Poster Session

| September 18 ^{Mon.} | Conference Room E (Lobby) / 15:15~16:25 |

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Intelligent Measurement and Instrumentation

A029 Creation and utilization of straightness standard due to reciprocal measurement of linear stage
Yusuke SAKAUCHI*, Ryoshu FURUTANI
Tokyo Denki University (Japan)

A064 A method for error estimation and alignment feedback of heterodyne interferometry based on single PMF
Yibin Qian*, Jiakun Li, Fajia Zheng, Fei Long, Qibo Feng
Beijing Jiaotong University (China)

A075 High-precision roll measurement method based on laser polarization
Fei Long*, Fajia Zheng, Yibin Qian, Jiakun Li, Qibo Feng
Beijing Jiaotong university (China)

A080 Resonant mirror based laser direct lithography instrument
Junhee Jo*, Hyungjun Lim, Seokyoung Ji, Wonseok Chang
Korea Institute of Machinery and Materials (South Korea)

A087 Real-time 3D surface reconstruction of deflectometry using deep learning
In-Kyu Park*, Young-Sik Ghim, Hyug-Gyo Rhee
University of Science and Technology (South Korea)

A094 Photometric stereo for anisotropic reflectance with tangent estimation
Xi Wang*, ZhenXiong Jian, MingJun Ren
Shanghai Jiao Tong University (China)

A121 Slopes-based wavefront reconstruction method in Cartesian grid geometry
Vu Hai Linh Nguyen*, Hyug-Gyo Rhee, Young-Sik Ghim
University of Science and Technology (South Korea)

A143 Phase plate fabrication process to simulate the turbulence effects on an optical imaging system in Korean atmospheric circumstances
Han-gyol Oh, Pilseong Kang, Jaehyun Lee, Hyug-gyo Rhee, Young-sik Ghim
Korea Research Institute of Standards and Science (South Korea)

A152 Fatigue life improvement of rear axle gearbox in agricultural vehicles by optimizing gear macro-geometry
Jae-Hyun Kim*, Dong-Joo Moon, Dongu Im, Tae Ick Moon, Seung-Hwa Yu, Young-Jun Park
Seoul National University (South Korea)

A169 Fast infrared small target detection based on improved weighted global contrast measurement
Yixuan Zhang, Hong Chang*, Yuxiang Feng, Ye Tang
Beijing Aerospace Institute for Metrology and Measurement Technology (China)

In-Process and On-Line Measurement

A140   An on-line surface quality detection method for wide cold-rolled strip based on normalizing flow

Pan Jiang, Zhenying Xu*, Liling Han, Yun Wang, Ziqian Wu
Jiangsu University (China)

A148   Management system using docker and robot middleware framework

Min Cheol Park*, Seung-Hun Kim
Korea Electronics Technology Institute (South Korea)

A163   Actual process synchronized simulation of deposited geometry in DED process

Segon Heo*, Min-Kyo Jung, Taeho Ha
Korea Institute of Machinery and Materials (South Korea)

A177   Measurement technology for quality improvement in 3D printing processes

Jiyong Park
Korea Institute of Industrial Technology (South Korea)

A187   Extrusion quality monitoring for screw-based 3D printer using computer vision

Song Hyeon Ju, Sang Il Kim, Jungsoo Nam*
Korea Institute of Industrial Technology (South Korea)

A189   Image-based monitoring approach for an in-situ analysis of the vapour plume behaviour of PBF-LB/M manufactured titanium alloys

E. Uhlmann, J. Polte, M. Bösing*
Fraunhofer Institute for Production Systems and Design Technology (Germany)

Machine Tool Metrology

A060   Determination of candidate temperature points for thermal error modeling of five-axis machine tools based on finite element analysis

Lei Cao*, Gyungho Khim, Jeong Seok Oh, Seung-Kook Ro, Chang-Kyu Song
Korea Institute of Machinery and Materials (South Korea)

A127   Diagnosis of high-speed ball-bearing spindles by data mining of dynamic responses from various rotating elements

