

S. No.	P. No.	TITLE	AUTHORS	AFFILIATION	E-MAIL
1	P001	Thermoelectric Technology: An Overview on Fundamental Theory to Physical Measurement	N.S. Chauhan ¹ , D.K. Misa ²	1 Physics of Energy Harvesting Division, CSIR-National Physical Laboratory, New Delhi-110012, India 2 Academy of Scientific & Innovative Research (AcSIR), CSIR-National Physical Laboratory (CSIR-NPL) Campus, New Delhi-110012, India	misradk@nplindia.org
2	P002	Preparation of Primary Gas Standard Mixture of Carbon Monoxide in Nitrogen by Gravimetric Method	Ravleen Kaur, Khem Singh, Daya Soni, Prabha Johri, Sulakshina Koul, Shankar G. Aggarwal, Prabhat K. Gupta	Analytical Chemistry Section, CSIR-National Physical Laboratory, New Delhi 110012, India	aggarwalsg@nplindia.org
4	P003	Two Rules based Fuzzy Swing-up and Four Rules based Non-linear Fuzzy Stabilization of Rotary inverted pendulum and comparison with linear fuzzy controller and LQR	Navjeet Kaur ¹ , Pradeep Yadav ²	1 Student of M.Tech (Control and Instrumentation, Dr. B. R. Ambedkar NIT, Jalandhar, India) 2 Assistant Professor (Control and Instrumentation, Dr. B. R. Ambedkar NIT, Jalandhar, India)	pyiitr@gmail.com
5	P004	Dispersivity: A New Parameter for the Ultrasonic Metrological Characterization of Liquids	Deepa Joshi ¹ , Ashok Kumar ² , Reeta Gupta ¹ , Sanjay Yadav ¹	1 CSIR-National Physical Laboratory (CSIR-NPL), Dr. K. S. Krishnan Marg, New Delhi-110012, India \$Former Scientist, CSIR-NPL, New Delhi-110012, India	deepa16a@gmail.com
6	P005	Measurements of Shear Strength of High Strength Reinforced Concrete Beams	Dr. Harpal Singh ¹ , Balwinder Kaur ²	1 Guru Nanak Dev Engineering College, Ludhiana, India 2 Guru Nanak Dev Engineering College, Ludhiana,	hps_bhoday@yahoo.com
7	P006	Proposal for Establishment of DC High Voltage Standard up to 300 kV at NPL	K B Ravat, Harish Kumar, Thomas John, V.N. Ojha	ALSIM, National Physical Laboratory, New Delhi	kbravat@nplindia.org

8	P007	PERFORMANCE EVALUATION OF CLAMP-ON ULTRASONIC FLOW METER FOR NON-IDEAL CONDITIONS	A. Gopan C K1, B. K G Jayesh2, C. P K Suresh3, D. Dr. Jacob Chandapillai4	1 Water Flow Laboratory, FCRI, Palakkad, India. 2 Water Flow Laboratory, FCRI, Palakkad, India. 3 Water Flow Laboratory, FCRI, Palakkad, India.	gopan.c.k@fcriindia.com
9	P008	Establishment of Metrological Traceability of HF Impedance Standards at CSIR-NPL: Present Status	Satish1, Sachin Kumar2, Thomas John3	1, 2, 3 LF, HF Impedance and DC Standard, CSIR-NPL, New Delhi, India	singhsp3@mail.nplindia.org
10	P009	SELECTION AND CALIBRATION OF ACOUSTIC SENSORS	A. Tamil Chandran1, Dhanya M.P2, P. Surendran3, Dr. Jacob Chandapillai4	1 Senior Research Engineer, Fluid Control Research Institute, Palakkad, India 2 Research Engineer, Fluid Control Research Institute, Palakkad, India 3 Chief Research Engineer, Fluid Control Research Institute, Palakkad, India 4 Director, Fluid Control Research Institute, Palakkad,	p.surendran@fcriindia.com
11	P010	PERFORMANCE STUDY OF CAPACITANCE TYPE PROBES IN LEVEL MEASUREMENT	K Suresh1, P.K. Suresh1, Jacob Chandapillai1	1 Fluid Control Research Institute, Palakkad, India.	k.suresh@fcriindia.com
12	P011	Studies on Use of Ferroelectric Relaxor as High Pressure Sensor	Vinay Kumar1, Sanjay Yadav2	1. Jubail Industrial College, Jubail Industrial City, Saudi Arabia 2. CSIR-National Physical Laboratory, New Delhi, India	vin_212@yahoo.com

13	P012	A Knowledge Based Framework for Metrology Based Homologation and Traceability	S.C. Ganganalli ¹ , Y.S. Thipse ² , V. K. Jadhav ³ , M.S. Kurane ⁴	1 Automotive Research Association of India (Pune, India) 2 Automotive Research Association of India (Pune, India) 3Automotive Research Association of India (Pune, India) 4Automotive Research Association of India (Pune, India)	thipse.dts@ara.com
14	P013	Frugal Techniques for Streamlining Calibration Process of Mechanical Measurements for Automotive Applications	S. S. Ekbote ¹ , Y. S. Thipse ² , V.K. Jadhav ³	1 Automotive Research Association of India (Pune, India) 2 Automotive Research Association of India (Pune, India) 3Automotive Research Association of India (Pune, India)	thipse.dts@araiindia.com
15	P014	EXPERIMENTAL INVESTIGATION ON EFFECT OF ORIFICE DIAMETER ON DISCHARGE COEFFICIENT	K.G. Jayesh ¹ , C.K. Gopan ¹ , P.K. Suresh ¹	1 Fluid Control Research Institute, Palakkad, India.	jayesh@fcriindia.com
16	P015	Experimental Investigation of RF Sputtered SiO ₂ Thin Films for Evaluation of Uniformity	Sunil Magadum, Niranjan Reddy, Ankit S, Chellamalai M, Balashanmugam N	Central Manufacturing Technology Institute, Bangalore, India	sunilm.cmti@nic.in
17	P016	Variation in ozone concentration in winter season over Delhi	Renu Masiwal, C. Sharma, Devesh Kumar Shukla	CSIR-National Physical Laboratory, Dr. K.S. Krishnan Road, New Delhi 110012, India	tuliprenu@gmail.com

