

2015 International Conference on Microwave and Photonics (ICMAP 2015)

**Dhanbad, India
11-13 December 2015**



**IEEE Catalog Number: CFP1516W-POD
ISBN: 978-1-4673-6899-5**

**Copyright © 2015 by the Institute of Electrical and Electronic Engineers, Inc
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

******This publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP1516W-POD
ISBN (Print-On-Demand):	978-1-4673-6899-5
ISBN (Online):	978-1-4673-6898-8

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

SESSION 1A

HETEROJUNCTION DETECTORS FROM UV TO IR	1
<i>A. G. U. Perera</i>	
HIGH SPEED FIBER-OPTIC SYSTEMS FOR RADAR APPLICATIONS.....	6
<i>T. Srinivas ; Meena D</i>	
MICROWAVE FREQUENCY ESTIMATION WITH HIGH ACCURACY BASED ON MACH-ZEHNDER MODULATOR AND PHASE MODULATOR.....	8
<i>R. R. Singh ; A. Kumar ; A. Gautam ; V. Priye</i>	
STUDY OF AN ELECTRO-OPTIC POLYMERS LEAKY WAVEGUIDE DEFLECTOR AND ITS MICROWAVE ACCESS ACROSS A GCPW TO CMS TRANSITION FOR REALIZING A 40 GSPS AOADC	10
<i>M. Hadjloum ; M. El Gibari ; G. Lirzin ; Hongwu Li ; A. S. Daryoush</i>	

SESSION 1B

DESIGN OF COMPACT MEANDERED DUAL MODE WIDEBAND MICROSTRIP BANDPASS FILTER USING TUNING STUBS	12
<i>K. G. Avinash ; I. S. Rao</i>	
DUAL-MODE BANDPASS FILTER USING VIA LESS SUBSTRATE INTEGRATED WAVEGUIDE TECHNOLOGY.....	14
<i>A. A. Khan ; R. Shaw ; M. K. Mandal</i>	
DUAL-BAND BANDSTOP FILTER USING SINGLE TRI-SECTION STEPPED IMPEDANCE OPEN STUB.....	16
<i>Purushothaman. B ; K. V. Phani Kumar ; S. S. Karthikeyan</i>	
WIDEBAND MICROSTRIP BANDPASS FILTER USING STUB-LOADED RESONATOR.....	18
<i>L. Murmu ; S. Das</i>	
A COMPACT PARALLEL COUPLED WIDEBAND BANDPASS FILTER WITH DGS AND SPURLINE	20
<i>B. Pal ; S. Dwari</i>	
DUAL BANDPASS FILTER USING SIR FOR WLAN	22
<i>A. K. Tiwary ; R. Ranjan ; N. Gupta</i>	
PERFORMANCE ANALYSIS OF ENTRANCE LINK USING CASCADED RADIO-ON-FIBER AND DIGITAL RADIO-ON-RADIO	24
<i>K. Kumamoto ; K. Tsukamoto</i>	

SESSION 1C

INVESTIGATIONS OF PLASMONIC DEVICES AND THERMAL EMISSION AT SUB-λ SCALE USING NSOM MICROSCOPY	26
<i>Y. De Wilde</i>	
SENSITIVITY ANALYSIS OF A DISPERSED CLAD MODE TO SURROUNDING REFRACTIVE INDEX.....	28
<i>T. K. Dey ; P. Biswas ; S. Bandyopadhyay ; N. Basumallick ; K. Dasgupta ; S. Bandyopadhyay</i>	
PHOTONIC CRYSTAL BASED SENSOR FOR SMALL FORCES	30
<i>Sreenivasulu T ; V. Kolli ; A. K. Sahu ; T. Srinivas</i>	
SPR BASED FIBER SENSOR TO MEASURE REFRACTIVE INDEX OF GLYCEROL AND ACETONE	33
<i>A. K. Pathak ; V. Bhardwaj ; R. K. Gangwar ; V. K. Singh</i>	
REAL TIME MONITORING OF FRINGE FORMATION INSIDE LDA MEASURING VOLUME	35
<i>A. Ghosh ; A. K. Nirala ; H. L. Yadav</i>	
A RASPBERRY PI-BASED FIELD-DEPLOYABLE TUNABLE DIODE LASER SPECTROSCOPY SYSTEM FOR THE DETECTION OF CO₂ AT 2003.5 NM.....	37
<i>V. Gandhi ; S. Heda ; R. Anand ; Zarin A S ; A. Upadhyay ; A. L. Chakraborty</i>	

