

2011 Saudi International Electronics, Communications and Photonics Conference

(SIECPC 2011)

**Riyadh, Saudi Arabia
24 – 26 April 2011**



**IEEE Catalog Number: CFP1186N-PRT
ISBN: 978-1-4577-0068-2**

TABLE OF CONTENTS

An Emerging Concept for 4G+ Wireless Cellular Networks: Terminal Relaying	1
<i>R. Gohary, H. Yanikomeroglu</i>	
Wireless Sensor Networks for Smart Grid Applications.....	5
<i>M. Erol-Kantarci, H. Mouftah</i>	
Optimization of Interconnect Architectures through Coding: A Review	11
<i>A. Garcia-Ortiz, D. Gregorek, C. Osewold</i>	
An Introduction to Reversible Circuit Design.....	17
<i>R. Wille</i>	
Design of Wide Band PVGA for UWB Applications	21
<i>L. Abdel-Hafez, Y. Khalaf, F. Farag</i>	
A Virtual Topology for Routing in Adhoc Networks.....	25
<i>H. Hachichi, S. Chelloug, F. Athmouni</i>	
Fixed Wireless Service Coexistence with IMT-A System within UHF Band	31
<i>Z. Shamsan, A. Al-hetar, T. Rahman</i>	
A Design Methodology for System Level Synthesis of Multi-core System Architectures	36
<i>K. Yehia, M. Safar, H. Youness, M. Salam, A. Salem</i>	
Modelisation And Simulation Of The Transmission Properties In Dimer Fibonacci Superlattices	42
<i>A. Sefir, Y. Djelti, R. Bentata, S. Bentata</i>	
Fiber Optic Sensor-based Concrete Structural Health Monitoring	47
<i>M. Afzal, O. Sidek, S. Kabir</i>	
Building Energy Efficient LR-PON For Desert Terrain of Saudi Arabia.....	52
<i>M. Siraj, A. Fatehmulla, S. Alshebeili, K. Bakar</i>	
Duobinary Modulation Format and Unequal Channel Spacing Integration to Suppress Four-Wave Mixing Crosstalk in WDM Systems	58
<i>B. Eirazak, M. Saleh, M. Aly</i>	
Stochastic Joint Source–Channel Coding For Low Bit Rate Robust Speech Coding	63
<i>M. Bouzid, H. Benkerouf, K. Benzadi</i>	
Electrospun TiO₂ Nanorods Assembly Sensitized By Mercaptosuccinic Acid-Capped CdS Quantum Dots For Solar Cells.....	69
<i>A. Nair, S. Yang, P. Zhu, E. Kumar, P. Archana, V. Babu, S. Ramakrishna</i>	
Bayesian Decision-Making For Industrial Production Facilities And Processing.....	73
<i>N. Hassini, S. Zouairi</i>	
CCS vs NLDM Comparison Based on a Complete Automated Correlation Flow between PrimeTime and HSPICE.....	79
<i>T. Motassadeq</i>	
New Techniques for IR Laser Sensors	84
<i>T. Hanafy</i>	
Establishing an Infrared Measurement and Modelling Capability.....	91
<i>C. Willers, A. Al-Ghamdi, D. Bezuindenhou, N. Al-Hosiny</i>	
Long Wavelength Determination of a Strained Quantum Well Structure Based on Ga_xIn_{1-x-y}As_ySb_{1-y}/GaSb for Gas Detection.....	97
<i>A. Aissat, S. Nacer, H. Aliane, J. Vilcot</i>	
Retro-Propagation Algorithm Used for Tuning Parameters of ANN to Supervise a Pharmaceutical Industry	100
<i>D. Benazzouz, M. Amrani, S. Adjjerid</i>	
New Erbium Doped Fiber Laser Amplifier	106
<i>B. Bouzid</i>	
Templating Silicon Nanowires Seeded With Oxygen Reactive Materials	109
<i>M. Khayyat, B. Wacaser, M. Reuter, D. Sadana</i>	
