mixed-ligand complexes is emphasized. The relevance of the results for mixed-ligand complexes containing metal ions other than Cu^{2+} is briefly outlined. (86 Ref.)

١٢_٥_٣٨

Watson, A. ; Svehla, G. Polarographic Studies on Some Organic Compounds of Arsenic : Substituent Effects and the Arsenic Acids. The Analyst, 100(1192), 1975, 489-502.

A study has been made of the polarographic behaviour of 12 arsonic acids. They give rise to a single well defined cathodic wave in acidic solutions below pH 3. The wave height is diffusion controlled and proportional to the concentration in the range 10^{-5} to 10^{-3}M. The arsonic acids are reduced irreversibly to arsenobenzenes. The current-potential relationships have been examined and a linear relationship was found between the half-wave potential and the polar Hammett substituent constants. The use of polarography has been proposed for the quantitative functional analysis of the arsonic group, for the sepcific determination of nitrophenylarsonic acids and arsanilic acid in mutual mixtures, and for the specific determination of phenylarsonic acid and phenyl arsenoxide, also in mutual mixtures. (21 Ref.)

شیمی آلی

۱۲ـ۵ـ۲۹

بیات ، سهیل • سنتز مشتقات جدید بنزوفنون • دانشگاه تهران ، دانشکده داروسازی ، ۵۱ـ۱۳۵۰ ، ۵۹ ص • (پایاننامه فوق لیسانس)

مشتقات جدید بنزوفنون و گوانیل هایدرازون که خاصیت ضد مالاریائی دارند در دو دسته متاوپارا ساخته شده اند • در دسته متا ۱۴ کتون جدید تهیه شده است که ازاین تعداد ۸ کتون با آمینوگوانیدین هایدرو کلراید تولید گوانیل هایدرازون مربوطه را کرده اند و در دسته پارا ۴ کتون جدید هر چهارکتون با امینوگوانیدین هایدرو کلراید تولید گوانیل‌هایدرازون مربوطه را نموده اند •

۱۲ـ۵ـ۴ •

بیگدلی ، ابراهیم • شیمی کربانیون • نشریه دانشکده فنی ، ۲(۱ ۳) ، خرداد ماه ۱۳۵۴ ، ۲۱۰ـ۲۲۲ ص •

شیمی کربانیون مانند همه رشته های دیگر علوم بطور کامل گسترش یافته است• بنابراین در زمان کنونی نمی توان مقاله ای تهیه کرد که تمام شیمی کربانیون را در برگیرد • دراین مقاله کوششی خواهد شد که قسمتی از نتایج تحقیقاتی که دراین زمینه شده است نشان داده شود • اولین قسمت مقاله که بهمراه مکانیسم نوآرایی ویتیج (Witing Rearrangement) میباشد ، نشان می‌دهد که شیمی کربانیون مسائلی را در مورد کاتیون یا رادیکال آزاد معلوم و در اختیار شیمی دان قرار میدهدکه برای توجیه واکنشها ضروری است‌بخشی اول مربوط به سنتز آلکیل ایزوسیانید a فلزی (با فلزات قلیائی) میباشد • این

قسمت نشان میدهد که تحقیق در شیمی کربانیون برای شیمیدان با ارزش و قادر است روشهای سینتیك جدیدی را ارائه دهد • (کتابشناسی ۱۰)

۱۲_۵_٤۱

Aaij, C. ; et al. The Preparation of Astatine Labelled Proteins. The International Journal of Applied Radiation and Isotopes, 26(1), 1975, 25-29.

Methods are described for the labelling of protein antigens with astatine, a halogen of which no stable isotopes exist. We used the radionuclide ^{211}At ($t_{1/2}$ = 7.2 hr), which decays by electron capture and by emission of alpha particles. Electro-oxidation of ^{211}At showed that up to 30 per cent of its radioactivity was bound to the proteins. We have shown that with H_2O_2 as oxidant even higher rates of incorporation were obtained. Up to 60 per cent of the ^{211}At could be coupled to μg amounts of protein. Specific radioactivities of 1 μCi per μg protein were obtained. Using immunoelectrophoretic and autoradiographic methods, it was demonstrated that neither the labelling process nor the radiation emitted by the ^{211}At caused any appreciable denaturation of the protein antigens. (19 Ref.)

۱۲_۵_٤۲

Drake, R. ; Higgibotham, H. Reactive Liquid Polymer Modification of Epoxy Resins. Polymer Age, 6(4), 1975, 96-98.

Epoxy resin alloys of the type based on pre-reacting carboxylic nitrile liquid polymers with the epoxy resin base are finding utility in both major and minor epoxy applications. Model preparation methods and comments vis-a-vis four broad application areas are discussed. Application advantage may be related, for the most part, to improved toughness or to an optimised flexibilisation of the epoxy resin. (17 Ref.)

١٢_٥_٤٣

Lagow, R.J. ; et al. A New General Synthesis for Trifluoromethyl Organometallic Compounds. Journal of the American Chemical Society. 97(3), 1975, 518-522.

A new general synthesis for trifluoromethyl organometallic compounds using very reactive trifluoromethyl radicals obtained from the glow discharge of hexafluoroethane is reported. Reaction of these trifluoromethyl radicals with metal halides produces trifluoromethyl organometallic compounds in high yields. In most cases, substitution of trifluoromethyl radicals for halogen atoms is effected more easily as one proceeds from chlorine to iodine in accordance with decreasing metalhalogen bond strengths. Novel syntheses for bis(trifluoromethyl)mercury, $Hg(CF_3)_2$, the trifluoromethylmercuric halides, CF_3HgX, and bis(trifluoromethyl) ditelluride, $(CF_3)_2Te_2$, are reported. The new compounds bis (trifluoromethyl) tellurium, $(CF_3)_2Te$, tetrakis (trifluoromethyl) tin, $Sn(CF_3)_4$, and tetrakis (trifluoromethyl)germanium, $Ge(CF_3)_4$, have been prepared. (12 Ref.)

١٢_٥_٤٤

Lyle, R.E. ; Heavner, G.A. A Novel Synthesis of 8-Aza Steroids. The Journal of Organic Chemistry, 40(1), 1975, 50-54.

A general synthesis of A-aromatic 18-nor-8-aza steroids have been demonstrated from the enamine of a β-arylethylamine and 1,3-cyclopentandione. The C-ring atoms were introduced by reaction of the enamine with β-propiolactone. Cyclization to form the B ring occurred with redox dispropionation to give an 8-aza steriod with the C-ring aromatic (7) and the C ring in the tetrahydro state (9). Reductions of 7 and 9 were investigated to form the trans-anti-cis isomer of 2,3 - dimethoxy-18-nor-8-azaesterone (13). The reaction of 9 with electrophiles occurred at oxygen. (27 Ref.)

١٢_٥_٤٥

Murgia, E. ; Walton, H.F. Ligand-Exchange Chromatography of Alkaloids. Journal of Chromatography, 104(2), 1975, 417-424.

Alkaloids are separated by liquid chromatography on resins having functional carboxyl groups combined with copper (II) ions. **The** eluent is aqueous alcohol containing ammonia. Some resins retain alkaloids much better than others. Alkaloids studied included morphine, codeine, strychnine, atropine, papaverine, narcotine cocaine, quinine, cinchonine and methadone. (11 Ref.)

١٢_٥_٤٦

Pagington, J.S. Vegetable Proteins, with Particular Reference to Soybean Protein. Journal of the Society of Dairy Technology, 28(1), 1975, 32-37.

The position of vegetable protein in the United Kingdom is briefly examined and soya protein products are shown to be of major importance. The production and uses of the various soya products are described and the nutritional properties of soya bean protein are compared with those of milk proteins. (1 Ref.)

١٢_٥_٤٧

Roth, J.F. The Production of Acetic Acid: Rhodium Catalysed Carbonylation of Methanol. Platinum Metals Review, 19(1), 1975, 12-14.

The new Monsanto Company acetic acid process employs a rhodium based homogeneous liquid-phase catalyst which promotes methanol carbonylation in high selectivity and at low pressures.

This article describes some of the chemistry involved in this process, with particular emphasis on the role played by rhodium complexes in the catalytic cycle. (4 Ref.)

١٢_٥_٤٨

Schnitzer, M. ; Neyroud, J.A. Alkanes and Fatty Acids in Humic Substances. Fuel, 54(1), 1975, 17-19.

Straight-chain fatty acids are shown to occur in natural humic acids and fulvic acids to a substantially greater extent than has previously been estimated. The amounts chemically bonded to the substrate usually exceed those physically adsorbed. Quantities of individual fatty acids and phenolic acids in typical samples have been estimated. (9 Ref.)

شیمی بلور

۱۲ـ۵ـ۴۹

رحمانی ، مهین دخت. تشکیل مراکز F_2 (یا M) در تك بلورهای BaClF بازپخته و ($\bar{H}$) BaClF. نشریه دانشکده علوم ، ۶(۲) ، تیرماه ۱۳۵۲ ، ۷۵ـ۷۶ ص.

در این کار تحقیقی تشکیل مراکز رنگی F_2 (یا M') ، ناشی از تابش پرتوایکس در ۲۹۵ درجه کلوین، هم چنین تشکیل آنها بکمك بی رنگ کردن حرارتی و بی رنگ کردن نوری مراکز F موجود در نمونه تابش‌دیده در ۷۸ درجه کلوین ، در تك بلورهای BaClF باپخته و ($\bar{H}$) BaClF مورد مطالعه قرار گرفته است.

۱۲ـ۵ـ۵۰

Jones, W. ; Thomas, J.M. ; Williams, J.O. Electron Microscopic Studies of Extended Defects in Organic Molecular Crystals: P-Terpenyl. Journal of the Chemical Physics, 71(1), 1975, 138-145.

Transmission electron microscopy has been utilized to reveal directly the nature of the dislocations that occur in solution-and vapour-grown thin crystals of p-terphenyl. The identity of the linear defects was established chiefly by diffraction contrast using bright-field images, but it also proved possible to employ, to a limited degree, real-space crystallography. Many of the

slip systems deduced to be present in simple aromatic solids by dislocation-etching and topographical studies have been more fully characterized in this study (e.g. (001) [010], (001) [110], (100) [010] and (100)[001]. Of special interest is the identification of the hitherto undetected slip system (001) (12w) (with w probably zero). At the cores of such dislocations, in aromatic solids crystallizing in the $p2_1/a$ space-group, molecules within the structure adopt a sapce-symmetry which indicates that incipient dimers occur recurrently. This is relevant in the solid-state chemical behaviour of anthracene since such dislocations can rationally account both for the production of topochemically forbidden dianthracene upon u.v. irradiation of the crystalline monomer and the trapping of triplet excitons in single-crystals of anthracene. (27 Ref.)