SESSION 1D

DESIGN OF CIRCULARLY POLARIZED WAVEGUIDE CROSSED SLOTTED ARRAY ANTENNA AT KA BAND	39
<i>S. Chatterjee ; A. Majumder</i>	
DESIGN OF SHUNT-SERIES TYPE SLOT COUPLER AT X-BAND	41
<i>B. Bandyopadhyay ; S. Chatterjee ; S. Chatterjee</i>	
A TWISTED WAVEGUIDE SLOT ANTENNA	43
<i>A. Chandra ; S. Das</i>	
WIDEBAND WAVEGUIDE BAND-PASS FILTER BASED ON BROAD SIDE COMPLEMENTARY SPLIT RING RESONATOR	45
<i>A. Bage ; S. Das</i>	
IMAGE SERIES ANALYSIS OF BROADWALL LONGITUDINAL SLOT COUPLER BETWEEN PARALLEL WAVEGUIDES	47
<i>S. S. Kakatkar ; K. P. Ray</i>	

SESSION 1E

STUDY OF POLARIZATION RESOLVED ABSORPTION IN ANISOTROPIC QUANTUM DOTS	49
<i>S. K. Singh ; J. Kumar</i>	
OSCILLATOR STRENGTH AND ABSORPTION CROSS-SECTION OF CORE-SHELL CUBIC QUANTUM DOT FOR INTRABAND TRANSITION	51
<i>A. Deyasi ; N. R. Das</i>	
INVESTIGATIONS ON THE OPTICAL TRANSITIONS AND LINEWIDTH OF AS-GROWN III-V QUANTUM DOT SYSTEMS	53
<i>S. Kumar ; S. S. K. Sinha ; S. Sen</i>	
FINITE DIFFERENCE APPROACH FOR SELF-CONSISTENT SOLUTION IN STRAINED AND STRAIN BALANCED SIGE/GESN QUANTUM WELL	55
<i>P. Pareek ; M. K. Das</i>	
GE-CONTENT DEPENDENT EFFICIENCY OF $Si_{1-x}Ge_x$ NANOROD SOLAR CELL WITH PYRAMID STRUCTURE	57
<i>B. Priyadarshini ; M. K. Das</i>	

SESSION 2A

CHALLENGES AND INNOVATIONS IN MODERN ANTENNA TECHNOLOGY	59
<i>D. Guha</i>	
MICROWAVE AND OPTICAL DESIGN OPTIMATIZATION OF POLYMER PHASE MODULATORS WITH OVER 40 GHZ BW	61
<i>M. Hadjloum ; M. El Gibari ; H. Li ; A. S. Daryoush</i>	
A NEW DUAL LOOP OPTOELECTRONIC OSCILLATOR	63
<i>D. Ghosh ; A. Mukherjee ; S. Ray ; B. N. Biswas</i>	
MICROWAVE ELECTRONIC CAD MODELING OF MICROWAVE PHOTONIC DEVICES BASED ON LW-VCSEL MIXING	65
<i>M. E. Belkin ; Y. Tyschuk</i>	

