

distortions in signal amplitude and phase. Performance of digital communication systems is very sensitive to statistical properties of received signal's phase. To date, however, no empirically driven model for signal phase has been reported in literature. This is probably due to difficulties associated with measuring the phase of individual multipath components. In this work two phase models, partly developed in [1], have been studied in great detail and their performance has been evaluated by means of extensive computer simulations. First and second order statistics of narrowband CW fading signal obtained from a large empirical wideband impulse response data base for different choices of phase models have been investigated. It has been shown that deterministic phase model, that updates phase information using several scatterers for each multipath component, as well as random phase model, which updates phase of each multipath with random increments, provide narrowband CW fading results consistent with those obtained in measurements. Results of this modeling will be used in simulation of indoor radio propagation channels.



CONDUCTED RFI EMISSION FROM AN AC/DC CONVERTER WITH SINUSODIAL LINE CURRENT*

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ABSTRACT

This paper discusses the generation and modeling of conducted electromagnetic interference (EMI) in a

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single-phase AC/DC converter with sinusoidal line current at unity power factor. The converter is composed of a diode rectifier and a conventional boost converter with PWM control. Due to this control mode the input current has a very low content of harmonics (multiple of mains frequency: 50 Hz), thus power supply voltage distortion is considerably reduced. Many papers have already been published on different control strategies all aiming at minimizing low frequency harmonics emission. This paper, however, highlights noise generation and emission in the radio-frequency range (10 KHz - 30 MHz), i.e. RFI (Radio Frequency Interferences). Their characterization requires a precise knowledge of the input current which is simulated with a particular software. Noise signal measurements are carried out by means of a LISN (Line Impedance Stabilization Network), a standardized measuring tool.



THE INDOOR RADIO PROPAGATION CHANNEL*

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ABSTRACT

In this tutorial - survey paper the principles of radio propagation in indoor environments are reviewed. Modeling the channel as a linear time - varying filter at each location in the three - dimensional space, properties of the filter's impulse response are described. Theoretical distributions of the sequences of arrival times, amplitudes and phases are presented. Other relevant concepts such as spatial and temporal variations of the channel, large scale path losses, mean excess delay and RMS delay spread are explored. Propagation characteristics of the indoor and outdoor channels are compared and their major differences are outlined. Previous measurement and modeling efforts are surveyed and areas for future research are suggested.

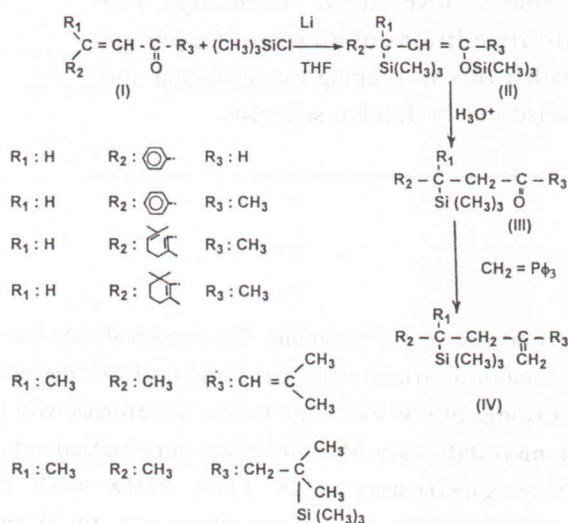
* Published in Proceeding of the IEEE, Vol. 81, No. 7, pp. 943-968 (July 1993).

SYNTHESIS OF β -TRIMETHYLSILYL OLEFINS*

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ABSTRACT

Sequential reaction of conjugated α, β -unsaturated aldehydes or ketones (I) with chlorotrimethylsilane and lithium in THF at 0-5°C, hydrolysis of the intermediate α -trimethylsilylenol (II) with hydrochloric acid, and reaction of the resulting β -trimethylsilyl ketone (III) with triphenylphosphonium methylid, produced β -trimethylsilyl olefins (IV) in good yields.



AGGREGATES FROM RECYCLED CONCRETE**

* Presented at 5th Belgian Organic Synthesis Symposium (Boss 5), Belgium (July 11-15, 1994).

** Presented at Seminar: Progress in Concrete Technology, Michigan State University (March 1994).

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ABSTRACT

The depletion of the supply of quality aggregates together with environmental, economic, and energy considerations are encouraging the recycling of demolished concrete structures and pavements as aggregate in new concrete construction. The quality of recycled concrete aggregate is dependent upon the original aggregate and paste, deterioration condition of the old concrete, crushing procedure, and the new mix composition. The complexities and inter-relationships of these factors demand elaborate quality control criteria and mix design procedures for recycling of demolished concrete as aggregate in new concrete.

In addition to the use of recycled concrete aggregates in the new concrete constructions, many other applications of recycled aggregates have been studied and the results indicate the feasibility of a wide range of applications for these products.



PHASE MODELING OF INDOOR RADIO PROPAGATION CHANNELS*

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ABSTRACT

Multipath propagation in indoor environments results in

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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.



A STUDY OF TEMPORAL AND SPATIAL VARIATIONS OF THE INDOOR RADIO PROPAGATION CHANNEL*

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ABSTRACT

This paper reports the results of extensive measurements and analysis of the indoor radio propagation channel's

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temporal and spatial variations. The empirical data base for the temporal variation analysis consists of 192 one-minute recordings of CW envelope fading waveforms with both antennas stationary. Measurements were carried out in an office environment at 1100 MHz with four transmitter-receiver antenna separations of 5, 10, 20, and 30 meters. Effects of controlled degrees of motion with 0, 1, 2, 3, or 4 individuals walking around the high antenna only, around the low antenna only, and around both antennas were investigated. The spatial variation analysis is based on 160 segments of 1.5 meter CW envelope fading data obtained from a wideband empirical data base of 12000 impulse response functions. The measurements in this category were carried out at two different office environments with four antenna separations of 5, 10, 20, and 30 meters. The reported results include amplitude fading distributions, correlation properties, level crossing rates, duration of fades statistics, and spectrum widths of the frequency domain data.