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Physical Sciences Section

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August 1970

THE QUENCHING OF TRIPLET STATES OF NAPHTHALENE IN SOLUTION BY ELECTRON DONOR COMPOUNDS

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(Received March 10, 1969)

Naphthalene triplet decay rate constants in solution containing various electron donor compounds have been made and the second-order quenching constants have been evaluated. A quantitative account of naphthalene triplet quenching ability by various electron donor compounds is given in terms of relative height of the charge transfer state.

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August 1970

FIXED-BED STUDIES OF THE CATALYTIC DECOMPOSITION OF OZONE

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(Received April 1, 1969; revised July 15, 1969)

Results are reported of the catalytic decomposition of ozone, using metal oxide catalysts, in a fixed-bed reactor. These results are then discussed in the light of other work on similar studies given in the literature.

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August 1970

DILUTE SOLUTION PROPERTIES OF BISPHENOL A POLYCARBONATE: EXCLUDED VOLUME TREATMENTS*

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(Received June 18, 1969)

The volume effects of bisphenol A polycarbonate in dilute solutions show a serious departure from Flory's theory. However, the variation of the swelling factor α with molecular weight conforms to the treatments of Kurata *et al.* and Fixman. Molecular weights below 20,000 do not seem to apply to any of the theories, probably indicating the limit of the excluded volume treatments.

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August 1970

DETERMINATION OF MOLECULAR WEIGHT OF POLYMER WITH LOW DEGREE OF POLYMERIZATION

The late W.R. MOORE and M.A. UDDIN*

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(Received March 22, 1969; revised May 5, 1969)

Molecular weights of polycarbonate fractions in the range 5,000 to 22,000 have been determined by vapour pressure osmometer. The results are within 5% of the viscosity average molecular weights. Moreover, agreement between the molecular weights calculated from Raoult's law and from the Flory-Huggins treatment is of the same order. The polymer-solvent interaction parameter is somewhat higher, probably indicating the concentration dependence.

INFLUENCE OF ETHYLENE GLYCOL CONCENTRATION ON THE ACTIVATION ENERGY TRANSITIONS OF LIQUID WATER

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(Received May 5, 1969)

The study of concentration dependence of the jumps in E_η for a number of aqueous solutions from 0% to 9.8% ethylene glycol is undertaken at increments of nearly 2% glycol. E_η is obtained by using the Andrade equation after differentiation, viz.

$$E_\eta/R = \Delta \ln \eta / \Delta (1/T) = T^2 \Delta \ln \eta / \Delta T$$

For examining the course of the movements of the activation energy jumps as a function of concentration a **chart is prepared for the various energy jumps**. It is found that the shifts of these jumps with the change of concentration are mostly smooth, except, the region between 16°C to 30°C, where there is appearance and disappearance of certain steps with the change in magnitude of the jump.

SOLVENT-EFFECTS IN THE EPOXIDATION OF CYCLOHEXENE

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(Received May 27, 1969; revised July 16, 1969)

Epoxidation of cyclohexene with peroxy and *p*-substituted peroxybenzoic acids has been studied kinetically in methanol at 30°, 40°, and 50°C ($\pm 0.5^\circ$) and with peroxybenzoic acid in ethanol, acetone and *n*-propanol at 40° ($\pm 0.5^\circ$). A ρ value of +1.30 has been calculated by the Hammett treatment. Energies of activation, entropies of activation and frequency factors have also been calculated. **The differences in rate constants have not been found to be significantly dependent either on differences in energies or entropies of activation.** However, the rate constants have been observed to be inversely proportional to the dielectric constants of the solvents employed. The addition of corresponding non-peroxybenzoic acids has been shown to cause no catalytic effects on the rate of this reaction.

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2 August 1970.

THE BASIC STRENGTH OF 2-METHYL INDOLE

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(Received February 20, 1969; revised June 25, 1969)

The best possible pK_a value of 2-methyl indole is found spectrophotometrically using the Hammett's H_0 indicator method. The value comes out to be -0.19 . The problem of polymerization of 2-methyl indole in high concentration of acid solutions has been overcome by extrapolation method and differential plot.