18	P017	To Study the behavior of Capacitance Standards as a function of Frequency, Temperature and Time Using Measurement Automation	Satish ¹ , Deepak Sekhawat ² , Sachin Kumar ³ , Thomas John ⁴	1, 3, 4 LF, HF Impedance and DC Standards, CSIR-National Physical Laboratory, New Delhi, India 2 Amity University, Jaipur	singhsp3@mail.nplindia.org
19	P018	MEASURING HUMAN INTELLIGENCE THROUGH FINGERPRINT PATTERNS			komal3630@gmail.com
20	P019	Surface ozone concentration and its behavior with aerosols at an urban site of Delhi, India	Ashima Sharma ¹ , S. K Sharma ¹ , T. K Mandal ¹	1 Radio and Atmospheric Sciences Division, National Physical Laboratory, New Delhi, India	ashima510@gmail.com
21	P020	Traceability of Reflection Coefficient Measurements upto 2 GHz at NPLI	Archana Sahu, Saood Ahmad, P. S. Negi, V. N. Ojha	LF & HF Voltage, Current and Microwave Standards Apex Level Standards and Industrial Metrology CSIR-National Physical Laboratory, New Delhi, India	archana@nplindia.org
22	P021	LabVIEW based automation and Measurement System for picoampere Current source using Capacitance Charging Method	Bushra Ehtesham, Poonam Sethi Bist, Thomas John	LF HF Impedance and DC Standards National Physical Laboratory, New Delhi-110012, India	bushra3007@gmail.com
23	P022	Traceability for DC charge measurements at CSIR-NPL: Present Status	Bushra Ehtesham, Poonam Sethi Bist, Thomas John, V. N. Ojha	LF HF Impedance and DC Standards National Physical Laboratory, New Delhi-110012, India	bushra3007@gmail.com

24	P023	PRECISE AND ACCURATE DETERMINATION OF ISOTOPIC ABUNDANCE RATIO OF 107Ag/109Ag IN SILVER GRANULES BY SECTOR FIELD INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY	S. Swarupa Tripathy ¹ , Swati, Poonam Chauhan ² , Rajiv K. Saxena ¹ , Sunita Raina ¹ , Nahar Singh ¹	1 Analytical Chemistry, CSIR- National Physical Laboratory, Dr K.S. Krishnan Marg, New Delhi-11012, India 2 Department of Chemistry, Indian Institute of Technology, Roorkee-247667, India	tripathyss@nplindia.org
27	P024	Measurements of Surface Ozone and its Precursors in Delhi, India	Utkarsa Pathak ^{1,2} , A. Sharma ¹ , N.C. Gupta ² , T.K. Mandal ¹ , S.K. Sharma ¹	1 Radio and Atmospheric Sciences Division, CSIR-National Physical Laboratory, Dr. K.S.Krishnan Road, New Delhi 110 012, India. 2 University School of Environment Management, GGS Indraprastha University, Dwarka, New Delhi 110 078, India	sudhir@nplindia.org
29	P025	Design and Development of Humidity and Temperature Data Logger for Ambient Condition Monitoring of Calibration Laboratories	Shashank Singh ¹ , P K Dubey ²	1,2 Acoustics, Ultrasonics and Vibration Standards, CSIR-National Physical Laboratory, New Delhi-110012, India	premkdubey@gmail.com
30	P026	Fog Forecasting and Variability with Physico- Chemical Parameters in Winter Season By Using Time Series Modelling	Kirti Soni ¹ , Kulwinder Singh Parmar ² , Naveen Garg ¹ , Nishant Kumar ³	1 CSIR-National Physical Laboratory, New Delhi 2 Department of Mathematics, Dr. B. R. Ambedkar National Institute of Technology Jalandhar, India 3 Thapar University, Patiala (Punjab)	soniks@mail.nplindia.org

32	P027	Development of Mixing Height based Fog Predication models using artificial neural network and fuzzy logic	Nishant Kumar, Kirti Soni, Ravinder Aggarwal, Naveen Garg, Gurbir Singh		kumarnishant.kumar9@gmail.com
33	P028	Spatio-temporal Chemical Characteristics and Source Apportionment of PM10 over Indo Gangetic Plain of India	S. K. Sharma ¹ , T.K. Mandal ¹ , Saraswati ¹ , M. Saxena ¹ , A. Sharma ¹ , D.M. Shenoy ² , M.K. Srivastava ³ , A. Chatterjee ⁴ , S.K. Gosh ⁴	1CSIR-National Physical Laboratory, Dr. K S Krishnan Road, New Delhi-110 012, India 2CSIR-National Institute of Oceanography, Dona Paula, Panaji 403 004, Goa, India 3Department of Geophysics, Banaras Hindu University, Varanasi-221 005, India 4Centre for Astroparticle Physics and Space Sciences, Bose Institute, Kolkata-700091, India	sudhir@nplindia.org
34	P029	High Precision Measurements of a Piston Diameter of a Primary Pressure Standard	Mukesh Kumar, K.P. Chaudhary, Sanjay Yadav	CSIR-National Physical Laboratory, Dr. K. S. Krishnan Road, India	mukesh@mail.nplindia.org
36	P030	Compensation of Error due to Change in Buoyancy of an Absorbing Target at High Ultrasonic Power Measurement	P K Dubey ¹ , Shashank Singh ²	1,2 Acoustics, Ultrasonics and Vibration Standards, CSIR-National Physical Laboratory, New Delhi-110012, India	premkdubey@gmail.com
38	P032	A Comparative study of Time domain features for SEMG signal for hand movement classification	Anurag Sohane ¹ , Hardeep Singh Ryait ² , Ravinder Aggarwal ¹	1 Department of Electrical and instrumentation Engineering, Thapar University, Patiala, India 2Department of Electronics & Communication Engineering, BBSBEC, Fatehgarh Sahib	ravindereed@thapar.edu
39	P033	Piezoresistive Based Wrist Pulse Acquisition System	Krittika Goyal, Piyush Samant, Ravinder Aggarwal	Electrical and Instrumentation Engineering Dept., Thapar University, Patiala, India	ravinder_eeed@ythapar.edu