١٢_٥_٥١

Riley, P.E. ; Kunz, K.B. ; Seff, K. Crystal Structure of an Ethylene Sorption Complex of Partially Cobalt (II)-Exchanged Zeolite A. Journal of the American Chemical Society, 97(3), 1975, 537-542.

The crystal structure of an ethylene sorption complex of a partially Co(II)-exchanged form of zeolite A, stoichiometry $Co_4Na_4Al_{12}Si_{12}O_{48} \cdot 4C_2H_4$ per unit cell, has been determined from three-dimensional X-ray diffraction data gathered by counter methods. The structure was solved and refined in the cubic space group pm3m. and at 21(1)° the unit cell constant is 12.135(3) Å. Dehydration (or activation) of the crystal studied was achieved at 400° and 2×10^{-6} Torr in 48 hr. The crystal was then treated with 682 Torr of ethylene at ambient termperature. The Co(II) ions select sites in the large cage of the zeolite along the threefold axes of the unit cell, where they are bound to three equivalent framework oxygen atoms at distances of 2.148(7) Å. One molecule of ethylene approaches each Co(II) ion in a symmetric, lateral

fashion, so that the resultant Co(II)-C distances are equal (2.51 (6) A). These long distances indicate that the Co(II)-C_2H_4 interaction is eweak, and is probably due to the polarization of the π -electron density of the C_2H_4 molecule by the highly charged Co(II) ion. To distribute cationic charge more uniformly, the four Na + ions adopt similar threefold axial positions recessed somewhat into the smaller sodalite cages, at locations close to those four (remaining) triads of framework oxygen atoms which are not coordinated to Co(II) ions. No interaction between Na + ions and C_2H_4 molecules is indicated. Full-matrix least-squares refinement has converged to a conventional R index (on F) of 0.062 using 312 independent reflections for which $I_o > 3\sigma(I_o)$. (32 Ref.)

۱۲_۰_۵۲

Crecelius, E.A. ; Bothner, M.H. ; Carpenter, R. Geochemistries of Arsenic, Antimony, Mercury, and Related Elements in Sediments of Puget Sound. Environmental Science & Technology, 9(4); 1975, 325-333.

The natural distributions of arsenic, antimony mercury, chromium, cobalt, iron, aluminum, and carbon in the surface sediments of Puget Sound are perturbed by two major anthropogenic sources of trace metals: a copper smelter near Tacoma, Wash., that discharges large amounts of arsenic and antimony, and a chlor-alkali plant in Bellingham, Wash., which, in the recent past, discharged significant amounts of mercury. Arsenic and antimony inputs from the smelter over the past 80 years are evident in sediment cores whose accumulation rates have been determined by the lead-210 technique. An arsenic budget for Puget Sound reveals the importance of atmospheric input resulting from smokestack emissions of the smelter. Chemical extraction studies of sediments showed that more than 82% of the mercury was associated with easily oxidizable organic matter, whereas about 50% of both arsenic and antimony was associated with extractable iron and aluminum compounds. (35 Ref.)

۱۲_۰_۵۳

Hoefs, J. Geochmistry of Stable Isotopes. Angewandte Chemie, 14(2), 1975, 75-79.

During the past 25 years a new branch of research has developed under the name "stable isotope geochemistry", and its importance within the earth sciences has steadily increased. The present progress report considers the scope, and also the limitations, of this discipline. (40 Ref.)

۱۲_۰_۰٤

Galli, C. ; Spagnuob, C. Distribution of Caffeine and Metabolites in Brain and Liver Subcellular Fractions in the Rat. Pharmacological Research Communications, 7(2), 1975, 125-132.

The distribution of 1-methyl- ^{14}C caffeine and metabolites in brain and liver subcellular fractions, at various time intervals after i.p. injection, has been studied in the rat. Caffeine penetrates rapidly in intracellular compartments of tissues and accumulates in the cytoplasm. Caffeine and metabolites do not tend to accumulate in sealed cytoplasmic compartments, except in the nuclear fraction. The different distribution of caffeine and metabolites in brain and liver subcellular fractions suggests a more active formation or accumulation of metabolites in liver particulate fractions in respect of brain. (14 Ref.)

۱۲_۰_۰۰

Harris, D.C. ; Aisen, P. Iron-Donating Properties of Transferrin. Biochemistry, 14(2), 1975, 262-267.

The transferrin molecule has two specific metal-binding sites, each of which may provide iron for the biosynthesis of hemoglobin by reticulocytes. Diferric human transferrin was shown to be a better iron donor, per iron atom, for rabbit reticulocytes, than was monoferric transferrin obtained by isoelectric focussing. The difference in binding of ^{125}I-labeled monoferric and diferric transferrin to reticulocytes may be sufficient to account for the difference in iron uptake. In contrast, diferric and monoferric rabbit transferrin both donated iron to reticulocytes at the same rate, per iron atom. In an experiment using $^{55}Fe/^{59}Fe$

doubly labeled transferrin, one iron binding site of human transferrin was a better iron donor than the other. In rabbit transferrin, the two sites appeared to function equivalenty. Care was taken in these experiments to demonstrate that labeled iron added to dilute solutions of transferrin was indeed specifically bound to the protein. A liquid scintillation counting procedure, simpler than existing methods, was developed to quantitate ^{55}Fe and ^{59}Fe in blood. (48 Ref.)

١٢_٥_٥٦

Holtta, E. ; et al. Oxidation of Polyamines by Diamine Oxidase from Human Seminal Plasma. The Biochemical Journal, 145(2), 1975, 373-378.

Diamine oxidase (amine-oxygen oxidoreductase (deaminating) (pyridoxal-containing), EC 1.4.3.6.) was purified from human seminal plasma more than 1700-fold. The enzyme appeared to be homogeneous on polyacrylamide-gel electrophoresis at two different pH values. The general properties of the enzyme were comparable with those described for other diamine oxidases from different mammalian sources. The molecualr weight of the exzyme was calculated to be about 182000. The enzyme had highest affinity for diamines, but polyamines spermidine and spermine were also degraded at concentrations that can be considered physiological in human semen. The possible degradation of spermine by diamine oxidase in human semen in vivo may give rise to the formation of cytotoxic aldehydes that conceivably can influence the motility and survival of the spermatozoa. (26 Ref.)

١٢_٥_٥٧

Nishikimi, M. Oxidation of Ascorbic Acid with Superoxide Anion Generated by the Xanthine-Xanthine Oxidase System. Biochemical and Biophysical Research Communications, 63(2), 1975, 463-468.

Ascorbic acid was found to be oxidized by 0_2 which was generated by the xanthine-xanthine oxidase system. From a kinetic analysis of the inhibition of this reaction by superoxide dismutase, the second-order rate constant for the reaction between ascorbic acid and 0_2^- at pH 7.4 was estimated to be $2.7 \times 10^5 M^{-1} sec^{-1}$. A function of ascorbic acid as a defense against 0_2^- is presented. (21 Ref.)

١٢_٥_٥٨

Rimai, L. ; Salmeen, I. ; Pelering, D.H. Comparison of the Resonance Raman Spectra of Carbon Monoxy and Oxy Hemoglobin and Myoglobin: Similarities and Differences in Heme Electron Distribution. Biochemistry, 14(2), 1975, 378-381.

With 441.6-nm excitation, which is near the Soret band, we observe that the resonance Raman Spectra of hemoproteins contain not only the bands between 650 and 1700 cm^{-1} which arise from vibrations of the conjugated macrocycle, but also bands below 650 cm^{-1}, some of which involve vibrations of the iron pyrrole-nitrogen bonds. The spectra of the oxygen and carbon monoxide complexes of both myoglobin and hemoglobin are sufficiently similar to those of low spin met derivatives, that the electronic distribution on the heme for both ligands can be interpreted as that of a low spin ferriheme. This agrees with an earlier interpretation, by others, of comparative optical absorption spectra and, as pointed out previously, would imply that in the complex the ligands are bound as O_2^- and CO- However, band frequencies and relative intensities differ somewhat between the carbon monoxide and oxygen

complexes of the same protein, which indicates differences between the details of the π - electron distributions in the corresponding complexes. (28 Ref.)

١٢_٥_٥٩

Ullman, B. ; Perlman, R.L. Chemically Phosphorylated Protamine: A New Substrate for the Study of Phosphoration Phosphatase Activity. Biochemical and Biophysical Research Communications, 63(2), 1975, 424-431.

A method for the chemical phosphorylation of seryl residues in protamine has been developed. Both non-radioactive and (^{33}P) phosphoprotamine have been prepared and characterized. Phosphoprotein phosphatases from a variety of mammalian tissues release inorganic phosphate from phosphoprotamine. Chemically phosphorylated protamine is a useful new substrate for the study of these phosphoprotein phosphatases. (16 Ref.)