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August 1970

CHEMICAL INVESTIGATION OF ANTICHARIS LINEARIS HOCHST. PART I

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(Received February 24, 1968; revised July 30, 1969)

From *Anticharis linearis* Hochst, two hydroxy lactones $C_{11}H_{16}O_5$, m.p. 123–24°C, $C_{17}H_{26}O_{10}$, m.p. 182–83°C, provisionally named as linearin and linearoside, respectively, have been isolated. A crystalline polyhydroxy compound and an aliphatic hydrocarbon identified as mannitol and triacontane, respectively, have also been isolated.

Pakistan J. Sci. Ind. Res., 13, Nos 1—2 August 1970

A NEW TECHNIQUE FOR THE STUDY OF COPPER-ACETAMIDE SYSTEM IN AQUEOUS SOLUTION

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(Received May 22, 1969; revised July 30, 1969)

The new technique called "continuous variation method", proved to be as reliable as the conventional mono-variation method. The complex in the ratios 1:2 and 1:4 were observed. A reasonable structure for the complexes is also suggested.

SHORT COMMUNICATION
PHYSICAL SCIENCES SECTION

Pakistan J. Sci. Ind. Res., **13**, 48 (1970)

ISOCYANATE TETRABROMIDE AND ITS REACTIONS

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(Received April 22, 1969; revised July 21, 1969)

Pakistan J. Sci. Ind. Res., **13**, 48-49 (1970)

THE ACTION OF A BASE ON α , α -DIBROMOACETANILIDE

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Defence Science Organisation, Chaklala, Punjab

(Received December 24, 1968; revised April 12, 1969)

Pakistan J. Sci. Ind. Res., **13**, 49-51 (1970)

THE ALKALOIDS OF BERBERIS PETIOLARIS WALL

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(Received June 30, 1969; revised July 22, 1969)

Pakistan J. Sci. Ind. Res., **13**, 51-52 (1970)

**THE ALKALOIDS OF DELPHINIUM VESTITUM WALL: ISOLATION AND
CHARACTERIZATION OF LYCOCTONINE**

G. A. MIANA, M. ISRAR KHAN, FEHMIDA SULTANA AND M. IKRAM
P.C.S.I.R. Laboratories, Peshawar

(Received September 1, 1969; revised September 19, 1969)

Biological Sciences Section

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August 1970

SOME PRELIMINARY STUDIES OF THE PHARMACOLOGICAL ACTIVITIES OF SCHINUS MOLLE LINN

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(Received July 6, 1969; revised August 1, 1969)

Aqueous extracts of the fruit, leaf and stem of the Californian pepper tree (*Schinus molle*) were pharmacologically active. Extracts prepared from the fruit were the most active. All the extracts caused a direct depression of myocardium and dilatation of blood vessels resulting in a fall in blood pressure. The smooth muscles of rabbit and guinea pig intestine were depressed after an initial stimulation. The action seems to be a direct one but in the anaesthized dog central vagal stimulation was found to be an additional factor. The non-gravid uterus of rat and rabbit was not affected but gravid uterus was greatly stimulated. Miosis was observed both on local and systemic administration of the extracts. Smaller doses had no effect on the central nervous system; higher doses produced analgesia and paresis of the muscles of extremities. Fatal doses produced clonic convulsions and the animals died from respiratory failure. All the extracts were saponin-free. However, the possibility of the presence of essential oils, though only in traces, producing some or all of these actions, can not be ruled out at the present stage.

PHARMACOLOGICAL ACTIVITY OF AN ALKALOID FROM SARCOCOCCA SALIGNA

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(Received January 6, 1969; revised October 31, 1969)

A shining crystalline base, isolated from the leaves of *Sarcococca saligna* Muel (Fam. Euphorbiaceae) was tested for its biological activity. The effect of the drug on neuromuscular transmission in the mammalian skeletal muscle was found to be remarkable. **At low concentrations, it potentiated the action of naturally secreted acetylcholine in the isolated rat diaphragm, stimulated *via* the phrenic nerve.** The drug was also found to possess local anaesthetic property when it was administered intradermally into the guinea-pig skin. Its acute toxicity in the intact animal and its effects on other systems of the body were also studied. The results of the biological investigations are described and the possible mode of action of the drug is discussed.

