

st percentile of the speech channel, $s C/I$, which offsets the improvements resulting from coherent combining capabilities; for the 10-th percentile of C/I distribution, overall improvements resulting from the pilot transmission is 1dB. (II) With a pilot channel transmission in the forward link, slope of the " C/I percentile" versus "number of active mobiles" curve is -2 dB/octave. (III) The required dynamic range for 1-st and 10-th percentiles of the C/I distribution are, respectively, 10 dB and 5 dB. (IV) With a 2 dB standard deviation for power control, capacity reduces to 20% of its ideal value. (V) A dynamic range of 12 dB for the transmission power of base is adequate. (VI) Capacity increases drastically by increasing path loss of transmission.

CEMENT KILN DUST CHARACTERIZATION AND UTILIZATION*

P. Soroushian
Department of Civil and Environmental
Engineering
Michigan state University

M. Tavakoli
Department of Civil Engineering
Sharif University of Technology

ABSTRACT

Cement Kiln Dust (CKD) consists of fine solid particles produced in the process of burning the ground materials with fuel in the kiln and grinding the cement clinker. Cement kiln dust is a large volum dy - product, a pollution control problem, and a potential resource.

As a result of increased awareness of environmental issues and the need for better resource management, cement kiln dust is now being considered as a potential resource for various applications. This paper presents a comprehensive review of the chemical and physical characteristics of ce-

* Published in *Proceeding of the International Cement Conference, Tehran (1994)*.

ment kiln dust and its potential environmental impact. The experience with the recycling of cement kiln dust in various application areas is reviewed and the most promising fields of application are discussed. Some key application areas of cement kiln dust include: soil stabilization for use in road subbase, soil amendment (through neutralization or as a potassium fertilizer) for agricultural use, stabilization and solidification of hazardous waste, and mineral filler in bituminous paving materials. The research needs for recycling of cement kiln dust are also identified.

PROPERTIES OF CONCRETE USING CRUSHED CLINKER BRICK AS COARSE AGGREGATE *

A.R. KHaloo
Department of Civil Engineering
Sharif University of Technology

ABSTRACT

Clinker brick is a very hard burned brick whose shape is distorted or bloated due to nearly complete vitrification. Due to some inefficiency in some of the brick - producing kilns in Iran, and also due to some methods of brick production in general, about 1 percent of all bricks produced is classified as clinker brick. The objective of this study was to make use of this industrial waste as coarse aggregate in concrete. Three different types of crushed clinker brick representing 13 clinker brick - producing kilns were crushed and then tested for grading, specific gravity, bulk unit weight, water absorption, and resistance to abrasion, and the results are compared with those for ordinary crushed stone aggregates. Experimental program for this investigation also included tests on concrete cylinders under uniaxial compression and split tension, and on concrete beams under flexure. The variables are age of testing concrete strength, type of clinker bricks, and the ratio of volume of crushed clinker brick to the total volume of coarse aggregates in concrete.

* Published in *ACI Materials Journal, USA (July- Aug., 1994)*.

J.Darabi, Graduate Student
M. Salehi
M. H. Saeedi
Department of Mechanical Engineering
Sharif University of Technology
M.M. Ohadi,
Department of Mechanical Engineering
University of Maryland

ABSTRACT

A large number of empirical and semi-empirical correlations are available to predict heat transfer coefficients for flow boiling regime in horizontal and vertical tubes. Some of these correlations have been widely tested and are for practical use while some lack sufficient verification for practical applicability. In this paper a comprehensive review of flow boiling correlations for smooth and augmented tubes for both pure fluids and mixtures is provided. Emphasis is laid on review of recent developments and new proposed correlations.

THE STATE-SPACE ANALYSIS OF PERMANENT MAGNET AC MOTOR DRIVES IN THE STEADY-STATE BY BASIS-TRANSFORMED STATE-SPACE APPROACH*

K.Ansari
Y.K. He
Y.X. Chen
Department of Electrical Engineering
Zhejiang University

ABSTRACT

In this paper a complete digital simulation was adopted to analyze the steady-state performance of a PM a.c. motor drive by the so called Basis-Transformed State-Space Approach. The state-Space model of the drive system was established, the computation procedure was discussed, some typical simulation results were compared with the analytical solution, which shows perfect agreement with each other.

*Published in *Proceedings of 1st Int. l Power Electronics and motion Control Conference, IPERC, 94, BEIJING (1994).*

A NOVEL METHOD FOR SYNTHESIS OF NAPHTHOFURANS AND NAPHTHODIFURANS*

M.R. Saidi
M. Firouzegare
Department of Chemistry
Sharif University of Technology

ABSTRACT

Thermal rearrangement of propargyl naphthyl ethers produced naphthopyrans. In the presence of sodium methoxide, propargyl naphthyl ethers were converted easily to naphthofurans and naphthodifurans in good yields.