SESSION 2B

ENABLING UBIQUITOUS SENSING WITH RFID	67
<i>S. K. Sarkar</i>	
RECTANGULAR MICROSTRIP ANTENNA WITH CROSS HEADED DUMBBELL DEFECTED PATCH SURFACE FOR IMPROVED POLARIZATION PURITY	70
<i>A. Ghosh ; R. Guha ; S. Chakraborty ; S. Chattopadhyay ; A. Nandi ; B. Basu</i>	
AN ULTRA WIDEBAND MONOPOLE ANTENNA USING FRACTAL SHAPED PARASITIC RESONATOR FOR BAND NOTCHING CHARACTERISTICS	72
<i>J. Banerjee ; A. Karmakar ; R. Ghatak</i>	
EFFECT OF FEEDING LOCATIONS ON BANDWIDTH, GAIN AND RESONANCE FREQUENCY OF THE PATCH ANTENNA	74
<i>K. Mondal ; K. Pandey ; S. K. Singh ; T. Pal</i>	

A COMPACT CIRCULARLY POLARIZED BROADBAND MICROSTRIP SLOT ANTENNA	76
<i>Y. J. Reddy ; C. Saha ; B. Ghosh</i>	
BROADBAND CPW FED STUB LOADED HEXAGONAL SLOT BACKED HEXAGONAL MICROSTRIP ANTENNA.....	78
<i>A. Deshmukh ; S. Agrawal ; K. Lele ; K. P. Ray</i>	
A MODIFIED CIRCULAR DISK PATCH RECTENNA FOR 5.8 GHZ HIPERLAN AND IEEE 802.11/WI-FI APPLICATIONS	80
<i>R. K. Yadav ; S. Das ; R. L. Yadava</i>	

SESSION 2C

RECENT ADVANCES IN ACCESS NETWORKS AND THEIR COMPONENTS TECHNOLOGIES.....	82
<i>T. Sugie ; H. Nakamura</i>	
DESIGNING MULTIBAND METAMATERIAL LOADED MICROSTRIP PATCH ANTENNA FOR SAR APPLICATIONS.....	84
<i>G. S. Rajesh ; V. Kumar</i>	
DESIGN AND ANALYSIS OF MULTILAYER TRIANGULAR MICROSTRIP PATCH ANTENNA WITH FSS SCREEN.....	86
<i>R. K. Saini ; S. Dwari</i>	
A DUAL BAND V-FRACTAL ANTENNA.....	88
<i>M. Ram ; S. Das ; R. L. Yadava</i>	
COMPACT CPW-FED ZOR ANTENNA FOR WIMAX APPLICATIONS	90
<i>N. Mishra ; A. Gupta ; R. K. Chaudhary</i>	
CPW-FED TRI-BAND MONOPOLE ANTENNA FOR WIRELESS APPLICATIONS	92
<i>P. Kumar ; S. Dwari</i>	
ZEROth-ORDER RESONATING CIRCULAR PATCH ANTENNA WITH TRIANGULAR STUB FOR WLAN	94
<i>S. K. Sharma ; A. Gupta ; R. K. Chaudhary</i>	

SESSION 2D

ADVANCE OF FIBER OPTIC GAS SENSORS FOR COAL MINE SAFETY APPLICATIONS	96
<i>Tongyu Liu ; Wei Li ; Xiangjun Meng ; Yubin Wei ; Jie Hu ; Tingting Zhang ; Weisong Zhao</i>	
ANALYSIS OF A FSO LINK UNDER DIFFERENT RAIN CONDITIONS.....	98
<i>G. Kar ; P. Agarwalla ; N. Roychoudhury ; T. K. De ; K. Pal ; S. Roy</i>	
ALL OPTICAL AND GATE BASED ON SILICON PHOTONIC CRYSTAL.....	100
<i>H. Mondal ; S. Chanda ; M. Sen ; T. Datta</i>	
SOLUTIONS OF LOW-INDEX AND HIGH-INDEX CONTRAST OPTICAL WAVEGUIDE BY USING FULL-VECTORIAL FEM.....	102
<i>S. L. Hada ; B. M. A. Rahman</i>	
MINIMIZING COUPLING LOSSES BETWEEN BEND AND STRAIGHT WAVEGUIDES	104
<i>V. Kumar ; V. Priye</i>	