40	P034	Investigation and Development of Cognitive Abilities in Basketball Sportspersons	Navjot Saini, Ravinder Aggarwal	Electrical and Instrumentation Engineering Dept., Thapar University, Patiala, India	saini.navjot7@gmail.com
41	P035	Vibration Analysis and Identification of Optimal Vibration Frequency on Tree Trunks	J.Sai Praveen Kumar, Ravinder Aggarwal	Electrical and Instrumentation Engineering Dept., Thapar University, Patiala, India	ravinder_eeed@thapar.edu
42	P036	Feature reduction and selection of SEMG signal for locomotion identification	Rohit Gupta, Ravinder Aggarwal	Electrical and Instrumentation Engineering Dept., Thapar University, Patiala, India	ravinder_eeed@yahoo.com
43	P037	FUTURE TREND IN CONFORMITY ASSESSMENT- INFLUENCE OF ERROR AND MEASUREMENT UNCERTAINTY	A Dasgupta ¹ , Alok Jain ²	1Former Scientist CMTI, Former Tech Director HFPL, Accreditation Committee member, NABL 2Alok Jain Technical Manager, NABL, Gurgaon E-mail: ajain@nabl-india.org	dg.hiten@gmail.com
44	P038	Expression of CMC using Conservative Regression Equation for Interpolation derived in Microsoft Excel platform	A Dasgupta ¹ , S. K. Nag ² , A. Das ³ , P. Singha ⁴ , D. Samanta ⁵	1 Former Scientist CMTI, Former Tech. Dir. HFPL, Tech. Committee Member NABL 2 Former System Manager HFCL, Former QM/TM EMC, CEO BSCSL, NABL Assessor 3Manager Technical, YEA Group 4Quality Manager, BSCSL 5Director(Operation), YEA Group	skn@beatus.co.in
45	P039	Automated Primary Ultrasonic Power Measurement Setup for Calibration at mW Region with Reduced Uncertainty	P K Dubey ¹ , Shashank Singh ²	1,2 Acoustics, Ultrasonics and Vibration Standards, CSIR-National Physical Laboratory, New Delhi-110012, India	premkdubey@gmail.com

46	P040	Expression Of CMC using Conservative Regression Equation	A Dasgupta ¹ , S. K. Nag ² , A. Das ³ , P. Singha ⁴ , D. Samanta ⁵	1 Former Scientist CMTI, Former Tech. Dir. HFPL, Tech. Committee Member NABL 2 Former System Manager HFCL, Former QM/TM EMC, CEO BSCSL, NABL Assessor 3 Manager Technical, YEA Group 4 Quality Manager, BSCSL 5 Director(Operation), YEA Group	snjbng@rediffmail.com
47	P041	A novel approach for reducing measurement uncertainty in Airborne Sound Insulation and Single-number Quantities	N Garg ¹ , L. Gandhi ² , K. Soni ¹ , A. Kumar ¹ , P. Kumar ² , P.K. Saini ³	1 CSIR-National Physical Laboratory, New Delhi-110012, India. 2 NIT Kurukshetra, Kurukshetra - 136 119, India 3 Kurukshetra University, Kurukshetra - 136 119, India.	ngarg@nplindia.org
48	P042	Determination of Inductive and Capacitive Components of Electrical Equivalent Circuit of Four-Terminal-Pair Capacitance Standards	Satish ¹ , Manish Grover ² , Sachin Kumar ³ , Thomas John ⁴	1, 3, 4 LF, HF Impedance and DC Standards, CSIR-National Physical Laboratory, New Delhi, India 2 Maharaja Agrasen Institute of Technology, New Delhi, India	singhsp3@mail.nplindia.org
49	P043	Design and Simulation of CMUT Cell for Medical Applications	R. Mukhiya, A. Sharma, Aditi, V. K. Khanna	MEMS & Microsensors Group, CSIR-Central Electronics Engineering Research Institute, Pilani-333 031, INDIA	vkk@ceeri.res.in

50	P044	Measurement of Linear Thermal Expansion Coefficient of Metallic Bar Using Grating Shearing Interferometry	Reena Disawal ¹ , Jitendra Dhanotia ² , Vimal Bhatia ² , Shashi Prakash ¹	1 Photonics Laboratory, Institute of Engineering & Technology, Devi Ahilya University, Khandwa Road, Indore-452001, India 2 Signals and Software Group, Discipline of Electrical Engineering, Indian Institute of Technology Indore-453446, India	sprakash_davv@rediffmail.com
51	P045	Long-term Measurement of ambient Ammonia and its Impacts on Air Quality of Delhi, India	Saraswati,A. Sharma, M. Saxena, T.K. Mandal,S. K. Sharma,	Radio and Atmospheric Sciences Division, CSIR-Natioanl Physical Laboratory, Dr. K S Krishnan Road, New Delhi, India	ydv.srs@gmail.com
52	P046	Simulations of MOSFET Test Structures with Different Dielectric Films for ISFET Characterization	R Chaudhary ¹ , J Yadav ¹ , R Sharma ^{1,2} , R. Mukhiya ^{1,2,V} , K. Khanna ^{1,2}	1 CSIR- Central Electronics Engineering Research Institute (CEERI), Pilani-333031 (Raj.) India 2 Academy of Scientific and Innovative Research (AcSIR), New Delhi, India	rekha.ceeri@ceeri.ernet.in
54	P047	Design and Analysis of MEMS-based Z-axis Capacitive Accelerometer	Shalu Rani ^{1,2} , R. Mukhiya ¹ , C. C. Tripathi ² , Ram Gopal ¹	1 CSIR-Central Electronics Engineering Research Institute (CEERI), Pilani-333031(Raj.) India 2University Institute of Engineering and Technology, Kurukshetra University, Kurukshetra, India	rmukhiya@ceeri.ernet.in

55	P048	DETERMINATION OF TOTAL ARSENIC IN BROWN RICE FLOUR BY HIGH RESOLUTION INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY - RESULT OF APMP.QM - P21 PILOT STUDY	S. Swarupa Tripathy, Rajiv K. Saxena, Swati, Sunita Raina, Nahar Singh	Analytical Chemistry, CSIR-National Physical Laboratory, New Delhi-110012, India	tripathyss@nplindia.org
56	P049	Studies of Short term satiability of convection vacuum gauge	Harish Kumar, Dr. Ashok Kumar	CSIR-National Physical Laboratory, Dr. K. S. Krishnan Marg, New Delhi-110012	harish@nplindia.org
57	P050	Uncertainty Evaluation of Recently Developed Prototype Water Flow Calibration System at NPLI	Shiv Kumar Jaiswal ¹ , Sanjay Yadav ¹ , Ravinder Agarwal ²	1CSIR-National Physical Laboratory (NPLI), New Delhi -110012 India 2Thapar University, Patiala -147004, India	skjaiswal@nplindia.org
58	P051	Calibration of an Air Flow Calibrator using Recently Established Gas Flow Calibration Facility at CSIR-NPL, India	Chatar Singh, I.S. Taak, Shiv Kumar Jaiswal	Fluid Flow Measurement Standards CSIR-National Physical Laboratory (NPLI) Dr. K.S. Krishnan Road New Delhi -110012 India	chauhancs@nplindia.org
59	P052	Capacitive & resistive load of an ion trap affecting systematics of trapped ions in it	S. Majhi ¹ , N. Batra ^{1,2} , A. Roy ¹ , C. Samal ¹ , S. Panja ¹ , S. De ¹	1CSIR-National Physical Laboratory (Dr. K. S. Krishnan Marg, New Delhi 110012, India) 2Academy of Scientific & Innovative Research (CSIR road, Taramani, Chennai-600113, India)	subhadeep@nplindia.org