BIOCHEMICAL AND QUALITY CHANGES IN POST-RIGOR OVINE MUSCLE AFTER THAWING AT LOW AND HIGH TEMPERATURE*

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(Received May 10, 1969)

A study was made of the effects of freezing followed by thawing at low (8°C) and high (25°C) temperature upon some physical and chemical properties of the post-rigor ovine *longissimus dorsi* muscle. Measurements of total nitrogen, protein nitrogen (PN), non-protein nitrogen (NPN), acidic and basic groups, moisture content, pH value, refractive index and tenderness were made on the muscle and its exudate squeezed out under defined conditions. A new refractometric method for the determination of protein alterations has been evaluated.

Tenderness of the cooked meat was linearly related to PN, % PN/TN, and % NPN/PN of the muscle, but was not related to the refractive index of the muscle exudate.

The relation of various nitrogenous components of the exudate was plotted against tenderness. There was no relationship between ultimate pH value and moisture content of muscle or muscle exudate. Cooked meat tenderness increased with increase of acidic and basic groups on the muscle proteins and moisture content of the muscle up to a certain level and thereafter the trend was reversed. Possible explanations for various changes in muscle components after freezing and thawing and their relation with tenderness have been discussed.

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August 1970

A NEW SPECIES OF RHIZOGLYPHUS FROM PAKISTAN
(ACARINA : TYROGLYPHIDAE)

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(Received May 10, 1969)

A new species of *Rhizoglyphus karachiensis*, collected from the manure of dairy cattle in Karachi is described and illustrated.

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August 1970

THE BRACHYURAN LARVAE OF WEST PAKISTAN HATCHED IN THE LABORATORY

Part III.—Portunidae: *Thalamita* (Decapoda: Crustacea)

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(Received October 31, 1968; revised April 4, 1969)

Three species of genus *Thalamita* have been hatched in the laboratory and early larval stages obtained, figured and described. Prezoea and first zoea of *T. crenata* (Milne-Edwards), *T. prymna* (Herbst), and first and second zoea of *T. admeta* (Herbst) are described.

Pakistan J. Sci. Ind. Res., Vol, 13, Nos. 1-2, August 1970

PETKOLIN, A NEW OVICIDE WITH A SUMMARY ON OVICIDES AND PETKOLINS

MOHAMMAD ABDULLAH* AND ROSHAN ARA ROOHI

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(Received May 5, 1969; revised June 11, 1969)

A summary of the toxicology of Petkolins and note on ovicides is given along with the finding that Petkolin A could be used as an ovicide against the mosquito, *Aedes aegypti* (L.).

STEM APPLICATION OF INSECTICIDES FOR CONTROL OF THE RED COTTON BUG, *DYSDERCUS KOENIGI* (FAB)

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(Received May 10, 1969)

A green house test was conducted for determining the effectiveness of selected systemic insecticides, Azodrin (3-hydroxy-*N*-methyl-*cis*-crotonamide dimethyl phosphate), Bidrin (3-(dimethoxyphosphinyloxy)-*N*, *N*-dimethyl-*cis*-crotonamide) and Dimercon (2-chloro-2-diethylcarbamoyl-1-methylvinyl dimethyl phosphate) against the red cotton bug, *Dysdercus Koenigi* (Fab). The insecticides were applied in acetone to the stem of okra plant, *Hibiscus esculentus* Linn. at the rate of 2.5, 5.0 and 10.0 mg./plant. The 10 mg./plant dosage approximated 1.0 lb active material per acre. **All the three insecticides were quite effective in controlling the bugs. The nymphs were, however, more susceptible than the adults.**

CONTROL OF COTTON JASSID EMPOASCA DEVASTANS, BY PETKOLIN AS COMPARED WITH OTHER INSECTICIDES

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(Received May 21, 1969)

Petkolin, Sevin, Toxaphene, Dimecron, Diazinon, Endrin and Malathion were compared to evaluate their efficacy against jassids, *Empoasca devastans* on Cotton crop. Three lb active ingredient per acre Petkolin gave 84.51% mortality after 24 hr 90.7% after 72 hrs while 2 lb Toxaphene gave 76.0% and 80.0% mortalities after 24 hr and 72 hr respectively.

Maximum cotton yield of 17 maunds per acre was obtained with Sevin while Petkolin gave 14 maunds and in Toxaphene the yield was 12.13 maunds per acre.

