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FREQUENCY AND OTHER PARAMETRIC ANALYSIS OF TRAFFIC NOISE IN KARACHI CITY

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(Received January 30, 1990; revised June 27, 1990)

Octave and 1/3 Octave Band Frequency analysis of traffic noise have been undertaken at some of the major traffic junctions in Karachi city. Also, measurements of noise emission from individual vehicles have been made, readings have been taken for each variety of vehicles playing on city roads, with a view to assessing their individual contributions to the traffic noise. The results have been discussed with reference to speech interference, and possible health hazards due to high noise levels.

Key words: Traffic noise, Surface transportation, Environmental pollution.

Introduction

frequency over a period of about one minute and

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MINERAL PROCESSING STUDIES FOR THE UTILIZATION OF IRON, COPPER AND PRECIOUS METALS BEARING ORES OF CHILGHAZI, BALUCHISTAN

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(Received September 16, 1989; revised June 19, 1990)

The ore of Chilghazi previously considered as iron ores have shown significant quantities of copper, gold, silver and platinum. The main copper mineral is chalcopyrite which occurs as matrix mineral in magnetite. The precious metals were found to be associated mainly with chalcopyrite as substitution. The process developed for the beneficiation of the ore was low intensity magnetic separation for the production of iron concentrate, flotation and leaching for copper and precious metals. A high proportion of the copper and precious metals reported in the non-magnetic fraction and further enrichment was obtained by flotation of the non-magnetic fraction. Rougher concentration at neutral pH and cleaning at pH 9-10 using xanthate gave a product containing 22% Cu, 45.8 ppm Ag, 5.3 ppm Au and 21.8 ppm Pt.

Key words: Processing, Iron-copper ore, Baluchistan.

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EFFECTS OF N-BEARING SALTS ON GC ANALYSIS OF MCPA AND ITS METABOLITES IN SOILS

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(Received December 12, 1989; revised June 7, 1990)

An internal standard GC technique was applied with MCPA (4-chloro-2- methylphenoxyacetic acid) and its two major metabolites 4-chloro-*o*-cresol and 5-chloro-3- methylcatechol by applying of PFB derivatization in presence of eight different nitrogen bearing salts. Except MCPA, the peak height gradually increased with increasing the levels of all eight salts. The peak areas and the recovery yields significantly increased with 4-chloro-*o*-cresol and 5-chloro-3- methylcatechol. The results were applied to the soils. Ammonium chloride produced the best yields. The detection limit was between 0.001 to 0.005 ppb.

Key words: MCPA, 4-chloro-*o*-cresol, 5-chloro-3 methylcatechol, N-bearing salts, Peak height, Peak areas, GC, PFB derivatization.

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NEW PYRAZOLINES, ISOXAZOLINES AND SULPHIDES FROM 4;7-DIMETHOXY-5-ACETYL-6-HYDROXY-BENZOFURAN (KHELLINONE) AND THEIR ANTI-MICROBIAL ACTIVITIES

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(Received July 4, 1989; revised March 15, 1990)

Treatment of khellinone (I) with some aromatic aldehydes afforded the corresponding chalcones (II). The reaction of chalcones II with phenyl hydrazine in acetic acid led to the formation of phenylpyrazolines (III), the reaction of II with hydrazine hydrate in alcohol gave the pyrazoline derivatives (IV), whereas, the same reaction in acetic acid afforded the corresponding N-acetyl pyrazoline derivatives (V). Similarly the condensation of II with hydroxylamine hydrochloride afforded isoxazolines (VI). The reaction of II with thiophenol in presence of piperidine led to the formation of the corresponding sulphides (VII). The antimicrobial properties of the new derivatives were studied.

Key words: Khellinone, Chalcones, Phenyl pyrazoline.

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REACTION OF 1,4-PHENYLINE DI-[BENZYLIDENE-5-(4H)-OXAZOLONE 2-YL] WITH NITROGEN NUCLEOPHILES

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(Received April 24, 1989; revised June 7, 1990)

Hetero ring opening of compound *1* with aliphatic amines afford cinnamid derivatives *2* and *3*, and with aniline give imidazolinone *4*, Hydrazinolysis of *1* affording triazine derivatives *5* and cinnamic acid phenylhydrazide *6*. The reaction of *1* with glycine and ammonium acetate yielded the imidazolinone derivatives *7* and *8* respectively.

Key words: Oxazolone derivatives.

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CHARACTERISATION OF MIXED LIGAND COMPLEXES OF V(IV) AND Ti (III) HOMOPHTHALATE WITH HETEROCYCLIC AMINES

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(Received September 3, 1989)

The octahedral mixed ligand complexes of the type $[\text{VO}(\text{A})\text{L}_3]$, $[\text{VO}(\text{A})\text{L}'(\text{H}_2\text{O})]$, $\text{K}[\text{VO}(\text{A})\text{L}''(\text{H}_2\text{O})]$, $\text{K}[\text{Ti}(\text{A})_2\text{L}_2]$ and $\text{K}[\text{Ti}(\text{A})_2\text{L}']$ where A = deprotonated homophthalic acid; L=quinoline, isoquinoline, α -picoline or γ -picoline; L' = 2-aminopyridine and L'' = 8-hydroxyquinoline were prepared and characterised on the basis of elemental analysis, infrared and electronic spectra, conductance and magnetic measurements.