شیمی وصنایع داروئی

۱۲ـ۵ـ۶۰

احمدی ، ویدا . اندازه گیری شیمیائی و فیزیکوشیمیائی ویتامین های گروه ب در فرآورده های داروئی . دانشگاه تهران ، دانشکده داروسازی ، ۱۳۵۰ـ۵۱ ، ۸۶ ص . (پایان نامه دکترا)

اندازه گیری ویتامین ها با استفاده از روشهای فیزیکی ، شیمیائی ، بیولوژیکی و میکروبیولوژیکی صورت میگیرد . در اندازه گیری ویتامین B_1 از روش های فلورومتری تیوکروم ، اسید سیلیکو تنگستیك و کلریمتری استفاده میشود . اندازه گیری ویتامین B_2 یا ریبوفلاوین ، بطریق اسپکترو فتومتری ، پلارو گرافی و فلورومتری صورت میگیرد . ویتامین B_6 یا پیرید وکسین هاید روکلراید در فرآورده های داروئی بروش کلریمتری یا اسپکترو فتومتری اندازه گیری میشود . روشهای اندازه گیری ویتامین B_{12} یا سیانوکوبالامین عبارتند از : اسپکتروفتومتری ، توزیع در خلاف جهت جریان ، کلریمتری سیانید و دی سیانید ، روش رادیواکتیو و باکتریولوژی بهترین طریق برای اندازه گیری این ویتامین روش بیولوژیکی میباشد . (کتابشناسی ۵)

۱۲_۵_۶۱

پیروز ، سیروس. آبهای معدنی اطراف تفرش (آب گراو). دانشگاه تهران ، دانشکده داروسازی ، ۵۲_۱۳۵۱ ، ۱۰۲ ص. (پایان نامه فوق لیسانس)

آب معدنی گراو تفرش در ۵ کیلومتری شهرستان تفرش واقع است نتایج تجزیه آب مزبور نشان میدهد که چشمه فوق دارای آب بیکربنات دار میباشد که در اثر نوشیدن ترشحات گوارشی زیاد می‌شود و به هضم و تخلیه معدی کمک میکند و همچنین باعث بهبود متابولیسم پروتیدها می‌شود ، قند خون را پائین میاورد و دفع اسید اوریک را زیادتر میکند . ولی چون اب این چشمه عاری از میکروبهای بیماریزا نبوده است بنابراین برای آشامیدن باید کاملا تصفیه وضد عفونی گردد . استحمام در این آب اثر تسکینی دارد و باعث باز و بسته شدن عروق میگردد و همچنین در اثر استحمام نبض کند می‌شود و میزان ادرار بالا میرود . آب معدنی گراو تفرش شبیه آب معدنی Royat فرانسه است .

۱۲_۵_۶۲

طاهری ، شهین . کنترل وتعیین مقدار داروهای آنتی آنمیک . دانشگاه تهران ، دانشکده داروسازی ، ۵۱_۱۳۵۰ ، ۶۳ ص . (پایاننامه دکتری)

در این پایاننامه ، تعیین مقدار آهن در پاره ای از فرآورده های داروئی شامل قرص فروگلوکونات ، قرص فروسوکسینات ، آمپول آیرون دکستران ، آمپول آیرون سوربیتول ، قرص فرودیک ، قرص فروبیناکتون ، قرص فرونیکوم ، فرسولیکن ، بروش اسپکتروفتومتری ، شرح داده شده است .

۱۲ـ۵ـ۶۳

فرهید نیا ، هاشم. تجزیه کیفی وکمی آنتی هیستامینیك های سنتتیك و پدیده آلرژی. دانشگاه تهران ، دانشکده داروسازی ، ۵۱ـ۱۳۵۰ ، ۱۰۴ ص. (پایانnامه دکتری)

آنتی هیستامینیك ها را از نقطه نظر ساختمان شیمیائی به ۶ گروه زیر تقسیم میکنند: مشتقات دی الکیل آمینواتیل امین ، مشتقات دی آلکیل آمینواتوکسی ، مشتقات دی آلکیل آمینوآلکیل ، مشتقات سیکلیزین ، مشتقات فنوتیازین ترکیبات مختلف دیگر. دراین رساله برای تشخیص آنتی هیستامینیك های سنتزی علاوه بر روشهای اختصاص از روشهای زیر استفاده شده است : ازمایش تشخیص بازهای آلی ازت دار (اسپکتروفتومتری) ، آزمایشهای کلراید ، استفاده از ثابت فیزیکی (نقطه ذوب) ، جذب اشعه ماورابنفش ، جذب اشعه مادون قرمز ، ازمایش های تارترات. روشهائی که جهت تعیین مقدار داروهای سنتینك فوق بکار رفته اند عبارتند از تعیین مقدار در محیط بدون آب به کمك اسید پرکلریك ازنرمال ، تعیین مقدار در محیط مائی و بکمك اسید کلرئید ریك ازنرمال ، اسپکتروفتومتری و گراویمتری.

۱۲ـ۵ـ۶۴

لاوی ، ایون. سنتز ترکیبات آنالوگ پورین از سری ایمیدازو(۲،۱ـب) آسیمتریك تریازین. دانشگاه تهران ، دانشکده داروسازی ، ۴۰ـ۱۳۴۹ ، ۷۲ص. (پایان نامه دکترا)

از سنتز آنالوگهای پورین ، با حلقه ایمیدازو (۱ ، ۲ ـ ب) اسیمتریك ـ تریازین ، نگارنده موفق به سنتز ۱۹ جسم جدید گردیده است. پیش‌بینی میشد این اجسام دارای خاصیت ضد توموری باشند ، لیکن آزمایشهای ممکن برروی سوش های استافیلوکوکوس اورئوس ـ باسیلوس سوبتیلیس ـ سارسینا لوته آ ـ کلبسیلاپنومونیه ،

باستثناء یك مورد اثر ضد میکروبی قابل ملاحظه ای نشان نداده است .
(کتابشناسی ۲۷)

۱۲_۵_۶۵

Ferruti, P. Macromolecular Drugs Acting as Precursors of Non-Macromolecular Active Substances-Preliminary Considerations. Pharmacological Research Communications, 7(1), 1975, 1-13.

Some principles at the basis of the potential interest of macromolecular drugs are defined. The main lines of a research on purposely tailored synthetic high polymers acting as precursors of non-macromolecular active substances are given. The cehmical aspects of proper design of these polymers are discussed in detail. (19 Ref.)

۱۲_۵_۶۶

Hambright, P. ; et al. Chemistry of Technetium Radiopharmaceuticals: Exploration of the Tissue Distribution and Oxidation State Consequences of Technetium (IV) in Tc-Sn-Gluconate and Tc-Sn-EHDP using Carrier ^{99}TC. Journal of Nuclear Medicine 16(6), 1975, 478-482.

The distribution in rats of the renal agent Tc-Sn-gluconate using both ^{99m}Tc and carrier amounts of ^{99}Tc was similar. The same behavior was shown with the bone agent Tc-Sn-EHDP. The radiopharmaceutical consequences of the observed tTc(IV) oxidation state in these systems are explored. (24 Ref.)

١٢_٥_٦٧

Martin, J.L, ; Duncombe, R.E. ; Shaw, W.H.C. A Thin-Layer Chromatographic Test for the Identification of Some Drugs: Its Application to Steroids, Tetracyclines, Penicillins and Cephalosporins. The Analyst, 100(1189), 1975, 243-248.

The identity test described is based on the thin-layer chromatographic separation of the complex mixtures of substances formed by thermal degradation of small amounts of many organic substances applied as spots to thin-layer plates. Subsequent development of the plate, and the application of spray reagents when necessary, yields characteristic patterns that are suitable for comparison under 254- and 366-nm ultraviolet light with authentic specimens that have been similarly treated. The test has been found to give good discrimination within the groups of steroids, and the tetracycline, penicillin and cephalosporin antibiotics described in the European and British Pharmacopoeias. For the cephalosporin group, separation of the thermal degradation products by paper electrophoresis is an alternative that gives slightly better results. The technique is flexible in that there is a wide choice of thin-layer chromatographic support media, heating conditions, developing solvents and spray reagents, which facilitates its application to different classes of compounds. (3 Ref.)

١٢_٥_٦٨

Peters, W. ; et al. Antimalarial Compounds. XIII. New Derivatives of Phenylchloromethylsulfone. Polish Journal of Pharmacology and Pharmacy. 27(3), 1975, 283-287.

A series of chloromethylsulfonyl derivatives of amines, biguanides and amidineureas (Scheme 1) has been prepared and their antimalarial properties investigated. (7 Ref.)

١٢_٥_٦٩

Prelicz, D. ; Kasperek, L. Application of Pyridinium Salts Derived of Barbituric Acid in Krohnke's Reaction. Polish Journal of Pharmacology and Pharmacy, 27(3), 1975, 327-334.

A series of pyridinium salts derived of barbituric and (BAC) was obtained, as starting substances in Krohnke's reaction. On the example of 3-(1', 3'-dimethyl-5'-isopropylbarbituryl-5)-1-acetonylene-N-pyridinium bromide it was stated that the corresponding nitron can be formed only when in positions I and 3 of barbituric ring are no hydrogen atoms able to enolization. 3-(1', 3'-Dimethyl-5'-isopropylbarbituryl-5')-pyruvic aldehyde (XIII) was obtained by decomposition of nitron XII. (10 Ref.)

١٢_٥_٧٠

Ross, S. B. Pharmacokinetics of Haloalkylamines: Cyclization and Distribution in Blood in Vitro and in Vivo. Journal of Pharmacy and Pharmacology, 27(5), 1975, 322-328.

The cyclization of N-(5-chloropentyl)-N-methylaminoaceto-2,6-xylididehydrochloride(RAD 150) and N-(5-bromopentyl)-N-methylaminoaceto-2,6-xylidide hydrobromide (RAD 154) in red blood cells of rats and rabbits was examined under in vitro and in vivo conditions. The rate of cyclization was much slower in plasma and blood than in a buffer solution, probably due to influence of protein binding of the compounds. The tertiary amines disappeared rapidly from the blood cells in vitro and in vivo and the piperidinium derivative (RAD 179) formed from the haloalkylamines disappeared almost as rapidly as the tertiary amines from the plasma in vivo. In contrast, the efflux of RAD 179 formed in the blood cells was slow ($T_{\frac{1}{2}}$ for rabbit erythrocytes: 9 h in vitro; 8 h in vivo) following a 1st order reaction. RAD 179 itself was only to a small extent taken up in the blood cells. (7 Ref.)

١٢_٥_٧١

Tsuji, A. ; et al. Chemical Reactions Involved in Penicillin Allergy: Kinetics and Mechanism of Penicillin Aminolysis. Journal of Pharmacy and Pharmacology, 27(8), 1975, 580-587.

In view of the fundamental importance of the reaction of penicillins with amino groups of proteins to the penicillin allergy, the aminolysis of benzylpenicillin by various amines was kinetically investigated. The formation rate constants, Kamide, of benzylpenicilloylamides were determined at 35°, 45° and 60° (μ =0.5), and found to obey the general rate law: $K_{amide} = K_1(amine) + K_2(amine\ H+)(amine) + K_3(amine)^2 + K_4(amine)a_{OH}$. All of the amines exhibited the unassisted nucleophilic rate constant, K_1. The relative importance of the other kinetic terms depends on the basicity and the chemical structure of amines. The reaction mechanism of penicillin aminolysis was discussed. Bronsted relations for K_1, K_2 and K_3, except for hydrazines, were satisfactory. (21 Ref.)