TOXICITY OF PETKOLIN-M IN COMPARISON WITH OTHER PESTICIDES AGAINST COTTON JASSIDS IN HYDERABAD REGION

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(Received June 20, 1969)

Petkolin-M alone as well as in combination with Methyl-parathion (Petkolin-MN₁) and Diazinon (Petkolin-MN₂) gave effective control of mites and jassids on cotton crop. Petkolin-M, Petkolin-MN₁ and Petkolin-MN₂ killed 91%, 100% and 100% mites respectively. Petkolin-M, Petkolin-MN₁ and Petkolin-MN₂ gave 93% to 94%, 100% and 100% mortality of jassids respectively after 24 hr of treatments. Petkolin-M was found compatible with Methyl-parathion and Diazinon.

SYSTEMIC CONTROL OF RICE BLAST CAUSED BY PIRICULARIA ORYZAE CAV.

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(Received March 3, 1969)

Thirteen fungicides were tested to evaluate their merits in systemic control of rice blast. Blasticidin-S and PMA (Phenyl Mercuric Acetate) were found to act systemically and they significantly reduced both the number and size of lesions found at sites relatively distant from the point of application.

Blasticidin-S, Du-Ter W-50 (Triphenyl tin hydroxide) and PMA acted as eradicans when they were applied at the pin-head stage of development of lesion. These fungicides did not kill the internal mycelium nor could they reduce the viability of the conidia but they retarded lesion development and controlled leaf blast by reducing sporulation nearly two fold. A new experimental product, Fungicide 1991 also found to control blast systemically.

EFFECT OF TYPES OF SEEDLING NURSERIES ON THE PERFORMANCE OF TEN CULTIVARS GROWN AS TRANSPLANT AUS RICE

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(Received July 16, 1969)

Seedlings of 10 cultivars namely, Dhariyal, Kataktara, Charnock, Dular, Marichbati, MIFB-322-1, Taichung (Native) 1, IR8-288-3, IR5-47-2, and Peta, were raised in 3 different types of seedling nurseries—'Floating', 'Normal', and 'Dapog'—and transplanted, as *aus* crop at the age of 26 days.

Floating nursery was found to be the best type of seedling nursery for local cultivars, while the types of seedling nurseries had no measurable effect on the grain yield of the exotic varieties. A maximum yield of about 61 maunds of grains per acre was obtained in case of IR8 and IR5. Relatively lowest grain yield of about 38 maunds per acre was recorded in Marichbati and Charnock. Dhariyal, Kataktara, Taichung (native)1, and Dular were intermediate in grain production.

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August 1970

PREPARATION AND NUTRITIONAL EVALUATION OF HIGH PROTEIN BREADS CONTAINING OILSEED PROTEIN CONCENTRATES

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(Received January 11, 1969)

Breads were made containing protein concentrates prepared from cottonseed, rapeseed and groundnut cake. Skim milk powder and certain vitamins and minerals were also added to improve the nutritive value of the breads. Nutritional evaluation of the breads showed that the breads containing blends of oilseed protein concentrates and skim milk powder were found to be much better in all respects than that made of wheat flour and were slightly inferior to that containing skim milk powder alone.

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August 1970

CHEMICAL COMPOSITION OF GUAVA AND BANANA FRUITS GROWN IN HYDERABAD REGION

TAJ. MOHAMMAD CHAUDHRY and M.A.R. FAROOQI

Agricultural Research Institute, Tandojam, Sind

(Received May 27, 1969)

Chemical composition of five varieties of guava and two varieties of banana fruits was determined. The data showed that the varieties V4 and V5 of guava fruit had more total sugars, vitamin C and protein contents, while Basrai banana was found to be richer in non-reducing sugars, proteins and vitamin C contents than the rest of the varieties under study.

THE STAPHYLINDIAE, COLEOPTERA OF PAKISTAN

Part III.—A key to the genera and species of the Piestinae, Osoriinae, Pseudopsinae and Oxytelinae, with descriptions of new genera, subgenera and species from Karachi.