60	P053	Energy Shifts and Magic wavelength of Yb+1 clock transition	A. Roy ¹ , S. Majhi ¹ , N. Batra ^{1,2} , C. Samal ¹ , S. Panja ¹ , B.K. Sahoo ³ , S. De ¹	1CSIR-National Physical Laboratory (Dr. K. S. Krishnan Marg, New Delhi 110012, India 2Academy of Scientific & Innovative Research (CSIR road, Taramani, Chennai-600113, India 3Theoretical Physics division, Physical research Laboratory, Ahmedabad, India	royatish8@gmail.com
61	P054	Sound Insulation Metrology of Transmission Suite of CSIR-NPL	Mahavir Singh, Gurbir Singh	Acoustics, Ultrasonics & Vibration (AUV) Standards, CSIR-National Physical Laboratory, New Delhi 110 012, India	mahavir.acoustics@gmail.com
62	P055	Measurement of contact angle and meniscus shape using Moiré deflectometry and Fourier fringe analysis	Jitendra Dhanotia ¹ , Vimal Bhatia ¹ , Shashi Prakash ²	1 Signals and Software Group, Discipline of Electrical Engineering, Indian Institute of Technology Indore-453446, India 2 Photonics Laboratory, Department of Electronics & Instrumentation Engineering, Institute of Engineering & Technology, Devi Ahilya University, Khandwa Road, Indore-452001, India	sprakash_davv@rediffmail.com
63	P056	Design Study for Cutting Force Measuring Dynamometer	Shahroz A. Khan ¹ , Harish Kumar ²	1 Galgotias College of Engineering & Technology, Greater Noida, India 2 National Physical Laboratory - CSIR, New Delhi, India	shahrozakhtar@gmail.com

64	P057	A Terse Review of Strain Gauge Type Pressure Transducers	Vivek Singh ¹ , S. Chattopadhyaya ² , Sanjay Yadav ³ , Harish Kumar ³	1Galgotias College of Engineering and Technology, Greater Noida, India 2Indian School of Mines, Dhanbad, India 3, 4 CSIR-NPL, New Delhi, India	vsingh.ald@gmail.com
65	P058	Effect of crop residue burning on pulmonary function of school children in rural areas of Punjab	Gurpreet S Saggu ¹ , Susheel K Mittal ² , Ravinder Aggarwal ³	Department of Chemical Engineering, Thapar University Patiala School of Chemistry & Biochemistry, Thapar University, Patiala Department of Electrical and Instrumentation Engineering, Thapar University, Patiala	gurpreet_singh@thapar.edu
66	P059	Significance of Calibration of Reference Sub-Standard Energy Meter and Its Maintenance	S. Sudha	Instrumentation Division, Central Power Research Institute, Bangalore, India	sudhacpri@rediffmail.com
67	P060	Effect of filler particle size on the surface properties of Linear Low Density Polyethylene (LLDPE)-Si polymer nanocomposites	Girija Moona ¹ , Nidhi Sindhu ² , Rina Sharma ¹ , V. N. Ojha ¹	1 Nanoscale measurements, CSIR- NPL India 2 Departments of Materials Science & Nanotechnology, D.C.R.U.S.T, Sonapat	moonag@mail.nplindia.org
68	P061	Control & data acquisition system for automation of the optical frequency standard	N. Batra ^{1,2} , A. Roy ¹ , S. Majhi ¹ , C. Samal ¹ , A. Sengupta, S. Panja ¹ , S. De ¹	1 CSIR-National Physical Laboratory, Dr. K. S. Krishnan Marg, New Delhi - 110012, India. 2 Academy of Scientific and Industrial Research, CSIR Road, Taramani, Chennai - 600113, India.	subhadeep@nplindia.org

69	P062	Trends of ozone, PM2.5 and PM10 and their correlations with meteorology in Indo Gangetic Plains of Punjab (India) during 2014	MadhviRana, Susheel K Mittal	School of Chemistry and Bio Chemistry, Thapar University Patiala, India	madhvi.rana@thapar.edu
70	P063	Suitable Ion Trap with Reduced Systematics for Ytterbium-ion	S. De ¹ , N. Batra ^{1,2} , A. Roy ¹ , C. Samal ¹ , S. Majhi ¹ , S. Panja ¹ , B.K. Sahoo ³	1CSIR- National Physical Laboratory, Dr. K. S. Krishnan Marg, New Delhi 110012, India. 2Academy of Scientific and Innovative Research, CSIR road, Taramani, Chennai-600113, India. 3Theoretical Physics division, Physical research Laboratory, Ahmedabad, India.	subhadeep@mail.nplindia.org
71	P064	Determination of pressure distortion coefficient of a piston gauge and its associated Uncertainty - A Monte Carlo Simulation	Jasveer Singh ^{1,2} , Aditi Vijay ¹ , L.A. Kumaraswamidhas ² , Nita Dilawar Sharma ¹	1 Pressure & Vacuum Standards, CSIR-National Physical Laboratory, New Delhi, India 2 Mining Machining Engineering, Indian School of Mines, Dhanbad, India	ndilawar@nplindia.org
72	P065	development of VCO based drivers for frequency modulation	C. Samal ¹ , N. Batra ^{1,2} , A. Roy ¹ , S. Majhi ¹ , S. De, S. Panja, A. Sengupta	1CSIR-National Physical Laboratory(Dr. K. S. Krishnan Marg,New Delhi – 110012,India). 2Academy of scientific &innovativeresearch(CSIR road,taramani,Chennai-600113,India).	chirasmitaphysics@gmail.com