۱۲_۵_۷۲

Cecal, A.L. ; Calu, N. ; Harabor, P. Etude sur la Corrosion de l'Acier au Carbone a l'Aide de Radioisotopes. Bulletin de la Societe Chimique de France. (5-6), 1975, 1076-1078.

On présente une méthode radiochimique propre a l'etude de la corrosion des éprouvettes d'acier au carbone, en milieu corrosif HCl ou de NaCl. On y détermine les constantes globales de la vitesse de corrosion par la variation de l'activite de la solution qui contient du $^{55-59}FeCl_3$, a intervalles réguliers de temps. On établit en même temps l'effet protecteur de quelques inhibiteurs sur la corrosion des échantillons respectifs. (12 Ref.)

۱۲_۵_۷۲

Indig, M.E. ; Vermilyea, D.A. Corrosion of Sensitized Austenitic Stainless Steel in Hot Aqueous Solutions Under Natural and Electrochemical Control. Corrosion, 31(2), 1975, 51-59.

The corrosion of sensitized austenitic stainless steel in ditute acid at 289 C (552 F) was investigated with electrochemical and corrosion techniques. Grain boundary crevices from initially at the corrosion potential, but penetration is not significant as the crevices fill with corrosion product. Severe intergranular attack occurs if the sensitized alloy is polarized to a passive potential in a pH 3 H_2SO_4 electrolyte. The general corrosion morphology changes significantly with potential. A thick layered oxide forms if the alloy is polarized at the peak of the active region while anodic protection is achieved in the passive region. Fe-Ni-Cr alloys, where the chromium content was $<18\%$, were used in the polarization and corrosion studies.

The chromium composition of these alloys were similar to the local grain boundary compositions that might exist after a particular sensitizing treatment. The anodic polarization kinetics of these alloys depends on solution pH and alloy chromium content. At pH 3 or less, alloys containing $<$12.5% chromium do not passivate. At small anodic polarizing potentials these alloys exhibit extremely high corrosion currents. Exposure under open circuit conditions showed that corrosion increases with decreasing pH and chromium content. The corrosion rate of the alloys containing $<$12.5% chromium appeared to be limited by the diffusion of hydrogen ions to the corroding surface. The corrosion rate-limiting step of alloys containing $>$12.5% Cr appears to be a chemical reaction. (8 Ref.)

١٢_٥_٧٤

Legault, R.A. ; Preban, A.G. Kinetics of the Atmospheric Corrosion of Low-Alloy Steels in an Industrial Environment. Corrosion, 31(4), 1975, 117-122.

It has been demonstrated that the natural atmospheric corrosion behavior of low-alloy steels in industrial environments can be accurately described by an equation of the form: $\Delta W = K\ t^{N.}$ Thus, reliable predictions of long-term behavior become possible, and a vehicle is provided for accurately assessing the effect on atmospheric corrosion behavior of alloying additions, processing variables, and differences in exposure environment. (1 Ref.)

١٢_٥_٧٥

Morgan, J. Regular Pigging to Control Internal Pipline Corrosion. Corrosion Prevention & Control, 22(1), 1975, 14, 16.

Internal Corrosion in crude oil and refined product pipelines is usually caused by water and oxygen in the product carried. The product is normally cooled on entering the underground pipeline system, this causing the water to settle out: it then combines with the oxygen to corrode the internal surfaces of the steel pipe. There is an ample supply of oxygen available, as the solubility of oxygen in most petroleum products is about six times greater than in water. (٥Ref.)

١٢_٥_٧٦

Tedeschi, R.J. Acetylenic Corrosion Inhibitors. Corrosion, 31(4), 1975, 130-134.

The effectiveness of alpha hydroxy acetylenic compounds as corrosion inhibitors at iron and related surfaces has been shown to be due primarily to complex formation of the acetylenic with the metal surface. These complexes are believed to be stabilized by both pi and hydrogen bonding. It is also proposed that intermolecular attraction between acetylenics or nitrogen compounds, results in a charged multi-layer barrier at the ferrous surface, which further aids in the inhibition of acid corrosion. This concept can also be applied to the prevention of hydrogen embrittlement of steels, where acetylenic alcohols are also effective. The improvement of inhibitor performance, either with mixtures of alkynols or by formulation of acetylenics with nitrogen compounds, has been defined and measured by a Potentiation Ratio. This ratio is believed to be useful in evaluating corrosion inhibitor formulations with respect to the components in the formulation, and as a measure of inhibitor performance. (12 Ref.)

١٢_٥_٧٧

Walker, R. Triazole, Benzotriazole and Naphthotriazole as Corrosion Inhibitors for Copper. Corrosion, 31(3), 1975, 97-100.

The use of triazole, benzotriazole, and naphthotriazole as corrosion inhibitors for copper is briefly reviewed. The corrosion of copper immersed in acidic, neutral, and alkaline solutions containing these compounds is reported. Triazole has generally been found to be a poor inhibitor, while benzotriazole and naphthotriazole are much better, with naphthotriazole giving the best protection. When used as a pretreatment for copper surfaces, all three inhibitors increase the time before atmospheric staining occurs, naphthotriazole is better than benzotriazole, and both are better than triazole. (23 Ref.)

راکتورها

۱۲_۵_۷۸

صرام ، مهدی. سیستم تبادل یونی جهت تصفیه آب استخر راکتور اتمی دانشگاه تهران. نشریه دانشکده فنی ، ۲(۲۹) ، مهرماه ۱۳۵۳ ، ۱۴۲_۱۵۷ ص.

هسته مرکزی راکتور اتمی دانشگاه تهران در عمق ۸ متری با ظرفیت ۵۰۰۰۰۰ لیتر قرار دارد برای پرکردن استخر از آب آشامیدنی تهران استفاده میشود. مقاومت الکتریکی آب پس از عبور از سیستم تبادل یونی از ۲KΩcm به حداقل ۱۰۰KΩcm افزایش میابد. بدلائل زیر وجود سیستم تبادل یونی برای آب استخر راکتور لازم میباشد : الف ــ تصفیه آب استخر راکتور موجب میگردد که غلظت یونهای Cl, K, Ca غیره که معمولا در آب وجود دارند کاهش یابد. آب تصفیه شده با سرعت ۲۲۰۰ گالن در دقیقه از مرکزی برای خنک کردن راکتور عبور داده میشود. مواد محلول در آب در هنگام عبور از هسته مرکزی در معرض تاثیر (یا بمباران) فلوی نوترونی به شدت 10^{13} n/cm²sec قرار گرفته و تبدیل به مواد رادیو اکتیو میشوند. بالا بودن غلظت ناخالصی آب موجب پیدایش مواد رادیو اکتیو بیشتر و افزایش پرتوهای یونساز در سطح استخر راکتور میگردد. اگر آب تصفیه نشده از هسته مرکزی راکتور عبور داده شود شدت رادیو اکتیو در محیط راکتور بسیار زیاد بوده و سلامتی کارکنان راکتور را در معرض خطر قرار میدهد. ب ــ میله های سوخت راکتور در پوششی از آلومینیم قرار دارند. بالا بودن مقاومت الکتریکی آب موجب میگردد که میزان خوردگی (corrosion)و زنگ زدگی میله های سوخت و پوشش آن کاهش یابد. ج ــ هرچه مقاومت الکتریکی آب بیشتر باشد میزان نفوذ اشعه گاما از سطح استخر کاهش میابد. در قدرت ماکزیمم ۵۰۰ کیلو وات میزان

تولید تشعشع گاما در هسته مرکزی راکتور 10^9 R/hr است میزان اشعه گامـــا پس از عبور از ۸ متر آب تصفیه شده به حدود چند هزارم رنتگن در ساعت میرسد .

۱۲_۵_۷۹

Mclain, M.E. Reactor Loop for Continuous Production of Gaseous Fission Product Radioisotopes: 235 U-Loaded Molecular Sieve Target. The International Journal of Applied Radiation and Isotopes, 26(3), 1975, 107-118.

The development of high surface area fissile targets by the deposition of ^{235}U on molecular sieves and silica gel provides a matrix from which the gaseous fission products readily diffuse. Collection of the fission product gases by helium sweep gas circulated through such a target installed in a reactor neutron flux constitutes a loop system for the continuous production of fission product gases, e.g. ^{135}Xe. This system has provided ^{135}Xe for medical diagnostic clinical evaluations and mixed fission product gases for study of reactor stack monitor systems performance. (14 Ref.)

۱۲_۵_۸۰

Randolph, R.B. Determination of Strontium-90 and Strontium-89 by Cerenkov and Liquid-Scintillation Counting. The International Journal of Applied Radaition and Isotopes, 26(1), 1975, 9-16.

A practical procedure is described for the determination of ^{90}Sr and ^{89}Sr in mixtures, utilizing sequential Cerenkov and liquid-scintillation counting. The two purely beta-particle emitting nuclides, freshly separated from ^{90}Y, are first counted for ^{89}Sr Cerenkov radiation, taking advantage of the large differences in maximum beta decay energies, i.e. 1463 KeV for ^{89}Sr versus 546 KeV for ^{90}Sr. Scintillation solution is then added, and the sample is recounted for ^{90}Sr. Correction for the overlap of ^{89}Sr

and/or ingrown ^{90}Y into the ^{90}Sr spectral region is made by dual radionuclide counting with external-standard ratio techniques. Reasonably accurate results have been obtained for synthetic samples having ratios of $^{90}Sr/^{89}Sr$ ranging from 20/1 to 1/20, if counting is completed within 24 hr. (6 Ref.)

١٢_٥_٨١

Sagert, N.H. ; Pouleau, R.M.L. The Production of Heavy Water: Hydrogen-Water Deuterium Exchange over Platinum Metals on Carbon Supports. Platinum Metals Review, 19(1), 1975, 16-21.

Catalysts using suitably supported platinum show promise for the commercial production of heavy water. Carbons are potential primary supports for the platinum and metal-support interactions have been observed in this system. These interactions lower the chemical activation energy and increase the rate of reaction under conditions where it seems likely that the support donates electrons to the metal. (16 Ref.)