MOHAMMAD ABDULLAH* and (Miss) NOORUN-NISA QADRI

P.C.S.I.R. Laboratories, Karachi 32

(Received February 15, 1969; revised April 9, 1969)

Keys (with distinguishing characters) are provided for the genera and species of the rove beetle subfamilies Piestinae, Osoriinae (including Leptochirini and Eleusiini), Pseudopsinae and Oxytelinae found or likely to be discovered in West and East Pakistan. The following new taxa of the Oxytelinae are described from material collected in Karachi and subsequently to be presented to the University of Karachi entomological museum: *P. (Pseudopyctocraerus) subgen n.*, *Platystethus (Pseudopyctocraerus) mahmoodi sp. n.*, *Platystethus (Pseudopyctocraerus) tasneemae sp. n.*; *Neopyctocraerus gen n.*, *Neopyctocraerus shafqati sp. n.*; *Neoplatystethus gen. n.*, *N. (Neoplatystethus) subgen. n.*; *Neoplatystethus (Neoplatystethus) hameedi sp. n.*, *N. (Pseudoplatystethus) subgen n.*, *Neoplatystethus (Pseudoplatystethus) meccii sp. n.* *Trogophloeus zahiri sp. n.*, and *Trogophloeus qadrii sp. n.*

SHORT COMMUNICATION
BIOLOGICAL SCIENCES SECTION

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August (1970)

**CRITICAL OXYGEN LEVEL FOR THE RESPIRATION OF LYCOPERSICON
ESCULENTUM**

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(Received June 21, 1969; revised November 24, 1969)

Technology Section

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August 1970

QUALITY AND CHARACTER OF PAKISTANI WOOLS

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(Received February 17, 1970)

Five different series of Pakistani wools, of both carpet and medium type, were examined for a number of fibre characteristics. The relationship between crimp and diameter was investigated with a view to examining its use for quality assessment. The relationships among the various other parameters and especially the dependence of character on other characteristics were also investigated.

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August 1970

COMPOSITION AND MECHANICAL PROPERTIES OF PAKISTANI WHITE AND YELLOW SILK

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P.C.S.I.R. Laboratories, Peshawar

(Received June 3, 1969)

Amino-acid composition and mechanical properties of Pakistani white and yellow silk fibroin have been determined. The yellow variety, associated with higher mechanical constants, was rich in alanine, but poor in tyrosine and phenylalanine.

RESILIENCE CHARACTERISTICS OF PAKISTANI WOOL

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(Received February 11, 1969)

Resilience or percentage recovery characteristics of 6 different types of Pakistani wool i.e. Lohi-Harnai, Hasht-nagri, Dumba, Kaghani and Azad Kashmir have been studied using a small cylinder with pistons and applying pressure on a definite weight and volume of wool pellets. Percentages of recovery have been recorded at various intervals of time. The first 4 breeds have almost 100 percent recovery after 24 hours while the latter 2 breeds covered a period of 48 to 72 hr. Possible effect and relation of fibres length, diameters and tensile strength of each of the six breeds with percentage recovery have been observed and the importance of it in woollen apparel cloth and specially in carpets, manufactured from Pakistani wool, has been discussed.

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August 1970.

COMPARISON OF FELLMONGERED AND SHORN WOOL

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(Received January 8, 1969)

Samples of fellmongered wool, collected from a fellmongering firm in Lahore have been examined. The important fibre characteristics such as mechanical properties, felting, friction and dyeing of the wool have been evaluated and compared with shorn wool. No significant differences could be detected in these characteristics between the two types of wool.

SCIENTIFIC GRADING OF JUTE

Part III.—Determination of Lignin of Different Grades of Jute

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(Received April 22, 1969)

The lignin content of different new grades of white (*Corchorous capsularis*) and Tossa (*Corchorous olitorious*) jute has been found to increase from higher to lower grades of jute. The average lignin content of Tossa is less than the white variety. The findings of the present investigation indicates that lignin content may be correlated with grading of raw jute.

STUDY ON THE LOAD-ELONGATION CURVE AT LOW EXTENSION OF KAGHANI WOOL FIBRES

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(Received February 1, 1969)

In order to study the tensile properties of dry and wet wool fibres of Kaghani wool, 50 samples were tested for breaking strength and elongation. Moreover, strength at 20% elongation as well as Hookean slope of dry and wet wool fibres, were determined in the case of the three types of fibres. i.e. true, heterotypical and medullated. The variations in cross sectional area were also examined and the relationship between the various parameters were perused.

STUDIES ON ADSORBENTS FOR THE PREPARATION OF CAROTENOIDS AND CHLOROPHYLLS CONCENTRATES FROM BERSEEM (ALFALFA)

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(Received May 22, 1969)

The suitability of various locally available adsorbents for the preparation of carotene and chlorophylls concentrates from alfalfa has been studied. Sugar and starch have given the most promising results for the separation of carotenoids and chlorophylls. Regeneration of some of the adsorbents by solvent washing and drying at 85°C for two hours, for re-use, has also been investigated. Both sugar and starch may be used six times after regeneration before packing the columns.