73	P066	Utilization of multiple beam interference for optical computing	Ruchi Bhardwaj ¹ , Saurabh Babu Saxena ¹ , Parag Sharma ^{1,2} , V.K. Jaiswal ^{1,2} , Ranjana Mehrotra ^{1,2}	1Quantum Optics and Photon Physics, CSIR-National Physical Laboratory, Dr. K.S. Krishnan Marg, New Delhi 110012, India 2Academy of Scientific & Innovative Research (AcSIR), CSIR-NPL Campus, New Delhi 110012, India	ruchi@nplindia.org
74	P067	NEW APPROACH IN CALIBRATION OF TILT TABLES USING COORDINATE METROLOGY	Mallappa H.K ¹ , K. Niranjana Reddy ² , Khushboo ³ , Siddaraju K.G ⁴	1 Senior Technical Officer, 2 Scientist - D, 3Scientist - B, 4Technical Assistant Precision Metrology Laboratory, Central Manufacturing Technology Institute, Tumkur Road, Bangalore 560022	metrologylab.cmti@nic.in
76	P069	Advanced NRW Algorithm based Low Loss Permittivity Measurement for Xn-Band Waveguide System	Naina Narang ^{1,2} , Satya K. Dubey ² , Parmendra S. Negi ² , Vijay N. Ojha ²	1 AcSIR (CSIR-NPL, New Delhi, India) 2 CSIR-National Physical Laboratory (Microwave Standards, CSIR-NPL, New Delhi, India)	dubeysk@nplindia.org
77	P070	Slope measurement of PMMA plates in transmission geometry using Moiré deflectometry	Jitendra Dhanotia ¹ , Vimal Bhatia ¹ , Shashi Prakash ²	1 Signals and Software Group, Discipline of Electrical Engineering, Indian Institute of Technology Indore-453446, India 2 Photonics Laboratory, Department of Electronics & Instrumentation Engineering, Institute of Engineering & Technology, Devi Ahilya University, Khandwa Road, Indore-452001, India	sprakash_davv@rediffmail.com

78	P071	Parallel multiple logic operations using multiple beam interference	Saurabh Babu Saxena ¹ , Ruchi Bhardwaj ¹ , Parag Sharma ^{1,2} , V.K. Jaiswal ^{1,2} , Ranjana Mehrotra ^{1,2}	1CSIR-National Physical Laboratory, Dr. K.S. Krishnan Marg, New Delhi 110 012, India 2Academy of Scientific and Innovative Research (AcSIR), CSIR-NPL Campus, Dr. K.S. Krishnan Marg, New Delhi 110 012, India	sharmap2@nplindia.org
79	P072	Investigation of Response of Load frequency Controller in Two Area Restructured System with Non-Linear Governor Characteristics	Manbir Kaur, Veena Yadav	Electrical & Instrumentation Engg.Dept. Thapar University, Patiala-147004(India)	mkaur@thapar.edu
80	P073	Investigation and Evaluation of Systematics in Primary Frequency Standard	A. Acharya ^{1,2} , P. Arora ^{1,2} , V. Bharath ^{1,2} , S. Yadav ¹ , A. Agarwal ^{1,2} , A. Sen Gupta ^{1,2}	1 CSIR-National Physical Laboratory (Dr. K. S. Krishnan Marg, New Delhi 110012, India) 2 Academy of Scientific & Innovative Research (CSIR road, Taramani, Chennai-600113, India)	aishik@nplindia.org
82	P074	Indigenous development of 2nd Cs atomic fountain Clock	Vattikonda Bharath ^{1,2} , Poonam Arora ^{1,2} Aishik Acharya ^{1,2} , Suchi Yadav ¹ , Ashish Agarwal ^{1,2} , Amitava Sengupta ^{1,2}	1Time& Frequency Division, National Physical Laboratory, CSIR, New Delhi. 2Academy of Scientific and innovative research, NPL-Campus, Chennai. Email: bharathv@mail.nplindia.org	bharathv@mail.nplindia.org
83	P075	CLASSIFICATION OF POWER QUALITY EVENTS USING RADIAL BASIS FUNCTION NEURAL NETWORK	Manbir Kaur, Vinit Kumar	Electrical & Instrumentation Engg. Dept. Thapar University, Patiala	mkaur@thapar.edu

84	P076	Progress towards Indigenous Development of a Hydrostatic Pressure Transducer in the Pressure Range up to 500MPa	Afaqul Zafar, Sanjay Yadav, Lalit Kumar, Raman Kumar Sharma, Arif Sanjid, V.K. Gupta	CSIR-National Physical Laboratory, Dr. K. S. Krishnan Marg, New Delhi – 110060.	afaqul@mail.nplindia.org
85	P077	Purity evaluation of chromium chips by gravimetric method	Niranjn Singh, S. Swarupa Tripathy, Rajiv K. Saxena, Prabhat K. Gupta, Nahar Singh	Analytical Chemistry, CSIR- National Physical Laboratory, Dr K.S. Krishnan Marg, New Delhi-11012, India	tripathyss@nplindia.org
86	P078	Long Term Stability of the Primary Torque Standard Machine Established at CSIR-NPL	S.S.K. Titus, Rajesh Kumar, Rakesh Khann, R.M. Manikandan	Force and Hardness Standard, National Physical Laboratory, New Delhi – 110 012.	titus@mail.nplindia.org
87	P079	Novel approaches for the growth of single crystals by Bridgman technique	N. Vijayan, Anuj Krishna, K.K. Maurya	CSIR-National Physical Laboratory, New Delhi-110012	nvijayan@nplindia.org
88	P080	An Inter-comparison Study between two Rockwell Hardness standard Machines	S.S.K. Titus, J.P. Singh, Vikram	Force and Hardness Standard, National Physical Laboratory, New Delhi – 110 012.	titus@mail.nplindia.org
89	P081	Wet and dry deposition of pollutants during diwali festival at central delhi	Sanchita Singhal ¹ , B Kumar ² , S Chandra ¹ , M J Kulshrestha ¹	1CSIR-National Physical Laboratory, New Delhi, India 2Jawaharlal Nehru University, New Delhi, India	sanchita1691@gmail.com