۱۲_۵_۸۲

Raimondi, P. ; Terwilliger, P.L. ; Wilson, L.A. A Field Test of Underground Combustion of Coal. Journal of Petroleum Technology, 27, 1975, 35-41.

A field test of forward combustion in a coal seam is described. The coal was retorted using techniques similar to those developed for conventional oil reservoirs. Relatively high heat-content coal oil and gas were produced. The burned seam was later exposed by strip mining, enabling visual observation and sampling of the affected coal. (4 Ref.)

۱۲_۵_۸۳

Block, S.S. ; Sharp, J.B. ; Darlage, L.J. Effectiveness of Gases in Desulphurization of Coal. Fuel, 54(2), 1975, 113-119.

The effect of air, steam and hydrogen on the desulphurization of 10 U.S. high-volatile bituminous coal was investigated. Air treatment was most effective at 450 C where an average of 38% total sulphur, comprising 51% of the inorganic sulphur and 20% of the organic sulphur, was removed. With steam at 600° C, 61% of the total sulphur, 87% of inorganic and 25% of organic was lost. Hydrogen was not effective below 850° C, but at 900° C 86% of the total sulphur was dispelled, i.e. 94% of the inorganic and 76% of the organic sulphur. Without oxidative pretreatment the sulphur was much more difficult to remove, after oxidative pretreatment at 300° C for 10 min followed by treatment with hydrogen at 900° C, as much sulphur was removed in 4 min as in 60 min without the pretreatment. With raw coal, heating under nitrogen 'cooked-in' or fixed some of the sulphur making it more difficult to remove

with hydrogen; whereas following oxidative pretreatment, heating for up to 1 h did not lessen the reduction of sulphur with hydrogen. For temperature-swelling coals with large quantities of organic sulphur, heating at 300° C in air followed by reduction with hydrogen at 900° C appears to permit rapid discharge (3-10 min) of the organic as well as the inorganic sulphur, to produce a smokeless product with a CV (per unit of product) similar to the fuel value of the untreated coal. (8 Ref.)

١٢_٥_٨٤

Moore, G.E. ; Babu, S.P. Rapid Determination of Coal Char Oxidative Reactivity. Fuel, 54(1), 1975, 24-28.

A rapid quantitative estimation of carbon dioxide by infrared spectrophotometry provided a rapid and reliable technique for a semi-quantitative comparison of the reactivity of carbon samples to oxidative gases, since the previously demonstrated inverse relation between ease of wet oxidation of carbon samples and their reactivity to oxidizing gases was confirmed. Wet-oxidation characteristics of Montana lignite char, FMC bituminouscoal char, and electrode carbon were tested. The effect of particle size, carbon content and potassium oxide as a catalyst were investigated. Potassium oxide appeared to inhibit the wet oxidation of Montana lignite char, which observation extends the inverse relation for uncatalysed samples. The method adopted in this technique can provide the basis for choice between alternative char samples either for complete gasification or combustion. (7 Ref.)

۱۲ـ۵ـ۸۵

دلکشا ، محمد . غنی کردن نان بوسیله ویتامین A . تعیین بهترین روش افزودنی و نوع مناسب ویتامین A . دانشگاه تهران ، دانشکده بهداشت ، ۵۱ـ ۱۳۵۰ . ۱۰۷ ص . (پایان نامه فوق لیسانس)

تامین نیازمندی به ویتامین A در جمعیت آسیب پذیر در کشور با استفاده از منابع غذائی سرشار مثل روغن کبد ماهی ، سبزیها ، میوه جات در آینده نیز دیك بدلایل کشاورزی و اقتصادی مقدور بنظر نمیرسد لذا گمان میرود استفاده از روشهای کم هزینه غیر سنتی از قبیل افزودن این ویتامین به غذای عمده مردم کشور از جمله نان در آینده نزدیك ، قدم موثری برای بهبود تغذیه ای از نظر ویتامین A بشمار آید . در این پایانnامه ویتامین A افزوده شده به نان پس از طی مراحل مختلف پخت بروش اسپکتروفتومتری و کاپرایس اندازه گیری شده است .

۱۲ـ۵ـ۸۶

Atuma, S.S. Electrochemical Determination of Vitamin E in Margarine, Butter and Palm Oil. Journal of the Science of Food and Agriculture, 26(4), 1975, 393-399.

A simple, rapid and reproducible method is described for the analysis of tocopherols in margarine, butter and palm oil. The method involves saponification, extraction of the unsaponifiable material and direct voltammetric determination. No separation technique is necessary. Two indicator electrodes, glassy carbon (GCE) and carbon paste (CPE), have been employed in this work,

GCE in ethanolbenzene (2:1) medium and CPE in 75% ethanol. The CPE gives over ten times as much current as the GCE for a given tocopherol concentration. The GCE's high residual current in aqueous medium makes its impractical in 75% aqueous ethanol and the CPE's solubility in benzene restricts its usage in ethanol-benzene medium. Slight turbidity does occur sometimes when the unsaponifiable material of the samples is dissolved in 75% ethanol but this seems not to interfere in subsequent analysis. Increase in ethanol content to 90% gives a clearer solution and higher background, but no appreciable difference in the results. The results obtained by use of both electrodes are given and shown to be in close agreement with previously published results. (10 Ref.)

١٢_٥_٨٧

Butterworth, K.R. ; et al. Short-Term Toxicity of Dimethyl Sulphide in the Rat. Food and Cosmetics Toxicology, 13(1), 1975, 15-22.

Groups of 15 male and 15 female rats were given doses of 0 (control), 2.5, 25 or 250 mg dimethyl sulphide/kg/day for 14 wk. No effects on the rate of body-weight gain, intake of food and water, results of haematological examinations, serum-enzyme levels, urinary cell excretion, renal concentration tests, organ weights or histopathological examinations were attributable to the treatment. A no-untoward-effect level of 250 mg/kg body weight/day was therefore established. (12 Ref.)

١٢_٥_٨٨

Dixon, E.J.; Groffman, D.M. The Determination of Unsulphonated Primary Aromatic Amines in Water-Soluble Food Dyes and Other Food Additives. The Anatyst, 100(1192), 1975, 476-481.

EEC directives prescribe limits for the amount of unsulphonated primary aromatic amines present in food colouring matters in general and prohibit the presence of particular carcinogenic amines in food dyes and other food additives. Integrated methods based on solvent extraction and thin-layer chromatography have been devised for identification of these amines, followed by the spectrophotometric determination of their condensation products with 4-dimethylaminocinnamaldehyde. The method is also extended to the determination of primary aromatic amines in biphenyl and to the determination of aminoazobenzenes in the dye Fast Yellow. An additional thin-layer chromatographic method is given for the differentiation between the isomers of naphthylamine as their tosyl derivatives. (14 Ref.)

١٢_٥_٨٩

Foster, D.H. The Explosive Decomposition of Heated Massecuites. The International Sugar Journal, 77(916), 1975, 99-103.

Following the steaming of a blocked pan stage cut-over pipe at an Australian mill there was a disastrous pipe failure. This prompted an investigation of the behaviour of heated A- and C-massecuites and refined sugar magma. They were held in a 600 cm^3 bomb at constant temperature. In most experiments there was an exothermic reaction which was more severe in the impure massecuites and at the higher temperatures of the range 122 to 170°C. The delay period between commencement of heating and commencement of the sudden reaction was shortest in impure massecuites and was further reduced by higher storage temperatures and larger mass of massecuite. Frequently pressures of over 10,000 KPa gauge were

generated and even at 122° C pressures of around 2500 KPa gauge were obtained from A- and C-massecuites. Graphs are given showing pressure and temperature rise under varying conditions. Analyses are given of the gases taken from the cooled bomb. These contained mainly carbon dioxide but there was also evidence of hydrocarbons. The nature of the reactions taking place is discussed. (6 Ref.)

١٢_٥_٩٠

Gaunt, I.F. ; et al. Long-Term Toxicity of Sorbic Acid in the Rat. Food and Cosmetics Toxicology, 13(1), 1975, 31-45.

Groups of 48 male and 48 female rats were given diets containing 0(control), 1.5 or 10% sorbic acid for 2 yr. There was no increase in the rate or mortality in the treated rats and no changes attributable to treatment in the haematological examinations, analyses of serum, studies of renal function or histopathological examination. The relative liver and kidney weights were increased in the rats given 10% sorbic acid. The thyroid weight was increased at the same level in males but this was not thought to be due to sorbic acid treatment. This study showed no carcinogenic effect of sorbic acid at dietary levels up to 10%. The no-effect level established by this study was 1.5% of the diet, with changes of doubtful significance at the higher level (10%). (34 Ref.)

١٢_٥_٩١

Miki, T. ; Saito, S. ; Kamoda, M. Composition of Poly saccharides in Carbonated Beverage Floc. The International Sugar Journal. 77(915), 1975, 67-69

Since September 1973 sugar refiners and the carbonated beverage bottlers in Japan have had a floc problem, and we found that certain cargoes of Australian raws were responsible for cottony

floc in the carbonated beverages. The carbonated water flocs originating from the above raws and from granulated sugar produced from the above raws were prepared, and the constituents of polysaccharides present in them were identified as consisting of glucose, galactose, mannose, arabinose, xylose, and rhamnose; the polysaccharide was found to be an important factor in the formation of carbonated water floc. (8 Ref.)

١٢_٥_٩٢

Resurreccion, A.P. ; Juliano, B.O. Fatty Acid Composition of Rice Oils. Journal of the Science of Food and Agriculture, 26(4), 1975, 437-439.

Analysis of rice oil methyl esters of two varieties by gas-liquid chromatography showed that oil from bran-polish and oil from milled rice extracted with petroleum ether had similar fatty acid composition and had oleic/linoleic acid ratios of about 1.0. However, milled rice oil extracted with chloroform/methanol had a higher linoleic acid content and a lower oleic acid content than oil extracted with petroleum ether. (5 Ref.)

١٢_٥_٩٣

Ritter, E.D. Vitamins in Foods: Analytical Methods. Cereal Foods World, 20(1), 1975, 33-37.