Key words: Mixed ligand homophthalate complexes with amines.

EFFECT OF SOME TRIMETHINE MEROCYANINE DYES ON THE CORROSION OF ALUMINIUM AND ALUMINIUM MANGANESE

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(Received October 2, 1989; revised June 10, 1990)

The effect of some trimethine merocyanine dyes on the corrosion of Al and Al-Mn alloy was studied by Mylius, weight-loss and hydrogen evolution methods. The retardation of temperature rise by the added compounds was found to depend on the type of the compound and its concentration. All the compounds showed high inhibition effect. At the first stage of corrosion, $T=0.5^\circ$, the inhibition with Al is greater than with Al-Mn. The corrosion rate calculated from hydrogen evolution method was found to be smaller than from the weight-loss method. The order of inhibition for the compounds was found to be consistent with their electronic structures and the nature of substituents involved.

Key words: Trimethine merocyanine dyes, Al and Al-Mn alloy, Corrosion, Inhibitors.

LABORATORY TRIALS FOR THE CONTROL OF MOSQUITOES BY LARVIVOROUS FISH

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(Received March 12, 1989; revised April 30, 1990)

Eight species of these larvivorous fish were tried in the laboratory to see their effect on laboratory reared *Anopheles culicifacies* and *Anopheles stephensi* considering the recommendations of external review team. It has been proposed that Green Carp, Singhi, Daula, Silver Carp and Mori may be tried in field conditions during monsoon and postmonsoon season to see their impact on mosquito control.

Key words: Mosquito control, Larvivorous.

THE CHRONIC ORAL TOXICITY OF THREE ANTICOAGULANT RODENTICIDES TO *RATTUS RATTUS*

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(Received August 1, 1989; revised June 6, 1990)

This study reports the comparative toxicities of three anticoagulants to *Rattus rattus rufescens* in Pakistan, and describes a simple method to determine the toxicities. A nochoice, 4-day feeding test with small groups (3 or 4 males, 3 or 4 females) of rodents was used. By varying the concentrations of active ingredients, a value for the 4-day LC_{50} and LC_{95} can be statistically estimated from mortality data using probit analysis. The 4-day approximate lethal dose (ALD_{50} and ALD_{95}) also can be derived. Brodifacoum proved the most toxic, followed by bromadiolone and coumatetralyl, giving 4-day LC_{50} 's of 1.8, 2.1 and 19.6 ppm respectively and 4-day LC_{95} 's of 8.4, 10.1 and 126.4 ppm respectively. These values indicated that *R.r. rufescens* from Rawalpindi are susceptible to the three anticoagulants at recommended field concentrations.

Key words: Anticoagulant rodenticides, Toxicity, Lethal concentration.

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COMPARISON OF THREE METHODS FOR THE ESTIMATION OF SOIL AVAILABLE BORON FOR MAIZE

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(Received September 25, 1989; revised June 15, 1990)

A pot experiment was conducted employing eleven soils and using maize as an indicator crop to compare three methods for the estimation of soil available B. Boron concentrations extracted from the soils by the three extractants; hot water, HCl and mannitol were correlated ($r > .9$) with each other. The efficiency of various methods for the extraction of soil B varied in the order of hot water > HCl > mannitol. The soil B concentrations extracted by the above extractants were correlated with the plant B concentrations with r values of .89, .86 and .70 respectively. Boron concentrations of 0.5, 0.5 and 0.25 mg kg⁻¹ appeared to be the critical levels in the soils extracted by the above mentioned extractants respectively where as about 11 $\mu\text{g g}^{-1}$ B in the maize tissue was found to be the critical level.

Key words: Methods, Estimation, Soil boron, Maize.

OBSERVATIONS ON THE GERMINATION OF TEA SEED VARIETY QI-MEN AS INFLUENCED BY SOAKING, SHELL REMOVAL AND SHELL CRACKING

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(Received May 23, 1989; revised May 21, 1990)

The effect of pre-soaking, cracking and shell removal on the germination of tea seed variety Qi-men (China) was investigated during 1986 and 1987. Soaking the seed for one day resulted in a higher percentage of germination in all the above mentioned treatments. But decreased with increase in the duration of soaking. Soaking for 7 days had an adverse effect on germination in all treatments. In comparatively old seed (1986) shell removal or cracking had little or no effect on germination. However, with comparatively fresh seed (1987) soaking for one, two and three days increased the germination percentage. Although, cracking had little or no effect on the germination of old seed it greatly speeded up the germination of the fresh seed. Even with the fresh seed soaking the seeds upto seven days adversely affected the germination. It could be concluded that soaking of the seed upto three days improves the germination of both fresh and old seed. But periods longer than three days adversely affect the germination. Shell removal or cracking had a positive effect on germination only with the comparatively fresh seeds. But, had little or no effect on the germination percentage of the comparatively old seeds.