SESSION 2E

TIMING IN GNSS - ITS IMPORTANCE AND CHALLENGES.....	106
<i>P. Banerjee</i>	
DESIGN OF RECTANGULAR DIELECTRIC RESONATOR ANTENNA USING GLASS ADDED BARIUM STRONTIUM TITANATE	108
<i>P. Tripathi ; P. Kumari ; O. Parkash ; D. Kumar ; B. Sahu ; S. P. Singh</i>	
A CRLH SUBSTRATE INTEGRATED WAVEGUIDE LEAKY WAVE ANTENNA BASED ON HILBERT SLOT	110
<i>B. Ghosh</i>	
DUAL-BEAM SUBSTRATE INTEGRATED WAVEGUIDE PERIODIC LEAKY-WAVE ANTENNA	112
<i>R. Shaw ; A. A. Khan ; M. K. Mandal</i>	
A WIDEBAND CIRCULARLY POLARIZED SLOTTED RECTANGULAR DIELECTRIC RESONATOR ANTENNA EXCITED WITH A CROSS-SLOT	114
<i>R. Kumar ; R. K. Chaudhary</i>	

FREQUENCY RECONFIGURABLE MOBILE ANTENNA WITH MULTI-BAND CHARACTERISTICS BASED ON METAMATERIALS.....	116
<i>S. K. Sharma ; R. K. Chaudhary</i>	
TRI-BAND DUAL SEGMENT RING DIELECTRIC RESONATOR ANTENNA FOR WIMAX/ WLAN APPLICATIONS.....	118
<i>A. Sharma ; R. K. Gangwar</i>	

SESSION 2F

ON A REVISIT TO REFLEX KLYSTRON	120
<i>B. N. Biswas ; A. K. Varshney</i>	
BARKHAUSEN MODEL OF REFLEX KLYSTRON OSCILLATOR	122
<i>B. N. Biswas ; S. Chatterjee ; S. G. Mallick ; B. Choudhury</i>	
CROP VARIABLES ESTIMATION BY ADAPTIVE NEURO-FUZZY INFERENCE SYSTEM USING BISTATIC SCATTEROMETER DATA	124
<i>D. K. Gupta ; R. Prasad ; P. Kumar ; V. N. Mishra ; P. K. S. Dikshit ; S. B. Dwivedi ; A. Ohri ; R. S. Singh ; V. Srivastav ; P. K. Srivastava</i>	
CONDUCTOR-BACKED COPLANAR WAVEGUIDE TO MICROSTRIP TRANSITION ON BCB POLYMER THIN FILM WITH BANDWIDTH OVER 60 GHZ.....	126
<i>M. El Gibari ; M. Hadjloum ; H. Li</i>	
VIALESS WIDEBAND BANDPASS FILTER USING CRLH TRANSMISSION LINE WITH SEMI-CIRCULAR STUB	128
<i>D. K. Choudhary ; R. K. Chaudhary</i>	
THEORETICAL INVESTIGATIONS ON THE FAST AND MIXED WAVE MODES FOR PLASMA-FILLED GYROTRONS.....	130
<i>E. Allahyari ; S. Saviz</i>	

SESSION 2G

SUPERCONTINUUM GENERATION IN FLUORIDE PHOTONIC CRYSTAL FIBER	132
<i>S. Sharma ; J. Kumar</i>	
REALIZATION OF 4 BIT OPTICAL LOGIC SHIFTER CIRCUIT USING 4X1 MULTIPLEXER	134
<i>N. Verma ; S. Mandal</i>	
ELASTIC PROPERTIES OF ZINCBLLENDE III-NITRIDES: A FIRST-PRINCIPLES STUDY	136
<i>C. P. S. Gayathri ; D. V. Satyanand ; B. S. Kiran ; T. N. Sravya ; B. P. Singh ; V. Kumar</i>	
ANALYSIS AND MITIGATION OF RAMAN CROSS TALK IN WDM TDM SYSTEM USING PARTIAL RESPONSE CODING AND RAMAN PUMP	138
<i>M. K. Gupta ; D. Nagar ; A. K. Garg ; G. Singh</i>	