CATION EXCHANGE CAPACITY OF SOME EAST PAKISTANI CLAYS

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(Received July 14, 1969)

Bejaipur clay occurs abundantly in a particular locality of the District of Mymensingh, and Mirpur clays (Red and Black) and Dacca river silt are also abundantly available in the District of Dacca, East Pakistan. Dacca river silt and Mirpur clays are locally used in the manufacture of bricks, tiles, etc., and Bejaipur clay is used for the manufacture of ceramic bodies by some ceramic industries of East Pakistan. Cation exchange capacity (c.c.c.) of these clays has been determined which also throw some light to the mineralogical composition of these clays.

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August 1970

QUANTITATIVE ESTIMATION OF KAOLINITE IN CLAYS BY DIFFERENTIAL THERMAL ANALYSIS

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(Received July 16, 1969)

A quantitative method of estimating the kaolinite content in clays by differential thermal analysis, using magnesium hydroxide as an internal standard, is presented. The effects of variations due to particle size, and impurities such as quartz, iron oxides, hydrated alumina minerals and organic material are discussed.

SOME OBSERVATION ON THE MINERALOGY AND CHEMISTRY OF THE PLEISTOCENE ALLUVIUM FROM MIRPURE AREA, DACCA

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(Received July 26, 1969)

A preliminary study of the Pleistocene alluvium from Mirpure area, Dacca has been carried out with respect to its texture, mineralogy and chemistry. The clay falls in the category of "loam" with none of the sand, silt and clay fractions generally exceeding 50%. Chemically the clay may be termed as sublateritic markedly enriched in alumina and iron oxide and deficient in lime and magnesia. The mineralogical study of the coarse fraction separated from the clay indicates the presence of, besides other light minerals, clear grains of labradorite and bytownite. Heavy minerals consists of sillimanite, zircon, kyanite, topaz, tourmaline, staurolite and rutile in order of decreasing abundance. **The suite of heavy minerals suggests a mixed perentage.**

On the basis of mineralogical study it is suggested that the 'old alluvium' of Mirpure has been largely derived from igneous and metamorphic source rocks. Further, it is suggested that the sediments have been deposited under subareal condition most probably fluviatile.

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August 1970

MICRO-DIFFERENTIAL THERMAL ANALYSIS TECHNIQUE WITH THE HOT-STAGE MICROSCOPE

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(Received May 10, 1969)

The construction and operation of a micro-differential thermal analyser in corporation with the hot-stage microscope are described. Based upon the use of two opposed, viewable thermocouple microfurnaces, the instrument provides a sensitive means of detecting heat effects with accompanying reactions which may occur when small quantities (< 1 mg) of materials are rapidly quenched or undergoing programmed temperature change.

Pakistan J. Sci. Ind. Res., Vol. 13, Nos. 1-2, August 1970

MINERALOGICAL STUDIES ON SOME HIGH ALUMINA BAUXITIC CLAYS FROM SALT RANGE AREA

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X-Ray, D.T.A., P.C.E. and other data are presented for three selected high alumina bauxitic clays from salt range area. A correlation between X-Ray data of the raw bauxites and the other properties obtained revealed that the materials contain a very high proportion of boehmite (70 to 75%). After calcination they contain Al_2O_3 70 to 80%. These bauxites may, therefore, be used for making mullite and other high alumina refractories to be used in high temperature furnaces and kilns for chemical glass, Cement, ceramic, iron and steel and other metallurgical and non-metallurgical industries.

STUDIES ON PREPARATION OF SOLUBLE FLUORIDES DIRECTLY FROM CALCIUM FLUORIDE

Part I.—From Pure Calcium Fluoride

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(Received May 13, 1968; revised May 3, 1969)

The reaction between calcium fluoride and various alkali salts in the aqueous medium at atmospheric and high pressure was studied. No reaction is observed at atmospheric pressure. Reaction at 50–125 lb/in² pressure was observed only with alkali carbonates suggesting the usefulness of this method for industrial utilization for the preparation of alkali fluorides. Quantitative conversion on fusion of calcium fluoride and alkali carbonates was also observed.