PROCEEDINGS OF SPIE

International Conference on Communication and Electronics System Design

M. Salim
K. K. Sharma
V. Janyani
Editors

28–30 January 2013
Jaipur, India

Organized by
Department of Electronics & Communication Engineering,
Malaviya National Institute of Technology Jaipur, India

Sponsored by
Malaviya National Institute of Technology Jaipur, India
OSA (Optical Society of America), Financial Co-Sponsor

Cooperating Organization and Publisher
SPIE

Volume 8760

Proceedings of SPIE 0277-786-786X, V.8760

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

International Conference on Communication and Electronics System Design,
edited by M. Salim, K. K. Sharma, V. Janyani, Proc. of SPIE Vol. 8760, 876001
© 2013 SPIE · CCC code: 0277-786/13/$18 · doi: 10.1117/12.2020905

The papers included in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. The papers published in these proceedings reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from this book:
Author(s), "Title of Paper," in *International Conference on Communication and Electronics System Design*, edited by M. Salim, K. K. Sharma, V. Janyani, Proceedings of SPIE Vol. 8760 (SPIE, Bellingham, WA, 2013) Article CID Number.

ISSN: 0277-786X
ISBN: 9780819495570

Published by
SPIE
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445
SPIE.org

Copyright © 2013, Society of Photo-Optical Instrumentation Engineers.

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is $18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/13/$18.00.

Printed in the United States of America.

Publication of record for individual papers is online in the SPIE Digital Library.

SPIEDigitalLibrary.org

Paper Numbering: Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent citation identifier (CID) number is assigned to each article at the time of the first publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online, print, and electronic versions of the publication. SPIE uses a six-digit CID article numbering system in which:

- The first four digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B … 0Z, followed by 10-1Z, 20-2Z, etc.

The CID Number appears on each page of the manuscript. The complete citation is used on the first page, and an abbreviated version on subsequent pages. Numbers in the index correspond to the last two digits of the six-digit CID Number.

Contents

ix *Conference Committee*
xi *Introduction*

INTERNATIONAL CONFERENCE ON COMMUNICATION & ELECTRONICS SYSTEM DESIGN

8760 03 **Performance comparison of modulation techniques for underlay cognitive radio transceivers** [8760-10]
I. Khan, P. Singh, National Institute of Technology (India)

8760 04 **Design of a CPW-feed circularly polarized slot antenna with triangle embedded in half circular disc for UWB applications** [8760-11]
R. Krishna, R. Kumar, Deemed Univ. (India)

8760 05 **Expanded graphite/Novolac phenolic resin composite as single layer electromagnetic wave absorber for x-band applications** [8760-21]
J. P. Gogoi, N. S. Bhattacharyya, Tezpur Univ. (India)

8760 06 **T-coupled microstrip patch antenna for WLAN** [8760-24]
M. Thomas, New Horizon College of Engineering, Bangalore (India); J. S. Roy, KIIT Univ. (India); B. Gupta, Jadavpur Univ. (India); A. Rydberg, Uppsala Univ. (Sweden)

8760 07 **Fabrication and electrical characterization of Pd/TiO_2/n-Si MIS structure using TiO_2 film as insulator layer deposited by a low temperature arc vapor deposition process** [8760-27]
K. Shubham, R. U. Khan, P. Chakrabarti, Indian Institute of Technology, Banaras Hindu Univ. (India)

8760 08 **Identification and classification of similar looking food grains** [8760-31]
B. S. Anami, K.L.E. Institute of Technology (India); S. D. Biradar, D. G. Savakar, B.L.D.E.A College of Engineering and Technology (India); P. V. Kulkarni, Basaveshwar Engineering College (India)

8760 09 **Dual-band modified cross-coupler with large power division ratios** [8760-40]
K. K. Katare, S. P. Singh, Indian Institute of Technology, Banaras Hindu Univ. (India)

8760 0A **All-optical XOR gate using SOA based Mach-Zehnder Interferometer** [8760-41]
R. Mehra, Government Engineering College Ajmer (India); S. Jaiwal, C.C.S. Univ. (India); H. K. Dixit, Univ. of Allahabad (India)

8760 0B **Mobility based multicast routing in wireless mesh networks** [8760-43]
S. Jain, Goverment Engineering College Bikaner (India); V. S. Tripathi, Motilal Nehru National Institute Technology (India); S. Tiwari, National Institute of Technology (India)