Optical Waveguides And Switches Based On Periodic Arrays Of Carbon Nanotubes.....	112
<i>H. Butt, Q. Dai, T. Wilkinson, G. Amarasingha</i>	
AntNet-RSLR: A Proposed Ant Routing Protocol for MANETs	116
<i>A. Radwan, T. Mahmoud, E. Hussein</i>	
Nature of the Electronic States in Random Dimer Al_xGa_{1-x}As Superlattices.....	122
<i>S. Bentata</i>	
Adaptive Channel Equalization Using The Sign Regressor Least Mean Fourth Algorithm	128
<i>M. Faiz, A. Zerguine</i>	

Optical, Photo-Physical Properties And Photostability Of Laser Dyes Impregnated In Sol-Gel Matrix.....	132
<i>H. Al-Shamiri, Y. Badr, M. Kana</i>	
Nonholonomic Wheeled Mobile Robot Modeling and Development.....	138
<i>M. Al-Khalidy</i>	
Theoretical Analysis of Erbium Doped Fiber Amplifier	144
<i>B. Bouzid</i>	
Innovative Prospective of Antenna-Gain Removing the Pain of EMI Engineers.....	149
<i>H. Ahmad, A. Badesha, C. Wang, C. Shu, D. Pissort</i>	
Non Linear and Intelligent Controllers for the Ship Rudder Control	154
<i>R. Fraga, L. Sheng</i>	
Confidence Estimation in the Application of Simulation in the Development of Aircraft Self-Protection Measures.....	159
<i>C. Willers, J. Roodt</i>	
Enhanced Forced Symbol Method for Improving the Error Rate Performance of Turbo Codes.....	165
<i>Z. Sattar, A. Al-Sanie, Y. Ould-Cheikh-Mouhamedou</i>	
Asynchronous Switching For Low-Power Cliché Netwok-On-Chip.....	170
<i>M. El-Moursy, H. Shawkey</i>	
Interconnect Modeling With The Existence Of Line Inductance	174
<i>M. El-Moursy, H. Shawkey</i>	
Morphological Dependance Of Charge Transport In Nanostructured ZnO-Based Dye Sensitized Solar Cells	179
<i>N. Elumalai, M. Tan, J. Lee, S. Dolmanan, K. Lin, L. Bin, A. Nair, V. Chellappan, S. Ramakrishna</i>	
Simulation of Acoustic Semiconductors Signature of Cracked Surface.....	184
<i>F. Hamdi, S. Bouhedja</i>	
Hybrid-mode Analysis of Anisotropic High-T_c Superconducting Passive Microwave Circuits on Lossy Anisotropic Dielectric Layers	188
<i>M. Tounsi, A. Belguidoum, M. Yagoub</i>	
Secure Wireless Sensor Networks with Dynamic Window for Elliptic Curve Cryptography.....	192
<i>X. Huang, D. Sharma, M. Aseeri, S. Almorgi</i>	
A Novel High-Speed Parallel Sorting Algorithm Based on FPGA	197
<i>F. Alquaiad, M. Alshaya, A. Almudaifer</i>	
Green Energy: Electric Batteries from Food.....	201
<i>S. Abdalla, A. Al-Ghamdi, F. Al-Marzouki</i>	
High Sensitivity Of Sensors Based On Two-Dimensional Photonic Crystal	205
<i>F. Bougriou, T. Bouchemat, M. Bouchemat, N. Paraire</i>	
Computing Of The Quality Factor In A Two Dimensional Photonic Crystal Microcavity	209
<i>A. Benmerkhi, M. Bouchemat, E. Casson</i>	
A New FIFO Design Enabling Fully-Synchronous On-Chip Data Communication Network	214
<i>M. Elrabaa</i>	
Fluence and Photobleaching Effects of mTHPC	220
<i>M. Atif</i>	
Influence of the α-Factor in the Output and Noise of InGaAs Fiber-Grating Laser.....	223
<i>S. Abdulrhmann</i>	