90	P082	Effect of change in acceleration of gravity in accuracy of electronic levels	A. Murugan ¹ , K. Niranjan Reddy ² , H.K. Mallappa ³ , Shashikumar ⁴	1 Nano Manufacturing Technology Centre, Central Manufacturing Technology Institute, Bangalore, India 2,3,4 Ultra Precision Engineering, Central Manufacturing Technology Institute, Bangalore, India	murugan.cmti@nic.in
91	P083	Cavity Ring-Down Spectroscopy technique for the impurity analysis of CH ₄ and H ₂ O in purity Nitrogen gas	Khem Singh, Shankar G. Aggarwal, Daya Soni, Prabhat K. Gupta	Analytical Chemistry, CSIR-National Physical Laboratory, New Delhi 110012, India	khem008@nplindia.org
92	P084	Multipoint Calibration Versus Bracketing Method in determination of Carbon Monoxide in Nitrogen by Gas Chromatograph Technique	Daya Soni, S Koul, Khem Singh, Shankar G. Aggarwal, P Johri, Prabhat K. Gupta	Analytical Chemistry Section, CSIR-National Physical Laboratory, New Delhi 110012, India	dsoni@nplindia.org
93	P085	Experimental study on singularity and wave front tearing in monochromatic dark hollow beam	Rajeev Dwivedi ¹ , VK Jaiswal ^{1,2} , Parag Sharma ^{1,2} , Ranjana Mehrotra ^{1,2}	1Quantum Optics and Photon Physics CSIR-National Physical Laboratory, Dr K S Krishnan Marg, New Delhi 110012 2Academy of Scientific and Innovative Research (AcSIR) CSIR-NPL Campus, Dr K S Krishnan Marg, New Delhi 110012, India E-mail: jaiswalvk@nplindia.org	jaiswalvk@nplindia.org

94	P086	Comparative study of Natural Frequency on an L structure with crack and End mass induced	Mr. J S Thanmay ¹ , Dr H V Ravindra ²	1 Department of Mechanical, Vidya Vikas Polytechnic College, Mysore, Karnataka, India 2 Department of Mechanical, P.E.S College of Engineering, Mandya, Karnataka, India.	thanmaytou@gmail.com
95	P087	Uncertainty Estimation of Metal Determination in Aerosols Listed in NAAQS	Sudhanshu Kumar ^{1,2} , Shankar G. Aggarwal ^{1,2} , Prabhat K. Gupta ²	1Academy of Scientific and Innovative Research (AcSIR), CSIR-National Physical Laboratory Campus, New Delhi, 110012, India 2Analytical Chemistry Section, CSIR-National Physical Laboratory, New Delhi 110012, India	aggarwalsg@nplindia.org
96	P088	Variation in Particle Size Standards within and after Shelf-life Measured using Differential Mobility Analyzer	Bighnaraj Sarangi ^{1,2} , Shankar G. Aggarwal ^{1,2} , Prabhat K. Gupta ²	1Academy of Scientific and Innovative Research (AcSIR), CSIR-National Physical Laboratory Campus, New Delhi, 110012, India 2Analytical Chemistry Section, CSIR-National Physical Laboratory, New Delhi 110012, India	aggarwalsg@nplindia.org
97	P089	Resistively heated atomic oven for single ion trap experiment	S. Panja ¹ , S. De ¹ , N. Batra, A. Roy ¹ , C. Samal ¹ , S. Majhi ¹ , A. Sen Gupta ¹	1CSIR-National Physical Laboratory(Dr. K. S. Krishnan Marg,New Delhi – 110012,India). 2Academy of scientific &innovativeresearch(CSIR road,taramani,Chennai-600113,India).	panjas@mail.nplindia.org

98	P090	Spectroscopic investigations on the adductation of anticancer drug mitoxantrone with tRNA	Shweta Agarwal, Bhumika Ray, Ranjan Mehrotra	CSIR-National Physical Laboratory, Dr. K. S. Krishnan Marg, New Delhi -110012, India	agarwalshweta08@gmail.com
99	P091	Hybrid Nano-Biomaterials: an endeavor to curtail constraints in nonlinear applications	Kaweri Gambhir ^{1,2} , Ranjana Mehrotra ^{1,2} , Parag Sharma ^{1,2}	1Quantum Optics and Photon Physics, CSIR-National Physical Laboratory, Dr. K.S. Krishnan Marg, New Delhi 110012, India 2Academy of Scientific & Innovative Research (AcSIR), CSIR-NPL Campus, New Delhi 110012, India	ranjana@nplindia.org
100	P092	Probing nucleic acid (tRNA) interaction with anti-cancer alkaloid	Bhumika Ray, Ranjana Mehrotra	Quantum Phenomena and Applications, CSIR-National Physical Laboratory, New Delhi-110012, India	ranjana@gmail.com
101	P093	A novel methodology for simulations in metrology using axioms	M. Arif Sanjid ¹ , Sanjay Yadav ² , Sanjoy Ghoshal ³ , K.P. Chaudhary ¹	1Standards of Dimension Division (ALSIM), CSIR- National Physical Laboratory, New Delhi – 110012, 2Pressure & Vacuum Standards (ALSIM), CSIR- National Physical Laboratory, New Delhi – 110012 3Indian School of Mines, Dhanbad,	sanjid@nplindia.org
102	P094	Calibration of Dial Testers using Laser Interferometer at CSIR-NPL, India	M Arif Sanjid, K.P. Chaudhary	Standards of dimension (ALSIM), CSIR - National Physical Laboratory, New Delhi (India)	sanjid@nplindia.org

103	P095	Study of effect of eccentricity and pyramidal error of the polygon calibration	M Arif Sanjid, Ankur Gupta, K.P. Chaudhary	Standards of dimension (ALSIM), CSIR - National Physical Laboratory, New Delhi (India)	sanjid@nplindia.org
104	P096	A New Twin Post Pressure Balance Type Hydraulic Differential Pressure Standard	Sanjay Yadav, Raman Kumar Sharma, Lalit Kumar, Afaqul Zafer	Standards of dimension (ALSIM), CSIR - National Physical Laboratory, New Delhi (India)	syadav@nplindia.org
105	P097	Effect of Burden on Current Transfor	L. Sridhar, M.K. Tamrakar, Shrikrishan, M.A. Ansari	AC High Voltage and High Current Standards CSIR-National Physical Laboratory, Dr. K.S. Krishnan Road, New Delhi -110012	lsridhar@nplindia.org
106	P098	Measurement of the Gravity Induced	Pravesh Mathur, Swapnil Pathak, C K Rao	ISRO SATELLITE CENTRE, BANGALORE	pravesh@isac.gov.in
107	P099	Importance of Temperature suitability test in calibration of domestic water flow meters	I.S. Taak, Chatar Singh, A. Wahid, S.K. Jaiswal	Fluid Flow Measurement Standard CSIR – National Physical Laboratory New Delhi -110012	
108	P100	Study of Oxaliplatin interaction with ctDNA duplex by using Spectroscopic techniques	Bhumika Gupta, Bhumika Ray, Shweta Agarwal, Ranjana Mehrotra	Quantum Optics and Photon Physics National Physical Laboratory (Council of Scientific and Industrial Research) Dr. K.S. Krishnan Road, New Delhi-110012	ranjana@mail.nplindia.org