Jiwan Kang*, Changhyuk Lim, Heeyoung Maeng, Keun Park
Seoul National University of Science and Technology (South Korea)

Material Characterization

A019   Study on microstructure, strengthening mechanism and wear resistance of fe-based alloy cladding layer reinforced with TiC by laser cladding

L.J. Cui*, P.X. WANG, S.R. Guo, J.H. ZHANG, Z. CHEN, W.D. ZHOU, G.M. LIU, W.L. LI, D.F. WANG, Y.M. TIAN
Zhongyuan University of Technology (China)

Micro/Nano-Metrology

A003   Laser self-mixing grating interferometry for multi-dimensional displacement sensing

Dongmei Guo*, Zhanwu Xie, Wei Xia, Ming Wang
* Nanjing Normal University (China)

A024   Laser induced silver ink-doping porous graphene based on natural wood for sensitive SERS detection

Tongmei Jing*, Manping Wang, Han Ku Nam ,Truong-Son Dinh Le, Rongke Gao, Seung-Woo Kim, Young-Jin Kim, Liandong Yu
* China University of Petroleum (UPC) (China)

A027   Influence of laser fabricating parameters on the surface hydrophobicity of laser-induced graphene on wood

Manping Wang*, Tongmei Jing, Han Ku Nam, Truong-Son Dinh Le, Yang Lu, Seung-Woo Kim, Liandong Yu, Young-Jin Kim
* China University of Petroleum (UPC) (China)

A069   Current modulated self-mixing interference in VCSELs for vibration measurement and sensing: theory and applications

Ming Wang
Nanjing Normal University (China)

A070   Parametric examination of differential evolution algorithm for form error evaluation of non-axisymmetric aspheric surface based on Taguchi method

Hsin-Tung Lin, Kuo-Ming Chang, Wang-Long Li, Yung-Tien Liu*
* National Kaohsiung University of Science and Technology (Taiwan)

A110   Deterministic nanoantenna array design for stable plasmon-enhanced harmonic generation

Tae-In Jeong*, Seungchul Kim
* Pusan National University (South Korea)

A153   High-resolution repairing process of metal patterns using laser ablation for fine-patterned advanced packaging

Hakyung Jeong*, Seung Man Kim, Jae Hak Lee, Jun-Yeob Song, Seongheum Han, Ah-Young Park, Sumin Kang, Hayoung Youn
* Korea Institute of Machinery and Materials (South Korea)

A164   Statistical analysis to improve sub-nano scale surface roughness reliability of Si mirrors for accelerators

Hwanjin Choi*, Wonkyun Lee, Mincheol Kim, Minwoo Jeon, Woo-Jong Yeo, Sangwon Hyun
* Korea Basic Science Institute (South Korea)

A180   A study on SiC wafer thinning process using femtosecond pulse laser

Hayoung Youn*, Seungman Kim, Sumin Kang, Jae Seung Lim, Jae-Hak Lee, Seongheum Han, Ah-Young Park, Jun-Yeob Song
* University of Science and Technology (South Korea)

A184   Work coordinate setup in ultra-precision machine tool using electron tunneling

Sangjin Maeng*, Byungmin Kim
* Hongik University (South Korea)

Optical Metrology and Inspection

A011 Measurement of the axial displacement error of a segmented mirror using a Fizeau interferometer

Ha-Lim Jang*, Jae-Hyuck Choi, Jae-Bong Song, Hagyong Kihm
University of Science and Technology (South Korea)

A030 Single shot radial constant shearing interferometry with axicon lenes using polarization camera

Hiroyuki Akiyama*, Ryoshu Furutani
Tokyo Denki University (Japan)

A031 A study of common path length and angle measurement interferometer

Kota Ishii*, Ryoshu Furutani
Tokyo Denki University (Japan)

A036 Optical sectioning structured illumination microscopy with improved lateral resolution

Jong-Kyu Park*, Ki-Nam Joo
Chosun University (South Korea)