8760 0C **A novel design UWB antenna having band notch characteristics** [8760-46]
A. S. Gour, D. Mathur, Government Engineering College Ajmer (India)

8760 0D **Design of Chebyshev microstrip low-pass filter using defected ground structure** [8760-52]
N. S. Yadav, V. S. Chouhan, M.B.M. Engineering College (India)

8760 0F **PAPR reduction in synchronous CI/MC-CDMA uplink system using genetic algorithms** [8760-58]
S. Hati, S. P. Maity, Bengal Engineering and Science Univ. (India)

8760 0G **Synthesis and optical properties of zinc oxide nanoparticles grown on Sn-coated silicon substrate by thermal evaporation method** [8760-59]
D. Somvanshi, S. Jit, Indian Institute of Technology, Banaras Hindu Univ. (India)

8760 0H **Design of a planar multiband Sierpinski E-shaped carpet antenna with CPW fed for multi standard wireless terminals** [8760-61]
K. Sahu, A. K. Panda, National Institute of Science & Technology (India)

8760 0I **Dispersion analysis of coplanar waveguide for low frequency** [8760-63]
P. Singh, R. Bansal, A. K. Verma, Univ. of Delhi South Campus (India)

8760 0J **Design and construction of CPW fed circular microstrip patch antennas** [8760-67]
K. Vyas, Bhagwant Univ. (India); P. K. Singhal, MITS (India); A. K. Sharma, ACEIT (India); M. Pal, JNU (India)

8760 0K **Microwave absorption properties of graphite flakes-phenolic resin composite** [8760-79]
J. P. Gogoi, P. J. Gogoi, N. S. Bhattacharyya, Tezpur Univ. (India)

8760 0L **A novel e-shape communication antenna design using particle swarm optimization (PSO)** [8760-80]
D. Mohanageetha, R. Pavithra, Kumaraguru College of Technology (India)

8760 0M **Energy efficient wireless sensor networks using asymmetric distributed source coding** [8760-82]
A. Rao, National Instruments R&D Bangalore (India); M. Kulkarni, National Institute of Technology Karnataka (India)

8760 0O **Enhancement of security for free space optics based on reconfigurable chaotic technique** [8760-87]
L. F. Abdulameer, J. Jignesh D., U. Sripati, M. Kulkarni, National Institute of Technology Karnataka (India)

8760 0P **An adaptive calibration circuit for level measurement using optimized ANN** [8760-88]
S. K. V., B. K. Roy, National Institute of Technology Silchar (India)

8760 0Q **Effect of annealing temperature of nano-sized $BaFe_{12}O_{19}$ in Novolac phenolic resin on microwave properties for use as EMI shielding material in X-band** [8760-90]
S. Ozah, N. S. Bhattacharyya, Tezpur Univ. (India)

8760 0R **Modelling of photorefractive crystal grating mirrors** [8760-95]
W. Raja, Jazan Univ. (Saudi Arabia); N. Rehman, Rajiv Gandhi Technical Univ. (India)

8760 0V **BER performance enhancement for secure wireless communication systems based on chaotic-MIMO techniques** [8760-103]
L. F. Abdulameer, J. Jignesh D., U. Sripati, M. Kulkarni, National Institute of Technology Karnataka (India)

8760 0W **Ion track based tunable device as humidity sensor: a neural network approach** [8760-105]
M. Sharma, PEC Univ. of Technology (India); A. Sharma, YMCA Univ. of Science and Technology (India); V. Bhattacherjee, Birla Institute of Technology (India)

8760 0X **Speed based handover approach in WiMAX technology** [8760-108]
M. Kaur, R. Chechi, Haryana College of Technology and Management (India)

8760 0Y **The signal to noise and distortion ratio for sigma delta ADC for SDR 3G/4G mobile receivers** [8760-109]
P. Trivedi, SGSITS (India); A. Verma, Institute of Engineering and Technology (India)

8760 12 **Automated secured cost effective key refreshing technique to enhance WiMAX privacy key management** [8760-126]
B. Sridevi, S. Sivaranjani, Velammal College of Engineering and Technology (India); S. Rajaram, Thiagarajar College of Engineering (India)