SESSION 2H

A MULTI BAND ABSORBER USING BAND GAP STRUCTURES	140
<i>R. Pelluri ; N. Gupta ; B. Appasani</i>	
USE OF PARTICLE SWARM OPTIMIZATION TO OBTAIN DESIGNING PARAMETERS FROM DATA SET OF FREQUENCY SELECTIVE SURFACE.....	142
<i>P. Samaddar ; S. Sarkar ; N. Begam ; S. De ; S. Biswas ; D. C. Sarkar ; P. P. Sarkar</i>	
DESIGN AND FABRICATION OF WIRE BASED BANDWIDTH ENHANCED METAMATERIAL ABSORBER	144
<i>A. Bhati ; K. R. Hiremath ; V. Dixit</i>	
DESIGN OF WIRE BASED SINGLE/DUAL/TRIPLE BAND POLARIZATION INSENSITIVE METAMATERIAL ABSORBER.....	146
<i>A. Bhati ; K. R. Hiremath ; V. Dixit</i>	
DUAL BAND STUB LOADED MICROSTRIP REFLECTARRAY ANTENNA WITH MICROSTRIP ANTENNA FEED	148
<i>A. A. Deshmukh ; K. Lele ; S. Agrawal ; K. P. Ray</i>	
MULTI-LAYER SLOW-WAVE HALF-MODE SUBSTRATE INTEGRATED WAVEGUIDE	150
<i>M. Khalil ; M. Kamarei ; J. Jomaah ; H. Ayad</i>	
EFFECT OF ALLOY COMPOSITION ON THE GAIN PERFORMANCE OF A SI/GE_{1-y}SN_y AVALANCHE PHOTODIODE	152
<i>K. Majumder ; N. R. Das</i>	

STEADY STATE ANALYSIS OF TIN INCORPORATED GROUP IV ALLOY BASED TRANSISTOR LASER.....	154
<i>R. Ranjan ; M. K. Das</i>	
DESIGN OF A TUNABLE MSM PHOTODETECTOR FOR PHOTONIC INTEGRATED CIRCUITS.....	156
<i>K. Komirisetty ; N. Greene ; D. Geddis</i>	
TEMPERATURE DEPENDENT ETCHING OF GALLIUM NITRIDE LAYERS GROWN BY PA - MBE.....	158
<i>S. Majumdar ; S. Shaik ; S. Das ; R. Kumar ; A. Bag ; A. Chakraborty ; M. M. S. Ghosh ; D. Biswas</i>	
EFFECT OF FINGER SPACING ON THE GAIN OF A SILICON AVALANCHE PHOTODETECTOR COMPATIBLE WITH CMOS TECHNOLOGY.....	160
<i>K. Majumder ; P. Rakshit ; N. R. Das</i>	