Generation of Surface Optical Screw Dislocations by Evanescent Plasmonic Modes.....	229
<i>S. Al-Awfi, M. Babiker, V. Lembessis, D. Andrews</i>	
Radar-based Detection and Estimation of Reinforcement Elements and Degree of Corrosion	234
<i>S. Kabir</i>	
Thermal Imaging for Qualitative-based Measurements of Thermal Anomalies in Electrical Components.....	239
<i>M. Jadin, S. Taib, S. Kabir</i>	
An Improvement of the Rational Approximation of the Fractional Operator	245
<i>F. Leulmi, Y. Ferdi</i>	
Crystallization Of Poly-Silicon Film By Different Annealing Techniques	251
<i>N. Bidin, S. Razak</i>	
Multi States Electromechanical Switch For Energy Efficient Parallel Data Processing.....	255
<i>H. Kloub, C. Smith, M. Hussain</i>	
Long Reach PON Management and Protection System Based on Optical Coding	258
<i>M. Esmail, H. Fathallah</i>	
Improvement of the Performances MPPT System of Wind Generation.....	262
<i>Hamzaoui, F. Bouchafaa, A. Hadjamar, A. Talha</i>	
Adaptive UWB-OFDM Synthetic Aperture Radar.....	268
<i>M. Hossain, I. Elshafiey, M. Alkanhal, A. Mabrouk</i>	

Metamaterial for Gain Enhancement of Printed Antennas: Theory, Measurements and Optimization	274
<i>H. Attia, O. Siddiqui, L. Yousefi, O. Ramahi</i>	
Nahrainfish: A Green Cryptographic Block Cipher.....	280
<i>S. Al-Janabi</i>	
Model-Based Hardware/Software Synthesis For Wireless Sensor Network Applications	285
<i>S. Butt, P. Sayyah, L. Lavagno</i>	
Crisp Commitment Scheme Based on Noisy Channels.....	291
<i>A. Al-Saggaf</i>	
A Note on The Mathematical Modeling of Power Amplifier/Loudspeaker Nonlinearity in Acoustic Echo Cancellers.....	295
<i>M. Abuelma'atti</i>	
Predistortion Linearization of GaN Power Amplifier in Digital Radio Links.....	299
<i>M. Abuema'atti, A. Abuelmaatti, T. Yeung</i>	
A Study Of V₂O₄-PEPC Composite Based Resistance Temperature Sensors.....	305
<i>M. Saeed, K. Karimov, F. Khalid, M. Farooq, M. Saleem</i>	
Economic Load Flow Using Lagrange Neural Network.....	310
<i>M. Mohatram, P. Tewari, N. Latanath</i>	
Characterization and Simulation of Optimized Micro Paddle Bridge Resonator for Magnetic Field Measurements	317
<i>F. Ahmad, N. Hamid, M. Khir, J. Dennis</i>	
Fusion of Multispectral Palmprint Images For Automatic Person Identification.....	322
<i>A. Meraoumia, S. Chitroub, A. Bouridane</i>	
SIP Overload Control Using Automatic Classification.....	328
<i>Z. Chentouf</i>	
Effect of Negative Permittivity and Permeability in The Transmission of Electromagnetic Waves Through a Left-Handed Material Waveguide.....	334
<i>M. Ubeid, M. Shabat, M. Sid-Ahmed</i>	
Resistance Strain Sensors Based On Quasi-One-Dimension Ph₃MeP(TCNQ)₂ Crystals.....	338
<i>M. Saleem, K. Karimov, M. Saeed</i>	
Novel EM Antenna based on Y₃Fe₅O₁₂ Magnetic Feeders for Improved MVO	341
<i>M. Akhtar, N. Yahya, N. Nasir</i>	
(MVO) Study of Antenna and its 3D Scale Modeling by Finite Integration (FIM) Method	348
<i>N. Nasir, N. Yahya, M. Akhtar</i>	