109	P101	Effect of Pressure on the Two Plates of Ultrasonic Sandwich Transducer for Ultrasonic Cleaning and NDT Applications	Yudhister Kumar Yadav, Reeta Gupta	AUV Standards, CSIR-National Physical Laboratory, New Delhi – 110012	ykyadav@nplindia.org
110	P102	Optical setup for laser cooling, launching and detection of Cesium atoms	Ashish Agarwal ¹ , Poonam Arora ¹ , Aishik Acharya ¹ , A Sengupta ²	1 CSIR-National Physical Laboratory, Dr. K. S. Krishnan Marg, New Delhi 110012 2 The North Cap University, HUDA Sector 23-A, Gurgaon – 122017	ashish@nplindia.org
111	P103	Establishment and Verification of A New PVTt Primary Low Pressure Gas Flow Standard	Ching-Yi Kuo ¹ , Yi-Lin Ho ¹ , Wen-Ti Lin ¹ , Chun-Min Su ¹	1 Center for Measurement Standards, Industrial Technology Research Institute, Hsinchu, Taiwan	CMSu@itri.org.tw
112	P104	Functionalized Cobalt Ferrite Nanoparticles for removal of pathogenic Bacteria: A potential material for diagnostic applications	Raghvendra A Bohara, Shivaji H Pawar	Centre for Interdisciplinary Research D.Y.Patil University, Kolhapur (M.S.), India	raghvendraboehara@gmail.co
113	P105	Uncertainty analysis of developed ANN and ANFIS models in prediction of daily Atmospheric Boundary Layer Height	Kirti Soni ¹ , Naveen Garg ¹ , Kulwinder Singh Parmar ² , Nishant Kumar ³	1CSIR-National Physical Laboratory, New Delhi 2 Department of Mathematics, Dr. B. R. Ambedkar National Institute of Technology Jalandhar, India 3Thapar University, Patiala (Punjab)	soniks@mail.nplindia.org
114	P106	Development of Blackbody Calibrator for IR Clinical Thermometers	R.B. Sibal ¹ , Jagannath Prasad ¹ , D.D. Shivagan ¹ , Y.P. Singh ¹	1 Temperature and Humidity Standards, CSIR- National Physical Laboratory, New Delhi 110 012, India	shivagand@nplindia.org

116	P107	Evaluation of Technical Equivalence of Indian and International Col Testing Methods through ILC based PT Study	S.K. Bareja, Pinky Pandey	National Council for Cement and Building Materials Ballabgarh (India)	
117	P108	Challenges in metrology of Density Functional Theory	Dr. Archana Tripathi ¹ , Ms. Prapti Bajaj ²	1 Gargi College, University of Delhi, Physics Department, New Delhi -110049, India 2 Gargi College, University of Delhi, Physics Department, New Delhi -110049, India	prapti.bajaj@gargi.du.ac.in
121	P109	Development and Realization of Fe-C Eutectic Fixed Point Cell	Umesh Pant ^{1,2} , Hansraj Meena ¹ , Yatendra ¹ , M. Gandhi ¹ , D.D. Shivagan ^{1,2} , Y.P. Singh ¹	1 Temperature and Humidity Standards, CSIR- National Physical Laboratory, New Delhi 110 012 2 Academy of Scientific & Innovative Research, CSIR- National Physical Laboratory, New Delhi 110 012	shivagand@nplindia.org
122	P110	Muscle force measurement from SEMG signals for Exoskeleton Devices	Inderjeet Singh Dhindsa ¹ , Ravinder Agarwal ¹ , Hardeep Singh Ryait ²	1Electrical and Instrumentation Engineering Dept., Thapar University, Patiala, India 2Electronic and Communication Engg Dept. BBSBEC, Fatehgarh Sahib, Punjab, India	ravinder_eeed@thapar.edu

123	P111	Road Distress Measurement Equipment	Y.C. Tewari ¹ , Renu Chadda ² , R. P. Saini ³	1 Principal Scientist, Instrumentation Division, CSIR-CRRI, New Delhi, India 2 Senior Technical Officer, Instrumentation Division, CSIR-CRRI, New Delhi, India 3 Senior Technical Officer, Instrumentation Division, CSIR-CRRI, New Delhi, India	yogesh.crri@gmail.com
124	P112	Graphene Oxide Thin Films for Oral Cancer Immunosensor	Namrata Pachauri ^{1,3} , Shilpi Verma ^{2,4} , Manjri Singh ^{1,4} , Kavita Arora ⁵ , Surinder P. Singh ¹ , Priti Singh ²	1 Electron and Ion Microscopy, CSIR-National Physical Laboratory, New Delhi-12, India 2 Quantum Phenomena and Applications, CSIR-National Physical Laboratory, New Delhi-110012, India 3 Jayoti Vidyapeeth Women's University, Jaipur-303007, India 4 Academy of Scientific and Innovative Research (AcSIR), Chennai-600113, India 5 Advanced Instrumentation Research Facility, Jawaharlal Nehru University, New Delhi-110067, India	pritchem@gmail.com
125	P113	Preparation, Optimization and in vitro Cytotoxicity Evaluation of Gold Nanoparticles	Deepshikha Yadav ^{1,2} , Manjri Singh ¹ , Braham Dutt ¹ , Archita gupta ² , Ramneek Kaur ² , Manisha Singh ² , Priti Singh ³ , Surinder P. Singh ¹	1 Electron and Ion Microscopy Group, CSIR-National Physical Laboratory, New Delhi-110012 2 Department of Biotechnology, Jaypee Institute of Information Technology, Sector-62, Noida, UP 3 Quantum Phenomena and Applications, CSIR-National Physical Laboratory, New Delhi-110012	singhsp3@mail.nplindia.org