Nutrient labeling of processed foods has caused increased requirements for information on the content and stability of the vitamins present. Chemical and/or microbiological methods are available for determining the various vitamins, but there are many difficulties in obtaining reliable assays, particularly at the low potency levels frequently encountered in unfortified foods. The methods commonly used are reviewed and their performance characteristics discussed, including sensitivity, specificity, reproduci-

bility, and sources of error. The results of a number of collaborative tests are presented to illustrate the performance of standardized analytical methods. Recent developments in vitamin assay methodology. claimed to represent improvements over existing methods, are mentioned. (29 Ref.)

١٢_٥_٩٤

Rutter, P. ; Stainsby, G. The Solubility of Tea Cream. Journal of the Science of Food and Agriculture, 26(4), 1975, 455-563.

The heterogeneous nature of tea cream, with regard to solubility, is shown. A simple three-component system enables some of the observed cream characteristics to be explained. Suggestions are made concerning the compositions of these components and a model for the formation of cream particles, from a hot infusion, is proposed. Extraction of leaf tea with cold water gives an infusion incapable of creaming. (8 Ref.)

١٢_٥_٩٥

Sang, S.L. ; et al. Direct Determination of Trace Metals in Cane Juice, Sugar and Molasses by Atomic Absorption Spectrophotometry. The International Sugar Journal, 77(915), 1975, 71-75.

A rapid and simple atomic absorption spectroscopic method has been developed for determining 12 elements (Ca, Mg, K, Na, Fe, Al, Si, Zn, Cu, Mn, Co and Mo) in cane juice, process juices, molasses and sugar without separation. Several operational conditions were tried and nine methods of sample preparation were undertaken to compare results. The optimum operating conditions and the most suitable sample preparations have been selected for the determination of these elements. The determination of magnesium, potassium, sodium, iron and zinc can be done by dilution of the sample in 0.1N HCl solution only but, for determination of calcium, 1500

ppm lanthanum should be added to the above diluted sample solution to eliminate phosphate and silicate interference. Copper and manganese can be determined directly by dilution of the sample in 10% citric acid solution. The sample for determining silicon, aluminium, cobalt and molybdenum should be ashed by a dry method before determination. The results obtained by the above determinations were shown to be satisfactory in accuracy and reproducibility. It is considered that the AAS method applied for juices, sugar or molasses analysis is not only as reliable and accurate as the conventional methods, but is also simpler and quicker. (13 Ref.)

۹۶ـ۵ـ۱۲

دبیری ، حسن ؛ نیکمهر ، علی محمد ۰ کاربرد کامپیوتر در طراحی برج های تقطیر برای محلولهای دوتائی ۰ نشریه انجمن نفت ایران ، (۵۷) ، سه ماهه سوم ، ۱۳۵۳ ، ۱ ـ ۵ ص ۰

روش Ponchon و Savarit دقیقترین روش ترسیمی است که برای محاسبه تعداد سینی های برجهای تقطیر و سایر مشخصات آن جهت جدا کردن دو ترکیب از یکدیگر بکار میرود (۱) ۰ انجام عملیات لازم در این روش بسیار مشکل و طولانی بوده و اشتباهات ناشی از آن ، سرعت عمل و نیز دقت نتایج را کاهش میدهد ، بطوریکه بررسی و مطالعه تأثیر پارامترهای مختلف روی نتایج حاصله ، بخصوص پیدا کردن بهترین شرایط عمل برای برجهای تقطیر با استفاده از این روش بعلت طولانی بودن آن عملا خالی از اشکال نبوده و معمولا به نتایج دلخواه نمی توان دست یافت ۰ در این مقاله سعی شده است که تمام عملیات ترسیمی و محاسباتی روش فوق الذکر با طرح یك مدل ریاضی و به کمك برنامه کامپیوتر که بزبان Fortran IV نوشته شده است انجام پذیرد تا بتوان علاوه بر حصول سرعت عمل و ازدیاد دقت نتایج ، روی هریك از پارامترهای موثر در سیستم ، مطالعات و بررسی های لازم را سریع و دقیق انجام داد ۰ نتایج حاصله ازاین مدل با نتایج بدست آمده توسط روش Ponchon و Savarit که بطریق ترسیمی در منابع علمی (۲) و (۳) داده شده مقایسه شده است ۰ نتایج این مقایسه نشان میدهد که مدل ریاضی طرح شده دارای سرعت و دقت کافی و لازم بوده و میتواند برای بدست آوردن تعداد سینی های برجهای تقطیر سیستم های دوتائی ، همچنین بارهای حرارتی کندانسوروجوش آورمربوط ، محل سینی خوراك و بالاخره نسبت برگشتی مایع تقطیرشده بهرج در شرایط مختلف مورد استفاده قرارگیرد ۰ (کتابشناسی ۳)

١٢_٥_٩٧

Berkowitz, N. ; Speight, J.G. The Oil Sands of Alberta. Fuel, 54(3), 1975, 138-149.

Northern Alberta's oil-sand deposits contain some 143 Gt (900×10^9 bbl) of bitumen from which at least 36 Gt (250×10^9 bbl) of marketable light 'synthetic crude oil' are expected to be ultimately producible. Representing Canada's largest potential 'petroleum' reservoir, and of a size large enough to be compared with the total recoverable oil reserves of the Middle East, these deposits may become the country's principal source of future petroleum supplies. This review briefly describes the geological setting of the oil sands, and the methods by which bitumen can be extracted and upgraded; outlines current and planned commercial projects; and notes some of the factors bearing on future exploitation of the oil sands. (45 Ref.)

١٢_٥_٩٨

Koots, J.A. ; Speight, J.G. Relation of Petroleum Resins to Asphatenes. Fuel, 54(3), 1975, 179-184.

The chemical and structural analyses of a series of petroleum resins are reported. The data allow feasible representation to be made of the chemical and physical structure of bitumen and crude oils. (15 Ref.)

١٢_٥_٩٩

Latif, H.A. ; Ghazal, Kh. A. Effects of Water Injection on Composition of Crude Oils from Ain Zala-Buttmah Region in Northern Iraq. Fuel, 54(3), 1975, 150-152.

Water injection into some old wells in the Ain Zala-Buttmah oil field in northern Iraq resulted in souring the crudes, an effect

which extended to non-flooded wells as well. No apparent relation exists between the presence of hydrogen sulphide and the composition of representative samples of these crudes. This may suggest that the source of hydrogen sulphide is mainly inorganic, a conclusion which is further supported by the nature of the ground formation of the region. (5 Ref.)

١٢_٥_١٠٠

McKay, J.F. ; et al. Analysis of Acids in High-Bioling Petroleum Distillates. Fuel, 54(1), 1975, 50-61.

The major acidic compound types in ten high-bioling crude-oil distillates were identified as carboxylic acids, phenols, carbazoles, and amides. Acids from crude oils having different geological characteristics were separated using a standardized separation scheme involving the use of gel permeation, adsorption, and thin-layer chromatography, and preliminary comparisons have been made between the compositional results. In one method, compound types were isolated and the percentage of each was determined gravimetrically; in two other methods infrared spectrometry was used to estimate the relative amounts of individual types. The structures of the acidic compounds were examined in detail using mass, fluorescence, and nuclear-magnetic-resonance spectrometry. Trace amounts of pericondensed polyaromatic hydrocarbons were found in all the acid samples. (14 Ref.)

متالورژی

۱۲_۵_۱۰۱

جعفری ، ولی الله • شناخت مکانیسم بازگشت فولاد های مخصوص Fe - Cr - C (با ٪ ۱۲ کرم) پس از آبدادن • نشریه دانشکده فنی ، ۲(۳۱) ، خرداد ماه ۱۳۵٤ ، ۳۲ _ ۲۱ ص •

فولاد های کرم دار که بنام فولاد های زنگ نزن نیز معروفند در صنعت حائز اهمیت زیادی میباشد و در بخشهای مختلف صنعت بخصوص سانترالهای حرارتی و صنایع مواد غذائی، و شیمیائی بکار میروند زیرا این آلیاژها دارای خواص مخصوصی میباشند که سایر فولاد ها فاقد آن هستند ، بعنوان مثال مقاومت آنها در مقابل عوامل خورنده و حرارت بسیار عالی بوده همچنین دارای مقاومت بفرسایش خوبی میباشند • یکی از دلایل دیگر گسترش کاربرد این فولاد ها اینست که ، در هنگام بازگشت پس از آبدادن ، تغییرات ساختمانی پیدا کرده و ایجاد کربورهای مختلفی مینمایند و تشکیل همین کربورها است که خواص مختلفی باین فولاد ها میدهد • (کتابشناسی ۵)

۱۲_۵_۱۰۲

Chaudron, G. Spectrometric de Masse a Hante Temperature. Determination des Energies d' Atomisation des Molécules Si_2, Si_3, Al_2 Al Si et Al Si_2. Academie de Science Comptes Rendus Hebdomadaires des Séances, 280(25), 1975, 1505-1508.

Les espèces gazeuses en équilibre avec l'alliage Al-Si ont été étudiées par spectrométrie de masse, de I 585 à I 840 K. La molécule gaseuse $AlSi_2$ a été identifiée. Les énergies d'atomisation des molécules gazeuses.

Si_2(ΔH°_{Atom} = 77.2±2.4 Kcal/mole), Si_3(ΔH°_{Atom}=176,1 ± 3,5 Kcal/mole), $AlSi$(ΔH°_{Atom} = 59 + 3 Kcal/mole), $AlSi_2$(ΔH°_{Atom} = 150 ± 5 Kcal/mole)

et

Al_2(ΔH°_{Atom} = 40 ± 3,6 Kcal/mole)

ont été déterminées. (14 Ref.)

١٢_٥_١٠٣

Derbyshire, F.J. ; Trimm, D.L. Kinetics of the Deposition of Pyrolytic Carbon on Nickel. Carbon, 13(3), 1975, 189-192.

The kinetics of the deposition of laminar graphite on nickel by the pyrolysis of methane, ethane and ethylene at temperatures from 700-1000° has been studied. Two types of graphitic deposit are identified. Continuous films of laminar graphite are formed at higher temperatures, to a weight limit corresponding to the solubility of carbon in nickel at that temperature. It is concluded that such deposits are formed only as a result of a dissolution-precipitation mechanism. Deposits consisting of islands of graphite in a uniform graphite matrix are formed at lower temperatures. The kinetics of deposition are complex, but qualitative agreement is obtained with a model based on the surface aggregation of carbon atoms to account for island nucleation. (18 Ref.)