An Efficient Implementation of Floating Point Multiplier	354
<i>M. Al-Ashrafy, A. Salem, W. Anis</i>	
Selectively-grown III-V Compound Semiconductor Nano/Micro Structures on Silicon for Optoelectronics Applications	359
<i>G. Huang, F. Xiu, B. Alsubaie, L. He, X. Kou, X. Yu, K. Wang, M. Bensaleh, A. Alatawi</i>	
Structural and Electrical properties of Zinc Sulfide Nanoparticles	363
<i>M. Ahmad, K. Rasool, Z. Imran, M. Rafiq, M. Hasan</i>	
Initial Results for Compressive Sensing in Electronic Support Receiver Systems	367
<i>W. Plessis, P. Potgieter, M. Gouws, E. Malan</i>	
Effect Of Modifiers On Structural And Optical Properties Of Titania (TiO₂) Nanoparticles	373
<i>K. Rasool, M. Usman, M. Ahmad, Z. Imran, M. Rafiq, M. Hasan, A. Nazir</i>	
A 2-16 GHz CMOS Current Reuse Cascaded Ultra-wideband Low Noise Amplifier	377
<i>K. Yousef, H. Jia, R. Pokharel, A. Allam, M. Ragab, K. Yoshida</i>	
Urdu as Interface Design Language - A Novel Approach	382
<i>B. Rehman, T. Qureshi</i>	
An Embedded Hardware Architecture for GPC-on-Chip Applied to Automotive Active Suspension Systems	388
<i>Y. Shokry, M. El-Kharashi, H. Shokry, S. Hammad</i>	
Analysis of Dielectric Constants of Slaughtered and Non-Slaughtered Chicken	394
<i>A. Adam, N. Nasukha</i>	
An Efficient Hardware Design for Intra-prediction in H.264/AVC Decoder	399
<i>M. Nadeem, S. Wong, G. Kuzmanov</i>	
Combined Lidar/Sun-radiometer Remote Sensing Technique for Studying Long Range Aerosol Transport.....	405
<i>A. Chaikovsky, S. Denisov, J. Grudo, M. Korol, A. Lopatsin, V. Orlovich, O. Dubovik, P. Goloub, J. Karol, D. Tanre, F. Osipenko, A. Slesar</i>	
PID Controllers Design for a Power Plant Using Bacteria Foraging Algorithm	410
<i>A. Bensenouci</i>	

Frequency Invariant Beamforming Using Sensor Delay Line	416
<i>A. Alshammary</i>	
Performance Evaluation of IPv4 and IPv6 Networks in Absence of Link Layer Protection.....	421
<i>A. Amin, W. Anjum, M. Malik, S. Ali, A. Naseer, A. Waseem</i>	
Efficient Load Sharing Routing Algorithm to Increase lifetime of Wireless Sensor Networks.....	426
<i>A. Amin, W. Mehboob, A. Ranjha, H. Abbas, N. Abbas, W. Anjum</i>	
Dynamics of 850 nm Optical Pulses Upon Compression in a Tapered Photonic Crystal Fiber	431
<i>A. Abobaker</i>	
A Pipelined ADC Design Exploration Methodology Employing Circuit-System Refinement.....	435
<i>M. Abdoullah, M. Dessouky, M. Louerat, H. Gicquel, A. Shousha</i>	
The Design of Experimental Radar REX: Ultra High Bandwidth Receiver and Exciter Design.....	439
<i>L. Botha, C. Kitching, A. Almsallam</i>	
Evidence of Pool-Frenkel Conduction Mechanism in Sr-doped Lanthanum Ferrite La_{1-x}Sr_xFeO₃(0≤x≤1) System	445
<i>A. Zafar, Z. Imran, M. Rafiq, M. Hasan</i>	
Synthetic Range Profiling, ISAR Imaging Of Sea Vessels And Feature Extraction, Using A Multimode Radar To Classify Targets: Initial Results From Field Trials	449
<i>M. Gaffar, W. Nel, K. Naicker, J. Steyn, T. Alanazi, A. Alzamil</i>	