PERFORMANCE AND CAPACITY EVALUATIONS OF CDMA MOBILE RADIO SYSTEMS-FORWARD LINK ANALYSIS**

F. Behbahani
H. Hashemi
Department of Electrical Engineering
Sharif University of Technology

ABSTRACT

Performance and capacity of CDMA for mobile radio applications have been studied in detail by extensive computer simulation of a large service area consisting of 19 hexagonal cells. Major results of the study are as follows: (I) Interference initiating from the pilot tone reduces the 1-

*Published in *J. Sci; Vol. 5, No. 1,2, Iran. (Winter and Spring 1994).*

** Published in *Proceedings of IEEE PIMRC,94 conference pp. 55-59, The Netherlands (September 19-23,1994).*

sensible and evaporative cooling potentials of conventional wind towers, which depend on the tower design, are limited. Another disadvantage of the conventional wind towers is the admittance of dust into the building.

Two modern designs of wind towers are considered which eliminate the above disadvantages. One design incorporates one-way dampers in the tower head and a wetted column in the tower. This design, which is particularly suitable in areas with good winds, evaporatively cools the hot-dry ambient air before admitting it into the building. The other design incorporates evaporative cooling pads at the tower entrance. This design is particularly suitable in areas with very little or no winds.

This latter design may be incorporated into the existing minarets of the mosques and shrines, church towers, or other existing tall towers, to supply evaporatively-cooled air into the space.

Conventional and modern versions of wind towers can be incorporated aesthetically into the designs of modern buildings in the hot - arid regions of the Middle East, and other areas of the world with similar climates, to provide summer thermal comfort with little or no use of electricity.

THERMODYNAMICS PARAMETERS DETERMINATION OF VANADATES COMPLEXES WITH ALANINE AND GLAYCINE LIGANDS*

M.R. Gholami
M. Bayati
Department of Chemistry
Sharif University of Technology

ABSTRACT

Kinetics and thermodynamics studies of dioxovanadium and oxovanadium complexes with aminoacids are very important because of the biological-biochemical properties of related compounds.

In this work the stability constants of vanadates with glycine and alanine were determined by the PH-metric and UV-VIS spectrometric methods, the PH ranged from 1.3 to 2.3 and the ionic strength of sodium perchlorate.

*Presented at the 9th Iranian Chemistry and Chemical Engineering Congress.

Using different temperature the thermodynamics parameter such as ΔS , ΔG , ΔH for these complexes were measured.

The results are summarized in the following table:

Ligand	$\Delta S/J \text{ mol}^{-1} \text{ K}^{-1}$	$\Delta H/ \text{KJ mol}^{-1} \text{ K}^{-1}$	$\Delta G/\text{KJ mol}^{-1} \text{ K}^{-1}$
Glycine	20.34	-32.00	-20.45
Alanine	10.70	-12.70	-15.89

ULTRASOUND-PROMOTED SYNTHESIS OF SUBSTITUED PHENANTHEREN-1, 4- QUINONES; THE STRUCTURE OF PLECTRANTHON D*

F.M. Moghaddam
Department of Chemistry
Sharif University of Technology

ABSTRACT

A series of tanshinone-type diterpenoids was prepared by ultrasound-promoted and lewis acid catalyzed, highly regio-selective cycloadditions of styrenes with substituted 1, 4-benzoquinones as the key step.


REVIEW OF AVAILABLE CORRELATIONS FOR PREDICTION OF FLOW BOILING HEAT TRANSFER IN SMOOTH AND AUGMENTED TUBES**

*Published in *Tetrahedron Letters*, vol 35, No. 14, pp. 2153-2156, (1994).

**Published in *Ashrae Transactions Vol. 101, Pt 1, USA* (1995).

ABSTRACTS OF PAPERS PRESENTED AT INTERNATIONAL CONFERENCES

The abstracts of papers published in this magazine pertain to research projects conducted all over I.R. Iran, including those papers which have been printed previously in reputable scientific publications, and are not limited to the Sharif University of Technology. The Editor would be happy to include abstracts, in future editions of, all scientific papers presented by researchers throughout the country, with a view to keeping the academia and professionals informed about research activities carried out by Iranian scientists.



VIABILITY OF WIND TOWERS IN ACHIEVING SUMMER COMFORT IN THE HOT ARID REGIONS OF THE MIDDLE EAST*

* Published in "Renewable Energy", Vol. 5, Part II, pp. 879-892, UK, (1994).

Mehdi N. Bahadori
Department of Mechanical Engineering
Sharif University of Technology

ABSTRACT

Operation of conventional wind towers, Baud-Geers, are described. Wind towers maintain natural ventilation through buildings due to wind or buoyancy effects. The tower structure is cooled externally through radiative transfer with the sky, internally with the cool ambient air and circulated through the building and the tower during the night. During the day, the warm ambient air is partially cooled by the tower structure before entering the building. When passed over moist surfaces, air is cooled evaporatively. However,