8760 13 **Design and analysis of dual-resonant filters in visible and infra-red region based on polymer LPWG** [8760-128]
M. Sharma, A. Kushwaha, S. Pal, CSIR - Central Electronics Engineering Research Institute (India)

8760 15 **Ultra-large-effective-area dispersion-flattened segmented-core optical fiber** [8760-130]
B. Hooda, V. Rastogi, Indian Institute of Technology Roorkee (India)

8760 18 **Influence of external magnetic biasing on rectangular patch antenna designed on nano-Co/Ni Fe_2O_4 magnetodielectric substrates** [8760-134]
K. Borah, A. Phukan, N. S. Bhattacharyya, Tezpur Univ. (India)

8760 19 **Fast and secure handover of intra-ASN IEEE802.16 network by proposed certificate based pre-authentication** [8760-137]
B. Sridevi, T. S. Supriya, Velammal College of Engineering and Technology (India); S. Rajaram, Thiagarajar College of Engineering and Technology (India)

8760 1A **Accurate dispersion model for microstrip line up to terahertz frequency range** [8760-138]
R. Bansal, Y. K. Awasthi, P. Singh, A. K. Verma, Univ. of Delhi South Campus (India)

8760 1B **A new CMOS voltage controlled ring oscillator for low power radio transceiver applications** [8760-149]
A. Baishya, Tezpur Univ. (India); T. Sarkar, National Institute of Technology (India); M. K. Naskar, Jadavpur Univ. (India); P. P. Sahu, Tezpur Univ. (India)

8760 1C **Effect of mobile phone radiation on brain using EEG analysis by Higuichi's fractal dimension method** [8760-150]
C. K. Smitha, College of Engineering (India); N. K. Narayanan, Kannur Univ. (India)

8760 1D **Design of modified geometry Sierpinski Carpet Fractal Antenna for wireless communication** [8760-153]
R. Batra, Dr. Babasaheb Ambedkar College of Engineering & Research (India); P. L. Zade, D. Sagne, Yeshwantrao Chavan College of Engineering (India)

8760 1E **A review on face recognition techniques** [8760-155]
K. Choudhary, N. Goel, Delhi Technological Univ. (India)

8760 1F **Contourlet based image watermarking using QR decomposition** [8760-156]
P. Mitra, Vivekananda Institute of Technology (India); R. Gunjan, M. S. Gaur, Malaviya National Institute of Technology (India)

8760 1G **Improved performance of companded OFDM system using non symmetric approach** [8760-161]
M. Sabir, Sobhasaria Engineering College (India); S. Bohra, SLBS Engineering College (India)

8760 1H **A comparative study of frequency offset estimations in real and complex OFDM systems using different algorithms** [8760-168]
S. Sahu, S. Mohanty, R. Srivastav, Siksha "O" Anusandhan Univ. (India)

8760 1I **Dual band double square microstrip antenna for wireless applications** [8760-170]
R. Sharma, M. Kumar, Rajasthan Technical Univ. (India)

8760 1J **Low-dropout regulator with modest ripple and rugged performance in 180nm** [8760-172]
S. R. Patri, K. K. S. R., S. Alapati, R. Rao, National Institute of Technology Warangal (India)

8760 1K **FPGA implementation of digital down converter using CORDIC algorithm** [8760-173]
A. Agarwal, B. Lakshmi. Boppana, National Institute of Technology, Warangal (India)

8760 1L **Image fusion in discrete cosine transform domain using masking techniques** [8760-175]
K. K. Sharma, K. Priti, Malaviya National Institute of Technology (India)

8760 1M **Detection of microcalcifications in mammograms using statistical measures based region-growing** [8760-178]
P. Shanmugavadivu, S. G. Lakshmi Narayanan, Deemed Univ. (India)

8760 1N **Bandwidth enhancement of microstrip patch antennas using Electromagnetic Bandgap (EBG) structures with square and circular unit cells** [8760-181]
R. Gupta, M. Kumar, Rajasthan Technical Univ., Jaipur (India)

8760 1O **Fault classification approaches using empirical mode decomposition and histogram of power signals** [8760-186]
K. K. Sharma, Malaviya National Institute of Technology Jaipur (India); A. Samad, GLA Univ. (India)