CO₂ Laser Induced Micro Structural Variation In Alpha-Irradiated Polyallydiglycol Polymer.....	455
<i>M. Alsalhi, W. Farooq, M. Baig, A. Al-Fareikh, S. Al-Ghamdi</i>	
Dual Band Fractal Monopoles	461
<i>R. Aziz, M. Alkanhal, A. Sheta</i>	
Wireless Network Architecture And RF Transceiver Front-End To Provide Multilingual Speech Translation And Local Positioning System For Hajj Operations.....	466
<i>M. Anis, Z. Saeed</i>	
A Case Study: The Development Of An Embedded Realtime Tracking And Control Application For A Tracking Radar.....	469
<i>P. Thomson, B. Almutery</i>	
Mid-Wave Infrared Characterization of an Aircraft Plume.....	474
<i>S. Retief, P. Smit, M. Dreyer</i>	
Design Of Energy Efficient Low Power PV Refrigeration System	480
<i>A. Fatehmulla, A. Al-Shammari, A. Al-Dhafiri, A. Al-Bassam</i>	
Novel 3D Memory-Centric NoC Architecture for Transaction-Based SoC Applications.....	485
<i>A. Wassal, H. Sarhan, A. Elsherief</i>	
Dynamic Sleep Scheduling for Minimizing Delay in Wireless Sensor Network	490
<i>B. Nazir, H. Hasbullah</i>	
Deploying SIP-Based Mobile Exam Application Onto Next Generation Netwok Testbed	495
<i>A. Barnawi, N. Akkari, M. Emran, A. Khan</i>	
Non-Uniformity Correction and Bad Pixel Replacement on LWIR and MWIR Images	501
<i>A. Mudau, C. Willers, D. Griffith, F. Roux</i>	
Reconfigurable, XML-driven, OO Framework for Real-time Control and Monitoring of Embedded Radar Signal Processor	506
<i>C. Combrink, C. Venter, S. Govender, M. Alshareef</i>	
Classes of Attacks in VANET	512
<i>I. Sumra, I. Ahmad, H. Hasbullah, J. Manan</i>	
New Card Based Scheme to Ensure Security and Trust in Vehicular Communications	517
<i>I. Sumra, H. Hasbullah, I. Ahmad, J. Manan</i>	
Forming Vehicular Web of Trust in VANET	523
<i>I. Sumra, H. Hasbullah, I. Ahmad, J. Manan</i>	
A Generic Framework for Dynamic Bandwidth Management of SDH Networks for Unicast NGN Service Solutions	529
<i>M. Iqbal, N. Rikli</i>	
ROS-based Mapping, Localization and Autonomous Navigation using a Pioneer 3-DX Robot and their Relevant Issues.....	533
<i>S. Zaman, W. Slany, G. Steinbauer</i>	
Analysis of Bus-Invert Coding in the Presence of Correlations.....	538
<i>A. Garcia-Ortiz, D. Gregorek, C. Osewold</i>	
Ad Hoc MANET Mobile Networks and the Integration of the Multihoming Concept.....	543
<i>S. Salmi, S. Sadouni, H. Mokhtari, M. Benslama</i>	
Modelling And Control Using Takagi-Sugeno Fuzzy Models	549
<i>M. Hadjili, K. Kara</i>	

Implementation of an Efficient Algorithm for Human Hand Gesture Identification	555
<i>M. Qureshi, A. Aziz, M. Saeed, M. Hayat, J. Rasool</i>	
Optronics Sensor Development using an Imaging Simulation System.....	560
<i>M. Willers, J. Van Den Bergh</i>	
Pseudo-random Single Photon Counting: Absolute Rangefinding without Alaising	566
<i>R. Lamb, P. Hiskett</i>	
Determining Suitable Wavelet Filters For Visual Sensor Networks.....	572