Key words: Germination, Tea seed, Shell cracking, Shell removal.

EFFECT OF SALINITY ON GROWTH AND NUTRIENT CONTENT OF BAJRA PLANT GROWN IN DESERT SAND AND GRAVEL

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(Received February 16, 1989; revised June 23, 1990)

Sand and gravel culture techniques were used to study the effect of saline irrigation water on the growth and chemical composition of bajra plant with a view to evaluate its potential use as a forage crop in desert soils. Four levels of saline irrigation water i.e. Ec. 1.95, 4.68, 9.38 and 14.06 dS/m were used. Plant height and dry matter yield significantly decreased with increase in salinity levels. Salinity caused accumulation of N, P, Ca, Na, Fe and Mn whereas K content was significantly decreased with increasing salinity levels in the growth media.

Key words: Salinity, Bajra plant, Desert sand.

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EFFECT OF SULPHUR AND METHOD OF ZINC APPLICATION ON THE YIELD AND YIELD CONTRIBUTING CHARACTERS OF BR11 RICE

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(Received May 25, 1989; revised May 2, 1990)

An experiment was carried out with BR11 rice as the test crop to study the effect of sulphur and method of zinc application. Treatments included two levels of sulphur, namely 0 and 30 kg/ha and four methods of zinc application.

Addition of sulphur led to increased panicle length, number of spikelet and grain per panicle and 1000-grain weight and considerably increased grain and straw yield.

Among the different methods of zinc application, the greatest grain yield was achieved after zinc application in the mainfield during land preparation, followed in yield by application of zinc in nursery bed. Application of zinc by dipping seedlings and at tillering stage also gave higher grain and straw yield than where no zinc was applied.

Key words: BR11 rice, Sulphur, Zinc.

Short Communication

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**EFFECT OF PURPLE NUTSEDGE
(*CYPERUS ROTUNDUS* L.) LEAF EXTRACT
ON GERMINATION AND SEEDLING
GROWTH OF WHEAT**

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CATALYTIC VAPOUR PHASE OXIDATION OF TOLUENE

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(Received December 12, 1989)

Toluene, on vapour phase air oxidation in the presence of cobalt naphthenate, as catalyst gives excellent yield of benzoic acid at a temperature of 150° as compared to the oxides, V_2O_5 and mixture of V_2O_5 , MoO_3 , Cr_2O_3 , ThO_3 , CuO and PbO_2 .

Key words: Oxidation, Benzoic acid, Toluene.

A FEASIBILITY STUDY ON PRODUCING CERAMIC WATER FILTERS FROM LOCALLY AVAILABLE FIRE CLAYS

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(Received January 10, 1990; revised June 20, 1990)

Various locally available fire clays are screened for feasibility of producing ceramic filters for the purification of natural waters. The illite and kaolinite types of clays are found suitable for the production of ceramic filters by calcination at 1150° with a firing time of 4-1/2 hr extended to 24 hr for annealing in a cold-to-cold cycle. The de-bacterification aspect of the filters is studied as a function of porosity, which in turn is found to depend on the body composition (% w/w). The throughput of the filter developed from the two types of clays is found to range between 1.1 - 2.0 L/h at nominal pressure head. The clays have shown promise for future application towards the development and fabrication of filters incorporating colour, odour and bacterial removal characteristics through the use of certain antibacterial ingredients in the filter body.

Key words: Fire clay studies, Ceramic filter, Water purification.

Introduction

was evaluated by x-ray diffraction. Various compositions

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DEVELOPMENT AND FABRICATION OF A CERAMIC FILTER FOR NATURAL WATER FILTRATION

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(Received October 3, 1989; revised July 22, 1990)

A ceramic filter is developed for producing drinking water from natural raw waters. The body composition of the filter consists of two locally available fire clays calcined at 1150° for $4\frac{1}{2}$ hr to yield a vitreous cage structure capable of eliminating most bacteria and suspended particulate matter from natural waters. The filter has a cylindrical configuration, 14 cm x 4.5 cm, having a wall thickness of 1 cm. At defined body composition the filter has a throughput of 1.5 l/h, and is capable of eliminating about 60% bacteria and a sizeable amount of suspended particulate matter, determined as a function of throughput. The filter does not impair in any way the physico-chemical balance of natural waters.

Key words: Water filter, Ceramic filter, Water purification.

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PERFORMANCE OF THE JAGGERY STORAGE STRUCTURES ON NORTH INDIA

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(Received December 3, 1988; revised February 15, 1990)

Farm level jaggery (Gur) storage methods, commonly used in North India, were evaluated for preserving jaggery. Metallic drum with lids sealed and polyethylene lined gunny bags performed best. The biochemical changes were minimum. Any storage system which prevents moisture gain from the surrounding atmosphere preserves the jaggery quality and prevents physico-chemical changes.

Key words: Jaggery, Storage structure, Jaggery storage.