126	P114	Time dependent Variation of Correlated Color Temperature in Solid State Lighting	Mukul Singh, Rajat K. Mukherjee, Naval Manchalwar, Sudama, Parag Sharma, V.K. Jaiswal, Ranjana Mehrotra	CSIR-National Physical Laboratory, Dr. K.S. Krishnan Marg, New Delhi-110012 INDIA	ranjana@nplindia.org
127	P115	Ultra Low Power Optical Transmission Measurements in ND Filter	Parag Sharma ^{1,2} , V.K. Jaiswal ^{1,2} , Ranjana Mehrotra ^{1,2}	1 CSIR-National Physical Laboratory, Dr. K.S. Krishnan Marg, New Delhi-110012, INDIA 2 Academy of Scientific and Innovative Research (AcSIR), NPL Campus, New Delhi-110012, INDIA	sharmap2@nplindia.org
128	P116	Study of Luminous Flux Decay during Initial Burning Hours in LED Bulbs	Rajat Kumar Mukherjee, Mukul Singh, Parag Sharma, V.K. Jaiswal, Ranjana Mehrotra	Optical radiation Standards, CSIR-National Physical Laboratory, Dr. K.S. Krishnan Marg, New Delhi-110012 INDIA	ranjana@nplindia.org
129	P117	Investigation of Magnetic Property of Weights using Indigenous developed Magnetic Susceptometer at NPLI	Goutam Mandal ¹ , Manoj Kumar ¹ , Dinesh Chandra Sharma ¹ , Anil Kumar ¹ , Sanjay Mandal ²	1 CSIR - National Physical Laboratory, Dr. K. S. Krishnan Road, New Delhi, India 2 Indian School of Mines, Dhanbad, Jharkhand, India	goutam@nplindia.org
131	P119	Evaluation of Critical Geometrical Parameters and Alignment Corrections of Large Size Aerospace Systems	R. Ashok Ponram, B. Hari Prasad, Dr. S, Sai Kumar	Directorate of Engineering, DRDL, Hyderabad, India	ashokponram@rediffmail.com
132	P120	Initial Temporal Variation of Correlated Color Temperature in same Brand Different Wattage LED Bulbs	Sudama, Mukul Singh, Rajat K. Mukherjee, Naval Manchalwar, Parag Sharma, V.K. Jaiswal, Ranjana Mehrotra	Optical Radiation Standards, CSIR-National Physical Laboratory, Dr. K.S. Krishnan Marg, New Delhi-110012 INDIA	ranjana@nplindia.org

133	P121	Nonlinear optical transmission in sheet polarizer in ultralow power regime	V.K. Jaiswal ^{1,2} , Parag Sharma ^{1,2} , Ranjana Mehrotra ^{1,2}	1 CSIR-National Physical Laboratory, Dr. K.S. Krishnan Marg, New Delhi-110012, INDIA 2 Academy of Scientific and Innovative Research (AcSIR), NPL Campus, New Delhi-110012, INDIA	jaiswalvk@nplindia.org
134	P122	Uncertainty Estimation in PM10 mas	Jyoti Pokhariyal ¹ , Shankar G. Aggarwal ¹ , Sumit K. Mishra ¹ , Anubha Mandal ² , Prabhat K. Gupta ¹	1 Analytical Chemistry Section, CSIR-National Physical Laboratory, New Delhi, India 2 Department of Environmental Engineering, Delhi Technological University, Delhi, India	aggarwalsg@nplindia.org
135	P123	An Inter-comparison Study between two Vickers Hardness standard Machines	S.S.K.Titus, Girish, Vikram	Force and Hardness Standard, National Physical Laboratory, New Delhi – 110 012	titus@mail.nplindia.org
136	P124	Reliable measurements by quality co	Avijit Das	NABL, Delhi , India	avijit@nabl-india.org
137	P125	Air Quality Measurements According	Deepak Sinha ^{1,2} , Shankar G. Aggarwal ³ , Bighnaraj Sarangi ³ , Aditi Deopujari ⁴	1Government Nagarjuna Post Graduate College of Science, Raipur 492010, CG, India. 2Member State Expert Appraisal Committee Chhattisgarh, MoEF&CC, Government of India 3CSIR-National Physical Laboratory, New Delhi 110012, India 4Indian Institute of Environmental Medicine, Sane Guruji Marg, Mumbai 400011, India	drsinha@gcsrcg.org

139	P126	Nanomagnetic Fluid Based High Pre	Komal Jain ^{1,2} , Saurabh Pathak ^{1,2} , Sumit Mohan ¹ , Vinod Kumar ³ , Y.P. Singh ¹ , R.P. Pant ¹	1 CSIR-National Physical Laboratory, New Delhi, India) 2 AcSIR, Chennai, India 3DCRUST, Murthal, Haryana, India	rppant@nplindia.org
140	P127	The effect of dilution on dipolar intera	NoorJahan ^{1,2} , DhruvBakshi ¹ , A. Rathi ^{1,2} , Komal Jain ^{1,2} , G A Basheed ^{1,2} , R P Pant ^{1,2}	1-CSIR-National Physical Laboratory, Dr. K.S. Krishna road New Delhi, 110012, India 2-AcSIR-NPL campus, New Delhi 110012, New Delhi 110012	rppant@nplindia.org
141	P128	Reference material for calibration sta	Suman Dhayia, A.K. Srivastava, Sukhvir Singh ¹	Electron & Ion Microscopy CSIR-National Physical Laboratory, New Delhi110012, India	sukhvir@nplindia.org
142	P129	Mismatch Transfer Standard: S- par	Jyoti Chauhan ¹ , Satya K. Dubey ^{1*} , Parmendra S. Negi ¹ and Vijay N. Ojha ¹	1 CSIR-National Physical Laboratory (Microwave Standards, CSIR-NPL, New Delhi, India)	dubeysk@nplindia.org
143	P130	Accuracy in Analysis of Cd, Cr and P	Santwana H. Dhongade ¹ , Vilas M. Shinde ² , N. N. Rao ¹ , Rita S. Dhodapkar ¹	1Wastewater Technology division, CSIR-National Environmental Engineering Research Institute, Nagpur, India 2 Analytical instruments division, CSIR-National Environmental engineering Research Institute, Nagpur, India	rs_dhodapkar@neeri.res.in
144	P131	VALIDATION OF 6½ DIGITS PREC	Sunidhi Luthra, Swati kumari, Bijendra Pal, Saood Ahmad, P.S. Negi, V.N. Ojha	CSIR-National Physical Laboratory New Delhi-12	madaansunidhi@nplindia.org

146	P132	Evaluation of trends in physiological	Sachin Gupta, Susheel Mittal	Electrical and Instrumentation Department	ravinder_eed@thapar.edu
148	P133	Establishment of Chilled Mirror Hygr	Gaurav Gupta ¹ , D. D. Shivaga ¹	Temperature and Humidity Standards, CS	guptag2@nplindia.org
150	P134	HRTEM for Nano metrology	J. Sharma and V.N. Singh [*]	CSIR-National Physical Laboratory, New D	vidyanands@gmail.com

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