

## **Brief Report of IEEE EDS Delhi Sponsored Conference NCRDE-2013**

First **National Conference on Recent Developments in Electronics** (NCRDE- 2013) was the first conference organized by **IEEE EDS Delhi chapter** at **University of Delhi, South Campus, New Delhi**, during **18-20 January 2013**. The main aim of the conference and the workshop was to provide a forum for students to interact with the eminent scientists and experts working in the area of research and development of process, device design & technology.

The conference got an overwhelming response from a large number of researchers and experts from different parts of the country. The event saw the researchers from industry as well as academia presenting their work and sharing their views. The Conference received about 81 contributory papers, out of which 51 were accepted for oral presentations. There were in total 10 technical sessions along with 14 keynote/invited/plenary talks addressed by very eminent speakers.

The conference was held in conjunction with **National Workshop on Recent Trends in Semiconductor Devices and Technology** sponsored by **Defence Research and Development Organisation**.

There were two tutorials conducted on diverse topics like “ESD Challenges in Sub-micron Devices: Design, Testing and Application” by Prof. M.K. RadhaKrishnan (NanoRel Bangalore) and “Extending Microwave Measurements beyond the Horizon” by Mr. Adesh Kumar Jain (Agilent Technologies) for the benefit of the students.



### ***Inaugural Function of NCRDE-2013.***

*(In Picture) From Right to Left: Dr. Mridula Gupta (Conference Chair, and IEEE-EDS Delhi Chapter Chair), Prof. P. K .Bhatnagar (Head, Department of Electronic Science, UDSC), Dr. R. G. Gupta (Chief Guest, Chair- IEEE India Council), Prof. V. R. Rao (Institute Chair Professor, Deptt of EE, IIT-Bombay) and Prof. R. S. Gupta (Head, Deptt. Of ECE, MAIT, IPU)*

## Technical Program schedule for NCRDE-2013

| January 18, 2013, Friday   |   |  |
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| 09:00 am to 10:00 am   | Registration  |  |
| 10:00 am to 10:30 am   | Inauguration (SP Jain Auditorium)<br><b>Dr. R.G. Gupta</b><br>Chair, IEEE India Council   |  |
| 10:30 am to 11:15 am   | <b>Keynote : Prof. V. R. Rao</b><br>Institute Chair Professor, Department of Electrical Engineering, IIT Bombay<br><i>Organic Nano-Electro-Mechanical-Sensor Systems for Healthcare and Homeland Security Application</i> |  |
| Tea break (11:15 am to 11:45 am)   |   |  |
| 11:45 am to 12:30 pm   | <b>Plenary-I : Dr. Rakesh Malik</b><br>Chair, IEEE SSCS Delhi Chapter, TR&D CCDS, ST Microelectronics India<br><i>Recent Analog Design Trends and Challenges In Deep Submicron Technology</i>                             |  |
| 12:30 pm to 01:05 pm   | <b>Plenary-II : Dr. Ajay Agarwal</b><br>CSIR - CEERI, Pilani<br><i>Nano-sensors for Bio-Medical Applications</i>  |  |
| Lunch (01:05 pm to 02:00 pm)   |   |  |
| 02:00 pm to 03:30 pm   |   |  |
| <b>Technical Session I</b><br>(Room no. 115)<br>Microelectronics and Nanotechnology  | <b>Technical Session II</b><br>(Room no. 117)<br>Microwaves I   | <b>Technical Session III</b><br>SP Jain Auditorium<br>RF/Microwave Circuits and Systems  |
| <b>Invited Talk I : Prof. R. S. Gupta</b><br>Department of Electronics and Communication Engineering, MAIT<br><i>Recent Device Structures for Ultra Scale Integration Applications</i> | <b>Smriti Aggarwal, et.al.</b><br>Maharishi Markandeshwar Univ., Haryana<br><i>An Adaptive Linearization Technique for Power Amplifiers Using Predistortion Principle</i>   | <b>Chetan D. Parikh, et.al.</b><br>Ahmedabad University<br><i>A 1.5 V, 2.4 GHz High Performance CMOS Down-Conversion Mixer</i>   |
| <b>K P Pradhan, et.al.</b><br>NIT, Rourkela<br><i>Role of high-k in Nanoscale TM-DG MOSFET: A Simulation Study</i>   | <b>Vijesh Arora, et.al.</b><br>SSPL, Delhi<br><i>A 2.55 GHz Wideband GaAs MMIC VCO</i>  | <b>Rakhi Kumari, et.al.</b><br>SSPL, Delhi<br><i>A Compact and Low Insertion Loss DC-6GHz DPDT Switch</i>  |
| <b>Vandana Kumari, et.al.</b><br>Univ. of Delhi<br><i>Impact of Insulating Layers on Single and Double Gate MOSFET for Improved Short Channel Effect and Hot Carrier Reliability</i>   | <b>Joanna Shruti Sundharam, et.al.</b><br>MAIT, GGSIPU<br><i>Design and Analysis of Tunable Stacked Circular Microstrip Antenna for Dual band and Multiband Applications</i>  | <b>Monika Bhattacharya, et.al.</b><br>Univ. of Delhi<br><i>Gate-length and Donor-layer Characteristics Optimization of InAlAs/InGaAs DG-HEMT for improved RF and Noise Performance</i> |
| <b>Raj Kumar Tiwari, et.al.</b><br>Awadh Univ., Faizabad<br><i>A Comparative Study of Multilevel Darlington Pair FET Amplifier</i>   | <b>Shailendra Singh, et.al.</b><br>Univ. of Delhi<br><i>Designing of a Compact Microstrip Antenna Resonating at 5.6GHz by using Size Reduction Technique</i>  | <b>Umakant Goyal, et.al.</b><br>SSPL, Delhi<br><i>An X-Band 6 bit digitally Controlled Attenuator with Improved Insertion phase Error</i>  |
| <b>Pujarini Ghosh, et.al.</b><br>Univ. of Delhi<br><i>Analytical I-V Model for Dual Metal Gate Surrounded MOSFET</i>   | <b>Raghbendra Singh Tomar, et.al.</b><br>Univ. of Delhi<br><i>Optically Controlled MIS Micro-strip Slow Wave Line</i>   | <b>Akhilendra Krishna, et.al.</b><br>SSPL, Delhi<br><i>C-Band 0.7<math>\mu</math>m MESFET MMIC Amplifier</i>   |
|  |   | <b>Rahul Vijay, et.al.</b><br>Jaipur Eng. College<br><i>Study of Broadband Wireless Network in MIMO System and Fundamentals of LTE Systems</i>   |