١٢_٥_١٠٤

Gruzleski, J.E. On the Growth of Spherulitic Graphite in Nodular Cast Iron. Carbon, 13(3), 1975, 167-173.

Considerable evidence exists in the literature on graphite to indicate that it produces curved crystals bounded by basal planes but formed by growth in the basal plane. This evidence is supplemented by recent observations on pure Fe-C-Si alloys which show that graphite in cast irons can also undergo curved crystal growth.

A model of graphite spherulite growth in cast iron is presented. The model is based upon curved growth of graphite during solidification, and indicates that spherulitic growth is circumferential rather than radial. (26 Ref.)

١٢_٥_١٠٥

Price, R.J. Thermal Conductivity of Neutron-Irradiated Reactor Graphites. Carbon, 13(3), 1975, 201-204.

The thermal conductivity of neutron-irradiated reactor-grade graphites made from needle coke (H-327), Gilsocoke (H-328), and isotropic petroleum coke (H-451) was measured between 22 and 800° C. Irradiation temperatures were between 600 and 1600° C, and fast neutron fluences ranged up to 10^{22} n/cm^2 (E > 0.18 MeV). Irradiation reduces the conductivity toward a saturation level which increases with irradiation temperature. For given irradiation conditions, the reduction in conductivity is greater for the needle-coke graphites than for the isotropic graphites. The dependence of conductivity on measurement temperature is reduced by irradiation. The temperature dependence of the irradiation-induced increase in thermal resistivity is in fair agreement with that predicted from lattice dynamics theory for those vacancy loops which are small compared with phonon wave-lengths. The temperature dependence is not consistent with calculations which assume a temperature-independent phonon mean free path for irradiation-induced defects. (11 Ref.)

۱۲_۵_۱۰۶

Redwood, M. The Development, Use and Relevance of Concrete Mixers or Hide Proccessors in the Modern Tannery. Journal of the Society of Leather Technologists and Chemists, 59(1), 1975, 14-17.

The difficulty of producing a reliable and consistent product from the wet end of the tannery quickly and economically has been with the tanner since man first made leather. The arrival of the "Concrete Mixer" or Hide Processor was heralded as a considerable step forward in obtaining these ends with additional pertinent advantages also claimed of water and thus effluent saving. This paper assesses some of these claims and discusses the practical use of the concrete mixer vessel in the tannery. It also embodies a survey of available information on concrete mixers and is in addition based upon the author's experience of working with these vessels in the United Kingdom and overseas. Much of the material included was used by the author in lectures to the Northern Group of the Society of Leather Technologists and Chemists in March 1973, and to the Northampton Group in October 1973. (11 Ref.)

۱۲_۵_۱۰۷

Russell, A.E. Salt-pH effects on Collagen Thermal Stability in Pickling and Curing. Journal of the Sciety of Leather Technologists and Chemists, 59(1), 1975, 6-13.

Effects of alkali halides and sulphates on thermal stability of insoluble and precipitated fibrous collagens have been examined

in the acid-to-neutral pH range. The salt-pH levels studied corresponded to the range of conditions encountered from acid pickling to saturated brine curing. Fluoride and chloride salts stabilised collagen whereas the bromides and iodides tended to stabilise at low concentrations in acid solution only, but were structural destabilisers at high concentration. Halide effects were strongly pH-dependent and a feature of the results was the relatively small increase in collagen stability in saturated sodium chloride at neutral pH (curing conditions) compared with the large stability increase found at saturation at acid pH. Alkali sulphates on the other hand, stabilised fibrous collagen substantially at all pH levels. Assuming that an increase in heat stability of collagen is also correlated with increased resistance to bacterial attack, the results suggest that curing in acidified brine offers additional protection. In addition, salt concentration in acid medium can be substantially decreased without affecting the excess stability in collagen. Practical implications of these results are discussed with reference to the problem of salt reduction in curing and the use of sulphates as penetration assistants in Mimosa cure and rapid vegetable tannage. (10 Ref.)

۱۲_۵_۱۰۸

Akbulut, U. ; Fernandez, J. ; Birke, R. Electroinitaited Cationic Polymerization of Styrene by Direct Electron Transfer. Journal of Polymer Science, 13(1), 1975, 133-149.

We have studied by cyclic voltammetry the mechanisms of electron transfer and peak potentials of eleven alkenes, propylene oxide, propylene sulfide, and carbon disulfide. We have also studied the cationic polymerization of styrene in acetonitrile solution initiated by controlled potential electrolysis at the anodic peak potential of styrene. The electrolyte used was tetrabutylammonium fluoborate, which was not electroactive at the electrolysis potential, and the reference electrode was a Ag°/Ag^{+} electrode. The electrochemical studies show that direct electron transfer from styrene is the initiation step. Plots of reacted monomer concentrations versus time are sigmoidal curves. The propagation rate constant was found from a kinetic relationship based on an autocatalytic reaction. The activation energy is 15.6 kcal/mole at 20°C. The current behavior and effect of stirring on polymerization rate suggest that the growth of polymer takes place partially on the electrode surface. (24 Ref.)

۱۲_۵_۱۰۹

Friis, N. ; Hamielec, A.E. Kinetics of Vinyl Chloride and Vinyl Acetate Emulsion Polymerization. Journal of Applied Polymer Science, 19(1), 1975, 97-113.

The kinetics of vinyl chloride and vinyl acetate emulsion polymerization are reexamined. The validity of Ugelstad's model for systems with high desorption rate is confirmed by simulating conversion

histories for both systems at different initiator concentrations and particle numbers. On the basis of the model, it is shown that at ordinary initiation rates, termination reactions are unimportant with respect to molecular weight development in both systems, and as a consequence, molecular weight development is independent of number and size distribution of polymer particles and of initiator and emulsifier level. Based on this conclusion, it is shown that in accordance with experimental facts, the molecular weight distribution obtained in vinyl chloride emulsion polymerization is the most probable distribution, and it is concluded that the number of long-chain branch points per repetition unit is less than 2×10^{-4} at high conversions. In vinyl acetate emulsion polymerization, an almost logarithmic normal distribution is obtained. The distribution is strongly broadened by branching reactions with the number of long-chain branch points increasing rapidly with monomer conversion. The increase of M_n with increasing conversion is due to terminal double-bond polymerization, while the increase in M_n is due mainly to transfer to polymer. (17 Ref.)

١٢_٥_١١٠

Gan, L.H. ; et al. Physico chemical Characterization of some Fully Aromatic Polyamides. Journal of Applied Polymer Science, 19(1), 1975, 69-82.

The characterization of eight fully aromatic polyamides are described with the procedures required to yield film-and fiber-forming materials. Solutions of these aromatic polyamides in dimethylacetamide were characterized by NMR and the effects of dissolved lithium chloride on these spectra investigated. The NMR resonances for specific protons in these polymers are assigned. The IR spectra of thin films and fibers of these polyamides are also reported, together with glass transition temperatures as measured by differential scanning calorimetry (DSC). The value of NMR and IR to identify specific polyamide homopolymers and copolymers is discussed. (20 Ref.)

١٢_٥_١١١

Iida, T. ; Nakanishi, M. ; Goto, K. Stabilization of Poly (Vinyl Chloride). Compounded with some Metal Soaps. Journal of Applied Polymer Science, 19(1), 1975, 235-241.

Poly(vinyl chloride) (PVC) with one or more metal salts added was colored by the action of heat to investigate the stabilization mechanism. The coloration and the color difference of heated PVC compound films varied according to the metal salt added. The decoloration of the colored compound films was advanced markedly in THF, DMF, acetone, and ammonia. On the other hand, the heated achromatic PVC film containing Cd/Ba soaps underwent an opposite change, from colorless to yellow orange, in the above materials. This means that the coloration of heated compound films may result from the formation of some complex (for example, π complex of the polyene with the metal chloride). Furthermore, the colored film with cadmium stearate was decolored by roll miving with the colored film containing barium stearate. These results indicate that the stabilization with metal soaps may be founded on a physical phenomenon such as an effect of complementary color. (5 Ref.)

١٢_٥_١١٢

Iida, T. ; Nakanishi , M. ; Goto, K. Stabilization of Poly (Vinyl Chloride): Stabilization Mechanism Trough Metal Soaps by Complementary Color Action. Journal of Applied Polymer Science, 19(1), 1975, 243-250.

In a previous paper, it was pointed out that the stabilization mechanism through metal soaps might be affected by an effect of complementary color. In this work, the colors of heated poly(vinyl chloride) (PVC) films mixed with various metal soaps were investigated by using a differential colorimeter and a spectrophotometer. Monochromatic coloration was observed with PVC, PVC-Ca stearate,

and PVC-Ba stearate systems. On the other hand, the phenomenon of color mixing was observed with PVC-Zn stearate, PVC-Cd stearate, PVC-Zn/Ca stearate, and PVC-Cd/Ba stearate systems. In particular, achromatic color remained with PVC-Zn/Ca stearate and Cd/Ba stearate systems for longer heating periods. This means that the stabilization mechanism for PVC compounded with metal soaps should be effected finally by subtractive complementary colors situated between polyene color and the color effected with the metal complex, in addition to being subject to the usual chemical stabilization mechanisms. (5 Ref.)

١٢_٥_١١٢

Kim, O.K. ; Griffith, J.R. Highly Branched Acrylamide Graft Copolymer. Journal of Polymer Science, 13(1), 1975, 151-160.

Acrylamide graft copolymerization onto poly(3-O-methacryloyl D-glucose) (PMG) as a backbone was performed by the ceric ion method. The number of polyacrylamide (PAM) chains grafted was dependent upon the concentration ratio of the redox catalyst system at constant acid concentration and increased in proportion to the ceric ion concentration. A maximum number of grafts obtained, for example, was 29 onto PMG (DP = 244) under the conditions $(Ce^{4}+)/(PMG)= 1/5$, $(H^{+}) = 1.0 \times 10^{-2}$ mole/l. In other words, the graft frequency was 12 per 100 monomer units of PMG. Such a high frequency of the grafts was, however, greatly decreased when the acid concentration was increased. Characteristics of the highly branched structure were revealed by the relationship between intrinsic viscosity and graft frequency, which showed a downward curvature with the increasing graft frequency. Influences of acid and ceric ion concentrations on the copolymerization were kinetically evaluated. The rate of polymerization was found to be first-order with respect to ceric ion and proportional to the square of the reciprocal acid concentration. The result suggests that the graft frequency is dependent upon the rate of polymerization. (27 Ref.)