8760 1P **Image encryption algorithm based on wavelet packet decomposition and discrete linear canonical transform** [8760-187]
K. K. Sharma, H. Jain, Malaviya National Institute of Technology (India)

8760 1Q **Truncated stacked elliptical patch antenna for broadband performance** [8760-188]
V. Sharma, Government Mahila Engineering College, Ajmer (India); B. Sharma, Univ. of Rajasthan, Jaipur (India); K. B. Sharma, S.S. Jain Subodh P.G. College (India); D. Bhatnagar, Univ. of Rajasthan, Jaipur (India)

8760 1R **Investigations on use of fractional Fourier transform for image restoration in the Wiener and geometric mean filters** [8760-193]
K. K. Sharma, P. Mittal, Malaviya National Institute of Technology (India)

8760 1S **A novel 3D algorithm for VLSI floorplanning** [8760-195]
D. G. N. Rani, S. Rajaram, A. Sudarasan, Thiagarajar College of Engineering (India)

8760 1T **A novel approach for the fine tuning of resonance frequency of patch antenna** [8760-196]
M. Mathur, Malaviya National Institute of Technology (India) and Swami Keshvanand Institute of Technology (India); G. Singh, Malaviya National Institute of Technology (India); S. K. Bhatnagar, Swami Keshvanand Institute of Technology (India)

8760 1U **Low dispersion FBG cascades for 20-Gbps DWDM systems** [8760-197]
M. Singh, South Eastern Coalfields Ltd. (India)

8760 1V **AES based secure low energy adaptive clustering hierarchy for WSNs** [8760-198]
K. R. Kishore, N. V. S. N. Sarma, National Institute of Technology, Warangal (India)

8760 1W **Square wave analysis of dielectric rectangular waveguide** [8760-199]
D. Dabas, PIET (India); J. Sharma, ABES Engineering College (India); N. S. Raghava, A. De, Delhi Univ. (India)

8760 1X **Platinum and palladium doped tin oxide thick film sensors for sensing methane and hydrogen** [8760-204]
M. Choudhary, V. N. Mishra, R. Dwivedi, Indian Institute of Technology, Banaras Hindu Univ. (India)

8760 1Z **Efficient droplet router for digital microfluidic biochip using particle swarm optimizer** [8760-210]
I. Pan, RCC Institute of Information Technology (India); T. Samanta, Bengal Engineering and Science Univ. (India)

8760 20 **Study of LDPE/Al_2O_3 composite material as substrate for microstrip antenna** [8760-213]
D. Sarmah, N. S. Bhattacharyya, S. Bhattacharyya, J. P. Gogoi, Tezpur Univ. (India)

8760 21 **A study on modulation formats to improve performance of optical systems** [8760-216]
N. Mathew, S. Prince, SRM Univ. (India)

8760 22 **Modeling of a nano-metallic surface plasmonic lens for wider optical window operation** [8760-218]
S. Vyas, Vivekananda Institute of Technology (India) and Malaviya National Institute of Technology (India); G. Singh, A. Goyal, H. K. Mangal, N. Choudhary, Malaviya National Institute of Technology (India); S. Mathur, Indian School of Mines (India)

8760 23 **A transform (MRT) naturally suited to directional pattern analysis** [8760-219]
R. C. Roy, Federal Institute of Science and Technology (India); R. Gopikakumari, Cochin Univ. of Science & Technology (India)

8760 24 **Fabrication and comprehensive study of silicon oxynitride based compact directional coupler and multimode interference coupler** [8760-220]
B. Deka, A. Dutta, Tezpur Univ. (India); G. Hegde, Indian Institute of Sciences (India); P. P. Sahu, Tezpur Univ. (India)

8760 25 **Novel on chip-interconnection structures for giga-scale integration VLSI ICS** [8760-223]
U. R. Nelakuditi, S. N. Reddy, Vignan Univ. (India)

8760 26 **A study analysis of cooperative spectrum sensing in cognitive radio networks** [8760-225]
K. Kalimuthu, R. Kumar, SRM Univ. (India)

8760 27 **Design of 4x1 microstrip patch antenna array for 5.8 GHz ISM band applications** [8760-228]
G. J. Valjibhai, D. Bhatia, Univ. College of Engineering (India)

8760 28 **Analysis of OFDMA receiver with carrier frequency offset and common carrier frequency offset (CCFO)** [8760-229]
S. Gauni, R. Kumar, SRM Univ. (India)