A038 Multiplexed optical spectrometer with high resolution in the wide spectral range

Jin Hee Cho*, Ki-Nam Joo
Chosun University (South Korea)

A050 Development of a table-top surface inspection system based on phase-measuring deflectometry

Sangwon Hyun*, Kyesung Lee
Korea Basic Science Institute (South Korea)

A053 Characterization of polarization structured illumination microscopy

Minseo Cho*, Ki-Nam Joo
Chosun University (South Korea)

A055 Enhancement of third-order harmonic generation using upconversion nanoparticle coated on the borosilicate glass

Taewon Kim*, Won-Woo Noh, Seungjai Won, Murad Abualrejal, Geon Dae Kim, Donghwan Kim, Young-Jin Kim
Korea Advanced Institute of Science and Technology (South Korea)

A057 Measurement and analysis of atmospheric effects for free-space optical communication

Jaehyeon Lim*, Dong Il Lee, Shinhyung Kim, Seung-Woo Kim, Young-Jin Kim
Korea Advanced Institute of Science and Technology (South Korea)

A068 Polarized dual low-coherence scanning interferometry using a polarization camera and the dual low coherence characteristics

Seon-Ile Seo*, Seong-Wook Jang, Ki-Nam Joo
Chosun University (South Korea)

A088 Effect of actuator position on parasitic motion reduction in tip-tilt-piston stage guided by flexure mechanism

Hyeeun Yun*, Minseok Kim, Joohyung Lee, Dahoon Ahn
Seoul National University of Science and Technology (South Korea)

A108 In vivo moiré sensing technology for quantitative evaluation of bio-materials

Geehong Kim*, Soongeun Kwon, Semin Kim, Won-Gun Koh
Korea Institute of Machinery and Materials (South Korea)

A109 Chromatic confocal sensor based on a geometric phase lens

Min Kwan Song*, Ki-Nam Joo
Chosun University (South Korea)

A135 The development of a high-speed linear stage straightness measurement system using the industrial camera
Chun-Jen Chen*, Yi-Hung Yang
National Formosa University (Taiwan)

A145 Fourier transform spectrometer based on broadband infrared light source using supercontinuum generation method
Jungyoon Kim*, Woojeong Lee, Joohyung Lee
Seoul National University of Science and Technology (South Korea)

A146 Relative MTF measurement method for push-broom hyperspectral imager
Tri Nguyen*, Huy Vu, Joohyung Lee
Seoul National University of Science and Technology (South Korea)

A147 High-resolution hyperspectral imaging payload for small-satellite based on a dual sensing
Huy Vu*, Van Tri Nguyen, Dea-soo Oh, Sang-jun Seo, Joohyung Lee
Seoul National University of Science and Technology (South Korea)

A159 Accurate measurement of micro-gap in roll-to-roll equipment using optical diffraction patterns
Hwijun Koo*, Jinsu Choi, Dongwoo Kang ,Seung-Hyun Lee, Hongki Yoo
Korea Advanced Institute of Science and Technology (South Korea)

Sensors and Actuators

A020 Study on the influence of cycloidal gear pin tooth wear on transmission error of precision planetary cycloidal reducer
Hang Xu*, Xianxing Liu, Chenzhou Wei, Yuanchun He, Guiping Xie, Yaoting Wu
Henan University (China)

A063 Design and performance analysis of a MEMS-based LiDAR by range equation
Heesuk Jang*, Hajun Song, Hansol Jang, Hae Seog Koh, Taehyun Yoon
Agency for Defense Development (South Korea)

A083 Development of wireless communications system to collect foot pressure data generated during gait
Kyeong-Jun Seo*, Junhyeok Ham, Ji-Eun Cho ,Hogene Kim, Jung Hwan Kim
National Rehabilitation Center (South Korea)

A089 Fault analysis of transformer using tunable infrared gas sensors
Gun-Ho Lee, SeungHwan Yi*
Korea National University of Transportation (South Korea)