| Tea Break (3:30 pm to 03:45 pm)   |  |  |
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| 03:45 pm to 05:15 pm  |  |  |
| Technical Session IV<br>(Room no. 115)<br>Modeling and Simulation   | Technical Session V<br>(Room no. 117)<br>Microwaves II   | Technical Session VI<br>(SP Jain Auditorium)<br>High Voltage & High Power Devices  |
| <b>Invited Talk II : Prof. C. K. Sarkar</b><br>Jadavpur University<br><i>Effect of Underlap Engineering and High-K Spacers on RF Parameters of DG-MOSFET for SoC Applications</i>                 | <b>Shailendra Singh, et.al.</b><br>Univ. of Delhi<br><i>Designing of Multi- Band Microstrip Antenna with Defected Ground for C, X and Ku Band Applications</i>       | <b>Sanjeev Kumar, et.al.</b><br>Univ. of Delhi<br><i>Preparation and Characterization of Zinc Oxide/Polymer Nanocomposites by Sol-gel Method</i>           |
| <b>Devi Dass, et.al.</b><br>Univ. of Jammu<br><i>Impact of Varying the Carbon Nanotube (CNT) Diameters on the Performance of Carbon Nanotube Field Effect Transistors CNTFET</i>                  | <b>Ashwani Kumar, et.al.</b><br>Univ. of Delhi<br><i>Wideband Bandpass Filter using SIR</i>  | <b>P. Dalapati, et.al.</b><br>Jadavpur University<br><i>Estimations of Carrier Life Time of Various Photodetectors by Using OCVD Measurement Technique</i> |
| <b>Rakhi Narang, et.al.</b><br>Univ. of Delhi<br><i>Performance Investigation of Silicon Nanowire Tunnel FET for Analog and Digital Applications</i>  | <b>Neeraj Mani Tripathi, et.al.</b><br>Powerwave Technologies, Hyderabad<br><i>Microstrip-Fed Monopole Antenna With V Shape Slot For Ultra Wide Band Application</i> | <b>Abhishek Joshi, et.al.</b><br>Jaipur Engineering College<br><i>High Frequency LED Driver</i>  |
| <b>Manoj Kumar, et.al.</b><br>MAIT, GGSIPU<br><i>VLSI Implementation of Hybrid Universal Logic on 350 nm Technology</i>   | <b>Anil K. Saini, et.al.</b><br>CSIR-CEERI, Pilani<br><i>CMOS Compatible RF MEMS based FBAR for Wireless applications: Design and Model and Simulation</i>           | <b>Neetu Singh, et.al.</b><br>Univ. of Delhi<br><i>Highly Crystalline ZnO Nanoparticles for Solar Cell Application</i>                                     |
| <b>Jay Hind Verma, et.al.</b><br>Univ. of Delhi<br><i>A surface potential model of Triple Material Gate Graded Channel Gate Stack Surrounding Gate (TMG-GC-GS SGT) MOSFET</i>                     | <b>Ritu Bansal, et.al.</b><br>Univ. of Delhi<br><i>Loss Computation for Thin Film Microstrip Line (TFMS)</i>   |  |
|   | <b>Shailendra Singh, et.al.</b><br>Univ. of Delhi<br><i>Design of a Compact Microstrip Diplexer with Stubs</i>   |  |
| January 19, 2013, Saturday (SP Jain Auditorium)<br>Third National Workshop On Recent Trends in Semiconductor Devices and Technology<br>Sponsored by Defense Research and Development Organization |  |  |
| 09:00 am to 09:30 am  | Registration for the Workshop  |  |
| 09:30 am to 10:15 am  | <b>Invited Talk III : Dr B K Sehgal</b> , Scientist G, SSPL, DRDO, Delhi<br><i>GaN High Electron Mobility Transistor for High Power RF Applications</i>              |  |
| 10:15 am to 11:00 am  | <b>Invited Talk IV : Dr. Amita Gupta</b> , Scientist G, SSPL, DRDO, Delhi<br><i>Emerging Trends in MEMS and NEMS</i>   |  |
| Tea Break (11:00 am to 11:30 am)  |  |  |
| 11:30 am to 12:15 pm  | <b>Invited Talk V : Dr. P. K. Chaudhury</b> , Scientist G, SSPL, DRDO, Delhi<br><i>Carbon Nano Tube based devices</i>  |  |
| 12:15 pm to 01:00 pm  | <b>Invited Talk VI : Dr. Harsh</b> ,<br>Department of Physics, Jamia Millia Islamia Central University, New Delhi<br><i>CNT based Chemical Sensor Technology</i>     |  |
| Lunch ( 01:00 pm to 02:00 pm)   |  |  |
| January 19, 2013, Saturday (Registration for Tutorial)  |  |  |