Nakamura, K. Dynamic Mechanical Properties of Plasticized Poly (Vinyl Chloride). Journal of Polymer Science, 13(1), 1975, 137-149.

The complex compliance in extension of gels of poly(vinyl chloride) (PVC) in di(2-ethylhexyl) phthalate (DOP) and in tricresyl phosphate (TCP) was measured over the frequency range from 0.6 0.006 eps and the temperature range from -66 to 65 °C: the weight fractions of DOP and TCP in the gels were 0.32, 0.40, 0.49, and 0.59. Measurements were carried out in an apparatus using forced low-frequency longitudinal osillations. Data for the gels could not be combined by the method of reduced variables, since there were gradual changes with decreasing temperature, attributable to an increase in crystallinity. Application of the reduction method of Ninomiya and Ferry for solutions of crystalline polymers was found to be successful. The apparent melting temperatures (T'm) were obtained from the temperature dependence of the vertical shift factors. An apparent heat of fusion of ca. 120 cal/mole of monomer unit was found. This melting range was in agreement with that of secondary crystallinity in plasticized PVC reported in calorimetric studies by Juijn. With decreasing temperature, two phenomena occurred in the temperature range from T_g + ca. 80° C to T_g : the vitrification of a concentrated amorphous solution and the slight crystallization of the polymeric component. The larger the difference between T_g and T'm, the broader the primary dispersion zone on the frequency scale. This broadening effect was explained as due to the difference in dependence of T_g and T'm on plasticizer concentration, without any need to consider any specific interaction between plasticizer and PVC. (24 Ref.)

فهرست کتابهای جدید در زمینه شیمی

برای آگاهی و آشنائی محققان و متخصصان و دانشجویان از کتابها و منابعی که در زمینه شیمی و صنایع وابسته بزبانهای انگلیسی و فرانسه در کشورهای مختلف منتشر میشود ، از این شماره ، اطلاعات کتابشناسی آخرین و تازه ترین کتابهائی که در این زمینه انتشار یافته است درج میگردد که امید است سودمند افتد .

Adsorption of Polymers. by Y U.S. Lipatov and L.M. Sergeeva. New York: John Wiley & Sons, 1974. 177 P.

Advances in Inorganic Chemistry and Radiochemistry, Vol. 17. Edited by H.J. Emeleus and A.G. Sharpe. New York: Academic Press, 1975. 402 P.

Analysis of Water. by J. Rodiev. New York: John Wiley & Sons; Jerusalem: Israel Program for Scientific Translations, 1975. 926 P.

Analytical Profiles of Drug Substances, Vol. 4. Edited by K. Florey. New York: Academic Press, 1975. 526 P.

Atlas of Stereochemistry: Absolute Configurations of Organic Moclecules. by W. Klyne & J. Buckinghan. London: Chapman & Hall. 1974. 311 P.

Catalysis Review. Science and Engineering, Vol. 10. Edited by H. Heinemann and J.J. Carberry. New York: Marcel Dekker, 1975. 297 P.

Chemical Applications of Pattern Recognition. by P.C. Jurs and Th. L. Isenhour. London: John Wiely & Sons, 1975. 184 P.

Chemical Separations and Measurments. Theory and Practice of Analytical Chemistry. by D.G. Peters; J.M. Hayes and G.M. Hieftje. London: W.B. Saunders, 1974. 749 P.

Chemistry. The Science and the Scene. by R.D. Clark and R.L.S. Amai. Santa Barbara: Hamilton Publishing Company, 1975. 355 P.

Complexes and First-Row Transition Elements. by D. Nicholls. London: Macmillan, 1975. 215 P.

Creativity in Organic Synthesis, Vol. 1. by J.S. Bindra and R. Bindra. New York: Academic Press, 1975. 322 P.

Enzyme Engineering, Vol. 2. Edited by E.K. Pye and L.B. Wingard. New York: Plenum Press, 1974. 470 P.

Experimental Quantum Chemistry. by P. Hedvig. New York: Academic Press, 1975. 533 P.

General Chemistry. Principles and Structure. by J.E. Brady and G.E. Humiston. New York : John Wiley & Sons, 1975. 733 P.

Handbook of Moisture Determination and Control. Vol. 1. by A. Pande. New York: Marcel Dekker Inc, 1974. 266 P.

Handbook of Reactive Chemical Hazards. by L. Bretherick. London: Butterworths, 1975. 976 P.

Hydrogen Bonding by C-H Groups: by R.D. Green. London: Macmillan, 1974. 207 P.

Immobilized Enzymes in Food and Microbial Processes. Edited by A.C. Olson and Ch. L. Cooney. New York, Plenum Press, 1975. 268 P.

The Interpretation of Infrared Spectra. A Programmed Introduction. by R.R. Hill and A.E. Rendell. London: Heyden & Son, 1975. 129 P.

Introduction to Bioelectrodes. by C.D. Ferris. New York: Plenum Press, 1974. 243 P.

Metal - to - Metal Bonded States of the Main Group Elements. by M.J. Taylor. London: Academic Press, 1975. 211 P.

Organic Chemistry : A Brief Course. by J.R. Holum. New York: John Wiley & Sons, 1975. 446 P.

Plastic Films. by J.H. Briston and L.L. Katan. New York: John Wiley & Sons, 1974. 305 P.

Problems for General Chemistry and Qualitative Analysis. by C.J. Nyman and G.B. King. New York: John Wiley & Sons, 1975. 347 P.

Product Design and Process Engineering. by W. Niebel and A. B. Draper. New York: McGraw-Hill, 1974. 833 PP.

Progress in Surface and Membrane Science. Vol. 9. Edited by D.A. Cadenhead; J.F. Danielli, and M.D. Rosenberg. New York: Academic Press, 1975. 277 P.

Quantum Mechanics for Organic Chemists. by H.E. Zimmerman. Madison: University of Wisconsin, 1975. 224 P.

Soil Biochemistry, Vol. 4. Edited by E.A. Paul and A.D. McLaren. From the Series "Books in Soils and the Environment." Edited by A.D. McLaren. New York: Marcel Dekker, 1975. 277 P.

Stripping Voltammetry in Chemical Analysis. by Kh. Z. Brainina. New York: John Wiley & Sons; Jerusalem: Israel Program for Scientific Translation. 1975. 222 P.

Synthetic Peptides, Vol. 3. by G.R. Pettit. New York: Academic Press, 1975. 438 P.

Thermal Analysis : Comparative Studies on Materials. Edited by H. Kambe and P.D. Garn. Tokio : Kodansha Ltd. ; New York: John Wiley & Sons, 1975. 326 P.

فهرست الفبائی موضوعی فارسی

نـــان	٨٥
نيـــكل	٢٧
ويتامين آ	٨٥
ويتامين ب	٦٠

فهرست الفبائی موضوعی انگلیسی

Alphabetical Subject Index

فهرست نام نویسندگان ایرانی

Author Index
فهرست نام نویسندگان خارجی

فهرست مجله‌های مورد استفاده

نشریه انجمن نفت ایـــران	۱۳۵۳ (۵۷)
نشریه دانشکده علوم	۱۳۵۳ (۲) (۱)۶
نشریه دانشکده فنی	۱۳۵۳ (۳۰) (۲۹)۲
	۱۳۵٤ (۳۱)۲
Academie de Science Comptes Rendus Hebdomadaires des Seances	280(25), 1975
The Analyst	100(1189)(1192), 1975
Analytical Biochemistry	64(2), 1975
Angewandte Chemie	75(6), 1975
	14(2), 1975
Annales de Chimie	10(1), 1975
Australian Journal of Chemistry	28(3) (4), 1975
Biochemical and Biophysical Research Communications	63(2), 1975
The Biochemical Journal	145(1) (2), 1975
Biochemistry	14 (2), 1975
Bulletin de la Societe Chimique de France	(5-6), 1975
Canadian Chemical Education.	10(2), 1975
Canadian Journal of Chemistry.	53(5) (10), 1975
Carbon	13 (3), 1975
Cereal Foods World	20(1), 1975
Collection of Czechoslovak Chemical Communications	40(5), 1975
Corrosion	31(2)(3)(4), 1975
Corrosion Prevention & Control	22(1), 1975
Environmental Science & Technology	9(4), 1975
Food and Cosmetics Toxicology	13(1), 1975
Fuel	54(1)(2)(3), 1975
Inorganic Chemistry	14(7), 1975
The International Journal of Applied Radiation and Isotopes	26(1)(3), 1975

The International Sugar Journal	77(915)(916), 1975
Journal of the American Chemical Society	97(3), 1975
Journal of Applied Polymer Science	19(1), 1975
Journal of the Chemical Society: Faraday Transactions 11	71(1), 1975
Journal of the Chemical Society: Perkin Transactions. 1	(4), 1975
Journal of Chromatography.	104(2), 1975 105(1), 1975
Journal of Colloid and Interface Science.	50(1), 1975
Journal of Electro chemical Society.	122(1), 1975
Journal of Nuclear Medicine.	16(6), 1975
The Journal of Organic Chemistry.	40(1), 1975
Journal of Petroleum Technology.	27,.1975
Journal of Pharmacy and Pharmacology.	27(5)(8), 1975
Journal of Polymer Science.	13(1), 1975
Journal of the Science of Food and Agriculture.	26(4), 1975
Journal of the Society of Dairy Technology.	28(1), 1975
Journal of the Society of Leather Technologists and Chemists.	59(1), 1975
Laboratory Practice.	26(5), 1975
Pharmacological Research Communications.	7(1)(2), 1975
Pigment and Resin Technology.	4(1), 1975
Platinum Metals Review.	19(1)(2), 1975
Polish Journal of Pharmacology and Pharmacy	27(3), 1975
Polymer Age.	6(4), 1975

No. 40

Published by The Iranian Documenlation Cntre

46 , Shahreza Avenue

P . O. Bax 11 - 1387

Tehran Book Processing Centre Card Number M 50 - 3112

Printed at the Print House of the Institute for Research and Planning in Science and Education

Selected Bibliography of Chemistry

(item No. 1 - 114)

Vol. 5

No. 1

March 1976