8760 2B **Improved efficiency and enhanced slow light performance in photonic crystal waveguides using rectangular unit cells** [8760-237]
N. Janrao, R. Zafar, S. K. Metya, V. Janyani, Malaviya National Institute of Technology (India)

8760 2C **Reliable circuit analysis and design using nanoscale devices** [8760-242]
R. Kumawat, V. Sahula, M. S. Gaur, Malviya National Institute of Technology (India)

8760 2D **Suitable RF spectrum in ISM band for 2-way advanced metering network in India** [8760-248]
A. Mishra, M. A. Khan, Landis & Gyr Communications AG (India); M. S. Gaur, Malaviya National Institute of Technology (India)

8760 2E **Design and performance of a broadband circularly polarized modified semi-elliptical microstrip patch antenna** [8760-251]
B. Sharma, Univ. of Rajasthan, Jaipur (India); V. Sharma, Government Mahila Engineering College, Ajmer (India); A. Tiwari, Univ. of Rajasthan (India); K. B. Sharma, S.S. Jain Subodh P.G. College (India); D. Bhatnagar, Univ. of Rajasthan (India)

8760 2F **Two octave spanning supercontinuum generation in hexagonal spiral photonic crystal fiber** [8760-209]
M. Tiwari, Rajdhani Engineering College, Jaipur (India); V. Janyani, Malaviya National Institute of Technology, Jaipur (India)

Author Index

Conference Committee

Conference Chairs

Dr. Mohammad Salim, Malaviya National Institute of Technology Jaipur (India)

Conveners

Dr. K.K. Sharma, Malaviya National Institute of Technology Jaipur (India)
Dr. Vijay Janyani, Malaviya National Institute of Technology Jaipur (India)

Program Committee

Communication

Dr. Vijay Janyani, Chair, Malaviya National Institute of Technology Jaipur (India)
Dr. Ghanshyam Singh, Malaviya National Institute of Technology Jaipur (India)
Prof. Deepak Bhatnagar, University of Rajasthan, Jaipur (India)

Signal & Image Processing

Dr. K. K. Sharma, Chair, Malaviya National Institute of Technology Jaipur (India)
Dr. Sanjay Nalbalwar, Dr. Babasaheb Ambedkar Technological University Maharashtra (India)
Dr. Rakesh Singhai, University Institute of Technology, Rajiv Gandhi Pordyogyiki Vishvavidhyalaya, Bhopal (India)

VLSI & Embedded System

Dr. Vineet Sahula, Chair, Malaviya National Institute of Technology Jaipur (India)
Dr. D. Boolchandani, Malaviya National Institute of Technology Jaipur (India)
Dr. S. K. Bhatnagar, Swami Keshvanand Institute of Technology Jaipur (India)

Computer & Networks

Sanjeev Agrawal, Chair, Malaviya National Institute of Technology Jaipur (India)
Rakesh Bairathi, Malaviya National Institute of Technology Jaipur (India)
Dr. V. Laxmi, Malaviya National Institute of Technology Jaipur (India)

Wireless & Sensor Networks

Dr. M. Salim, Chair, Malaviya National Institute of Technology Jaipur (India)
Dr. Upena Dalal, Sardar Vallabhbhai National Institute of Technology Surat (India)
Dr. K. K. Sharma, Malaviya National Institute of Technology Jaipur (India)

Introduction

The International Conference on Communication and Electronics System Design (ICCESD-2013) is being organized during 28-30 January 2013 by the Department of Electronics and Communication Engineering, Malaviya National Institute of Technology (MNIT) Jaipur, an Institute of National Importance as declared by the Act of Parliament. The Institute is located at the capital city of Rajasthan, one of the most beautiful states of India.

ICCESD 2013 offers a track of quality R&D updates from key experts and provides an opportunity in bringing-in the new techniques and horizons that will contribute to communications and electronics system design in the coming years. Some of the major research areas covered in the conference include MIMO Systems, Optical Communication Systems, Signal and Image Processing, VLSI Technology and Nano-Electronics.

The objective of the conference is to exchange ideas and dissemination of knowledge in recent advances in electronic communication, devices, circuits and systems among the researchers and corporate of international and national repute.

M. Salim
K. K. Sharma
V. Janyani