SESSION 3A

LIGHT SWITCHING OF RESISTANCE OF LBMO/ZNO HETERO P-N JUNCTION	162
<i>T. Endo ; S. Nonomura ; M. Yokura ; M. Nagashima ; W. Choi ; S. L. Reddy ; S. Kaneko ; H. Nishikawa ; N. Iwata ; Y. Nakamura</i>	
THE NEW GENERATION OF REMOTE SENSORS BASED ON THE INTEGRATION OF OPTICS AND ELECTRONICS.....	165
<i>A. Bogoni ; P. Ghelfi ; F. Laghezza ; F. Scotti ; M. Scaffardi ; D. Onori ; G. Serafino</i>	
THE SUITABILITY OF NORMAL SOI NANOWAVEGUIDES FOR TERAHERTZ PULSE TRAIN GENERATION.....	167
<i>D. Chaturvedi ; A. Kumar</i>	
OPTICAL HETERODYNING IN MICROWAVE PHOTONIC RECEIVER FOR RADAR APPLICATIONS.....	169
<i>V. V. Kulagin ; V. V. Valuev ; V. A. Cherepenin</i>	
OPTICAL SYNCHRONIZATION OF MICROWAVE SIGNALS IN AN OPTOELECTRONIC OSCILLATOR.....	171
<i>A. Mukherjee ; D. Ghosh ; N. R. Das ; B. N. Biswas</i>	

SESSION 3B

DESIGN OF A COMPACT AND WIDEBAND BRANCHLINE COUPLER USING HYBRID APPROACH	173
<i>A. K. Singh ; J. Mandal ; M. K. Mandal</i>	
DESIGN AND FABRICATION OF A S BAND MULTI-STUB CPW BAND PASS FILTER FOR IMPROVED FILTER CHARACTERISTICS.....	175
<i>A. Ghosh ; R. V. R. Choudhury</i>	
CASTOR LEAF-SHAPED QUASI-SELF-COMPLEMENTARY ANTENNA FOR BROADBAND APPLICATIONS.....	177
<i>S. R. Patre ; S. P. Singh</i>	
DESIGN OF MICROSTRIP INTERDIGITAL BANDPASS FILTER WITH SUPPRESSION OF SPURIOUS RESPONSES FOR L-BAND WIRELESS COMMUNICATION APPLICATIONS.....	179
<i>B. Sahu ; M. K. Meshram ; S. P. Singh ; P. Tripathi</i>	
A NOVEL COMPACT MULTI-BAND DOUBLE Y-SLOT MICROSTRIP ANTENNA USING EBG STRUCTURE	181
<i>S. K. Mahto ; A. Choubey ; R. Kumar</i>	

SESSION 3C

GRAPHEN GROWTH: 10B LEAD PENCIL, PRINT PAPER, AND FEMTOSECOND LASER.....	183
<i>S. Kaneko ; T. Rachi ; M. Yasui ; Y. Shimizu ; S. Tanaka ; C. Kato ; K. Satoh ; S. Shawuti ; M. Can ; T. Endo</i>	
EFFECT OF CLADDING PARAMETERS ON SUPERCONTINUUM GENERATION IN WATER CORE PHOTONIC CRYSTAL FIBER.....	185
<i>G. J. Raj ; N. Nagarajan ; R. V. J. Raja ; R. Ganapathy</i>	
EFFECT OF NOISE ON CONSTELLATION DIAGRAM OF 100 GBPS DP-QPSK SYSTEMS UNDER INFLUENCE OF DIFFERENT DIGITAL FILTERS	187
<i>D. Sharma ; J. B. Maurya ; Y. K. Prajapati</i>	

DESIGN OF INTEGRATED OPTIC TRIPLE RACETRACK RESONATOR	189
<i>S. Dey ; S. Addya</i>	
POWER BUDGET IMPROVEMENT IN ENERGY EFFICIENT LONG REACH HYBRID PASSIVE OPTICAL NETWORK	191
<i>A. K. Garg ; V. Janyani</i>	
HIGH PERFORMANCE OPTICAL COMB FILTER USING FULL DUTY CYCLE BASED PERIODICALLY CHIRPED- SAMPLED FIBER BRAGG GRATING	193
<i>S. Sengupta ; S. K. Ghorai</i>	
A NOVEL DESIGN OF PCF FOR SUPERCONTINUUM SOURCE TO DETECT ORAL CANCER USING OCT	195
<i>N. Nagarajan ; R. V. J. Raja ; G. J. Raj</i>	
Author Index	