| (Arts Faculty Building)  |   |
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| 02:00 pm to 03:30 pm (Arts Faculty Building)   |   |
| <b>Tutorial (Room no. 115)</b><br><b>Prof. M. K. RadhaKrishnan</b><br>Director, <i>NanoRel</i> –Technical Consultants, Singapore<br><i>ESD Challenges in Sub-micron Devices : Design, Testing and Application</i>    | <b>Tutorial (Room no. 117)</b><br><b>Mr. Adesh Kumar Jain</b><br>Application Engineer, Agilent Technologies<br><i>Extending Microwave Measurements beyond the Horizon</i>   |
| Tea Break (03:30 pm to 04:00 pm)   |   |
| 04:00 pm to 05:30 pm   |   |
| <b>Tutorial (Room no. 115)</b><br><b>Prof. M. K. RadhaKrishnan</b><br>Director, <i>NanoRel</i> –Technical Consultants, Singapore<br><i>ESD Challenges in Sub-micron Devices : Design, Testing and Application</i>    | <b>Tutorial (Room no. 117)</b><br><b>Mr. Adesh Kumar Jain</b><br>Application Engineer, Agilent Technologies<br><i>Extending Microwave Measurements beyond the Horizon</i>   |
| <b>January 20, 2013, Sunday (SP Jain Auditorium)</b><br><b>Third National Workshop On Recent Trends in Semiconductor Devices and Technology</b><br><i>Sponsored by Defense Research and Development Organization</i> |   |
| 09:30 am to 10:15 am   | <b>Invited Talk VII : Dr. M. K. Radhakrishnan</b> , Director, <i>NanoRel</i> –Technical Consultants, Singapore<br><i>Interfaces and Fault Localization in Sub 100nm Silicon Devices</i>                           |
| 10:15 am to 11:00 am   | <b>Invited Talk VIII : Prof. P.K. Bhatnagar</b> , Head, Department of Electronic Science, DU<br><i>A Journey to New Materials and New Technologies Related to Development of New Electron Devices</i>             |
| Tea Break (11:00 am to 11:30 am)   |   |
| 11:30 am to 12:15 pm   | <b>Invited Talk IX : Prof. S Annapoorni</b> , Department of Physics and Astrophysics, DU<br><i>Organic-Inorganic Nano Hybrid Interfacial Structures: Mechanism of Photoconduction and Sensing Characteristics</i> |
| 12:15 pm to 01:00 pm   | <b>Invited Talk X : Prof. Subhasis Ghosh</b> , School of Physical Sciences, JNU, Delhi<br><i>Physics and Technology of Graphene Based Field Effect Transistors</i>  |
| Lunch (01:00 pm to 02:00 pm)   |   |
| 02:00 pm to 03:30 pm   |   |
| <b>Technical Session VII (Room no. 115)</b><br>Signal Processing & Control System  | <b>Technical Session VIII (Room no. 117)</b><br>Electronic Circuit & System   |
| <b>Vandana Goyal, et.al.</b><br>Jaipur Eng. College<br><i>Performance Analysis of MIMO System Based on the Improved Radius Search in Sphere Decoder</i>  | <b>Sandeepa Sarkar, et.al</b><br>Burdwan Harisabha Hindu Girls High School, West Bengal<br><i>Effects of Chaotic Perturbation on a Colpitts oscillator: An Experimental Study</i>                                 |
| <b>Karan Aggarwal, et.al.</b><br>BBSBEC, Punjab<br><i>Ultrasound Image Matching for Automatic Liver Disease Diagnosis Using Hough Transform</i>  | <b>R. Mishra, et.al.</b><br>ISRO , Bangalore<br><i>MOSFET Based Driver Design for SMA Actuator</i>  |
| <b>Ankur Sharma, et.al.</b><br>Jaipur Eng. College<br><i>Wheelchair Controlling Using Corneal Reflections for Paralyzed Patients</i>   | <b>Pawan Kumar Bhargav, et.al.</b><br>ISRO, Bangalore<br><i>High Speed Data Transfer using PCI Express Interface</i>  |