<i>B. Hadjou, A. Mammeri, A. Khoumsi</i>	
A Reduced Complexity Weighted SIC Detector For Large Wireless Communication Systems	577
<i>A. Bentrcia</i>	
Optical Properties Of ZnS Nanocrystals/ KH₂PO₄ Dielectric Crystal	582
<i>O. Halimi, S. Addala, L. Bouhdjar, M. Sebais, M. Benguedouar</i>	
Highly Reliable Analog Filter Design Using Analog Voting.....	583
<i>S. Askari, M. Nourani</i>	
Absorption And Transport Enhancement By Ag Nanoparticle Plasmonics For Organic Optoelectronics	589
<i>M. Xue, H. Shen, J. Zhu, S. Kim, L. Li, Z. Yu, Q. Pei, K. Wang, H. Qasem, A. Alzaben, H. Enaya, Z. Otaibi</i>	
Effect of Substrate Temperature on the Optical Dispersion of Sprayed Nickel Oxide Thin Films	592
<i>A. Bakry, S. Mahmoud</i>	
Study of Nanocomposite ZnSe/ PMMA	599
<i>M. Sebais, A. Chaieb, B. Boudine, Z. Ouili, S. Halimi</i>	
FPGA Implementation of Modified Architecture for Adaptive Viterbi Decoder.....	602
<i>S. Ameen, M. Al-Jammas, A. Alenezi</i>	
Signal Stationarity Testing And Detecting Of Its Abrupt Change	611
<i>E. Akhouayri, E. Laasri, D. Agliz, A. Atmani</i>	
Stress-Induced Context-Variability In Digital Design	616
<i>M. Makarem, M. Dessouky, A. El-Henawy</i>	
Evaluation of the Communications Performance Achievable on Base Station to Handheld-Terminal Radio Links with Several Different Practical Receive Antenna Arrays.....	619
<i>G. Dahman, R. Bultitude, R. Hafez</i>	
Simple Method for Measuring Dispersion and Spectral Absorption of Si wafers for use in MEMS Applications.....	625
<i>M. Nabil, D. Khalil</i>	
An Overview of Laser Technology in Dentistry	630
<i>A. Umer</i>	
Poly-N-Epoxypropylcarbazole Complexes Photocapacitive Detectors.....	636
<i>I. Murtaza, K. Karimov</i>	
Self-imaging in Single mode-Multimode-Single Mode Optical Fiber Sensors	640
<i>A. Morshed</i>	
S-C Bands Broadband Envelop Detector Design	645
<i>S. Alamri, A. Alamoudi</i>	
Validation of Vertical Refractivity Profiles as Required for Performance Prediction of Coastal Surveillance Radars.....	651
<i>K. Naicker, F. Anderson, A. Roux, S. Alhuwaimel</i>	
An Implementation of a 2D FIR Filter Using the Signed-Digit Number System.....	657
<i>Y. Seddiq, H. Altwairiy</i>	
Nano-NiO as a Photocatalyst in Antimicrobial Activity of Infected Water using Laser Induced Photocatalysis.....	661
<i>M. Gondal, M. Dastageer, A. Khalil</i>	
Dye-sensitized Solar Cells based on In Situ Sensitized of Nitrogen Doped TiO₂.....	666
<i>K. Cahyorini, K. Indriana, Narsito</i>	
Biassing Effect On Improvement Of Linearity And Efficiency Of RF Linear Power Amplifier.....	671
<i>M. Tayel, A. Al-Mslmany</i>	
Compact Bandstop Filter using Defected Ground Structure (DGS)	675
<i>S. Rehman, A. Sheta, M. Alkanhal</i>	
Lateral Bipolar Transistor on Partial SOI: A 2D Simulation Study	679
<i>S. Loan, S. Qureshi, S. Iyer</i>	
Multi-User Detection for SDMA-OFDM Communication Systems	683
<i>M. Alansi, I. Elshafiey, A. Al-Sanie</i>	
Author Index	