A092 Wearable colorimetric sweat pH sensor-based smart textile for cystic fibrosis monitoring
Ji-Hwan Ha*, Junseong Ahn, Yongrok Jeong, Byeongmin Kang, Sohee Jeon, Soonhyong Hwang, Inkyu Park, Jun-Ho Jeong
Korea Institute of Machinery and Materials (South Korea)

A093 Development of piezo-transmittive mechanical metamaterial for self-powered strain sensor
Junseong Ahn*, Jimin Gu, Ji-Hwan Ha ,Soon Hyoung Hwang, Sohee Jeon, Inkyu Park, Jun-Ho Jeong
Korea Institute of Machinery and Materials (South Korea)

A113 Biomimetic virus-based gas sensor measured with plasmon-assisted photothermoelectric effect
Sehyeon Kim*, San Kim, Taein Jeong, Seungchul Kim
Pusan National University (South Korea)

A123   Ultra-sensitive gas sensor of nanobiomaterials using convolution neural networks based on hyperspectral analysis

Eunji Choi*, Tae-In Jeong, Seungchul Kim
Pusan National University (South Korea)

A138   Fabrication of nanohole arrays using a nano-printer for extraordinary optical transmission

Eunju Yang*, San Kim, Seungchul Kim
Pusan National University (South Korea)

A141   Ion beam figuring process for ultrafine precision optical components

Seungsik Shin*, Yeon Hwang, Seunghwoi Han
Chonnam National University (South Korea)

Signal Processing and Machine Learning

A118   Advancing optical coherence tomography image quality through interference fringe-leveraged deep learning

Woojin Lee*, Hyeong Soo Nam, Jae Yeon Seok ,Wang-Yuhl Oh, Jin Won Kim, Hongki Yoo
Korea Advanced Institute of Science and Technology (South Korea)

A132   Measurement and interpretation of ionization properties of CxFy molecules through quadrupole mass spectrometry

Mi-Young Song*, Dae-Chul Kim, Nidhi Shinha, Sanghyeok Park
Korea Institute of Fusion Energy (South Korea)

A139   Unsupervised learning-based anomaly detection for high-speed non-destructive industrial inspection using multi-digital X-ray tubes

Sunghoon Choi*, Jin-Woo Jeong, Jae-Woo Kim, Jun-Tae Kang, Sora Park, Yoon-Ho Song
Electronics and Telecommunications Research Institute (South Korea)

A151   Real-time compensation for thermal error reduction in diamond turning based on temperature monitoring and neural network prediction

Woo-Jong Yeo*, Hwan-Jin Choi, Minwoo Jeon, Mincheol Kim, Sangwon Hyun, I Jong Kim, Min-Gab Bog, Young-Jae Kim, Wonkyun Lee
Korea Basic Science Institute (South Korea)

A173   Use case of image segmentation and machine learning for characterizing nanoparticles in scanning electron microscope images

Byong Chon Park*, Min Jeong Kwak, In Yong Park
Korea Research Institute of Standards and Science (South Korea)

A194   Using genetic algorithms for geometric calibrations of X-ray computed tomography equipment

Chia-Hung Liao, Shih-Chieh Lin*
National Tsing Hua University (Taiwan)

Frequency Comb: Fundamentals & Applications

A037   Study on length measurement method using optical frequency comb

Keito Nagata*, Nobukazu Ishii, Ryoshu Furutani

Tokyo Denki University (Japan)

A073   Development of frequency comb-based free-space optical communication system with compensation for atmospheric effects

Shinhyung Kim*, Dong Il Lee, Jaehyeon Lim, Seung-Woo Kim, Young-Jin Kim

Korea Advanced Institute of Science and Technology (South Korea)

A117   Chip-scale flexible materials enable highly-enhanced acoustic phase modulation for direct frequency comb spectroscopy

San Kim*, Tae-In Jeong, Sehyeon Kim, Young-Jin Kim, Seungchul Kim

Pusan National University (South Korea)