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| <p><b>B.N. Misra, et.al.</b><br/>ISRO, Bangalore<br/><i>SUITS : Spacecraft Umbilical Interface Test system</i></p>  | <p><b>Mohit Gupta, et.al.</b><br/>DTU, Delhi<br/><i>Propeller Display with Touch-less Interaction</i></p>  |
| <p><b>C.S. Madhusudhana, et.al</b><br/>ISRO, Bangalore<br/><i>Optimum Power Control and Management (PCM) of Small Satellites for LEO and GEO</i></p>                                | <p><b>Rajni Gautam, et.al.</b><br/>Univ. of Delhi<br/><i>High Performance Low Power 6T RAM Cell Using Gate-All Around (GAA) MOSFET</i></p>   |
| <p><b>Tea Break (03:30 pm to 03:45 pm)</b></p>  |  |
| <p><b>03:45 pm to 05:15 pm</b></p>  |  |
| <p><b>Technical Session IX (Room no. 115)</b><br/>Communication System</p>  | <p><b>Technical Session X (Room no. 117)</b><br/>VLSI Design &amp; Embedded System</p>   |
| <p><b>Invited Talk XI :</b><br/><b>Prof. Avinashi Kapoor</b><br/>Department of Electronic Science, Univ. of Delhi<br/><i>Plasmonic Optical Waveguide and their Applications</i></p> | <p><b>Mohit Gupta, et.al.</b><br/>DTU, Delhi<br/><i>Novel 64bit Soft Processor core and True Zero Cycle Branching</i></p>  |
| <p><b>D. Bala Sekhar, et.al.</b><br/>CSIR-CEERI, Pilani<br/><i>Nano-Plasmonic Optical Dipole Antenna for Local Field Enhancement: A Parameter Dependence Study</i></p>              | <p><b>Chetan D. Parikh, et.al.</b><br/>Ahmedabad University<br/><i>A 1.8 V Piecewise-Linear Curvature-Corrected CMOS Bandgap Reference</i></p>   |
| <p><b>Satvik Chugh, et.al.</b><br/>BVCOE, Delhi<br/><i>A View on Enabling Technologies for 3GPP LTE-Advanced</i></p>  | <p><b>R.K. Tiwari, et.al.</b><br/>R.M.L Awadh Univ., Faizabad<br/><i>Applications of Reversible Logic Techniques in Low Power Computing Devices</i></p>  |
| <p><b>Smita Parija, et.al.</b><br/>NIT, Rourkela<br/><i>Mobility Management Using Neural Network Technique in Cellular Network</i></p>  | <p><b>Rakesh Vaid, et.al.</b><br/>Univ. of Jammu<br/><i>Breakdown Voltage Enhancement by Varying Buried Oxide (BOX) Thickness in Superjunction MOSFET</i></p>                                    |
| <p><b>Saloni Singla, et.al.</b><br/>BBSBEC, Punjab<br/><i>Performance Comparison for MANET Routing Protocols on the Basis of Throughput and Delay</i></p>                           | <p><b>Priya Sharma, et.al.</b><br/>Maharaja Surajmal Institute of Tech., Delhi<br/><i>Implementation Of High Speed And Low Power Novel Radix 2 Booth Multiplier Using 2248 Bec Converter</i></p> |
| <p><b>Deepesh Kumar Jain, et.al.</b><br/>ISRO, Bangalore<br/><i>Implementation Aspects of Elliptical Curve Cryptography</i></p>   | <p><b>Vikrant, et.al.</b><br/>Global Institute of Technology and Management, Gurgaon<br/><i>Sub-threshold Leakage Reduction of 6T SRAM Cell Using Optimum Bulk Bias</i></p>                      |
| <p><b>Jolly Parikh, et.al.</b><br/>BVCOE, Delhi<br/><i>Relaying in LTE-Advanced Systems</i></p>   |  |