

# **International Symposium on Optomechatronics Technology 2015 (ISOT 2015)**

MATEC Web of Conferences Volume 32 (2015)

Neuchatel, Switzerland  
14 - 16 October 2015

**Editor:**

**Yves Bellouard**

ISBN: 978-1-5108-1749-4

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

This work is licensed under a Creative Commons Attribution license:  
<http://creativecommons.org/licenses/by/2.0/>

**You are free to:**

**Share** – copy and redistribute the material in any medium or format.

**Adapt** – remix, transform, and build upon the material for any purpose, even commercial.

The licensor cannot revoke these freedoms as long as you follow the license terms.

**Under the following terms:**

You must give appropriate credit, provide a link to the license, and indicate if changes were made.

You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. The copyright is retained by the corresponding authors.

Printed by Curran Associates, Inc. (2016)

For additional information, please contact EDP Sciences – Web of Conferences  
at the address below.

EDP Sciences – Web of Conferences  
17, Avenue du Hoggar  
Parc d'Activité de Courtabœuf  
BP 112  
F-91944 Les Ulis Cedex A  
France

Phone: +33 (0) 1 69 18 75 75

Fax: +33 (0) 1 69 28 84 91

[contact-edps@webofconferences.org](mailto:contact-edps@webofconferences.org)

**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  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

<b>2D MEMS SCANNER INTEGRATING A POSITION FEEDBACK</b> .....	1
<i>Lani Sebastien, Bayat Dara, Despont Michel</i>	
<b>2D MEMS ELECTROSTATIC CANTILEVER WAVEGUIDE SCANNER FOR POTENTIAL IMAGE DISPLAY APPLICATION</b> .....	6
<i>Gu Kebin, Lin Keng-Ren, Wang Wei-Chih</i>	
<b>MEMS ACCELERATION SENSOR WITH REMOTE OPTICAL READOUT FOR CONTINUOUS POWER GENERATOR MONITORING</b> .....	13
<i>Tormen Maurizio, Timotijevic Branislav, Pétremand Yves, Lützel Schwab Markus, Bayat Dara Zaman, Jacquat Yvan, Aebi Laurent</i>	
<b>MULTIPHYSICS &amp; PARALLEL KINEMATICS MODELING OF A 3DOF MEMS MIRROR</b> .....	17
<i>Mamat N., Rabenoroso K., Clévy C., Lutz P., Xie H.</i>	
<b>FEMTOSECOND LASER FABRICATION OF OPTOFLUIDIC DEVICES FOR SINGLE CELL MANIPULATION</b> .....	23
<i>Bragheri Francesca, Vazquez Rebeca Martinez, Paiè Petra, Yang Tie, Minzioni Paolo, Cristiani Ilaria, Osellame Roberto</i>	
<b>HOLOGRAPHIC VECTOR-WAVE FEMTOSECOND LASER PROCESSING FOR FABRICATION OF ORIENTATION-CONTROLLED NANOSTRUCTURES</b> .....	27
<i>Hasegawa Satoshi, Hayasaki Yoshio</i>	
<b>3D ELECTROSTATIC ACTUATOR FABRICATED BY NON-ABLATIVE FEMTOSECOND LASER EXPOSURE AND CHEMICAL ETCHING</b> .....	31
<i>Yang Tao, Bellouard Yves</i>	
<b>VISUALIZATION OF FEMTOSECOND LASER-INDUCED STRESS ANISOTROPY IN AMORPHOUS AND CRYSTALLINE MATERIALS</b> .....	37
<i>McMillen Ben, Chen Feng, Bellouard Yves</i>	
<b>FEMTOSECOND LASER INDUCED UNDERWATER SUPEROLEOPHOBIC SURFACES</b> .....	44
<i>Yong Jiale, Chen Feng, Yang Qing</i>	
<b>PROCESSING OF GRAPHENE COMBINING OPTICAL DETECTION AND SCANNING PROBE LITHOGRAPHY</b> .....	45
<i>Zimmermann Sören, van Dillen Alexander, Wieghaus Markus, Fatikow Sergej</i>	
<b>3D MICRO-OPTICAL ELEMENTS FOR GENERATION OF TIGHTLY FOCUSED VORTEX BEAMS</b> .....	51
<i>Balcytis Armandas, Hakobyan Davit, Gabalis Martynas, Žukauskas Albertas, Urbonas Darius, Malinauskas Mangirdas, Petruškevičius Raimondas, Brasselet Etienne, Juodkazis Saulius</i>	
<b>ON-MACHINE MEASUREMENT OF CUTTING TOOL EDGE PROFILE BY DETECTING FLUORESCENCE FROM CUTTING FLUID</b> .....	56
<i>Maruno Kenji, Michihata Masaki, Mizutani Yasuhiro, Takaya Yasuhiro</i>	
<b>INVESTIGATION ON TOOL FUNCTION AND REMOVAL CHARACTERISTICS FOR BONNET SURFACING</b> .....	61
<i>Feng Yunpeng, Cheng Haobo</i>	
<b>ON-CHIP FABRICATION OF GLASS SPHERE LASER</b> .....	67
<i>Kishi Tetsuo, Kumagai Tsutaru, Yano Tetsuji</i>	
<b>OPTOMECHATRONICS FOR BIOMEDICAL OPTICAL IMAGING: AN OVERVIEW</b> .....	69
<i>Cho Hyungsuck</i>	
<b>LENS-FREE AND PORTABLE QUANTITATIVE PHASE MICROSCOPE USING A DUAL-PINHOLE APERTURE</b> .....	75
<i>Lu Yujie, Liu Yunhui, Wang Zerui, Zheng Fan</i>	
<b>A HOLOGRAPHIC DISPLAYING SYSTEM FOR GASTROSCOPY DIAGNOSIS</b> .....	78
<i>Lu Yukying, Lee Shara W.Y., Kim Khaw, Du Ruxu</i>	
<b>SELF-PROPELLED MAGNESIUM BASED MICROMOTORS: SYNTHESIS AND MAGNETIC STEERING</b> .....	83
<i>Jin Dongdong, Yu Jiangfan, Chan Ka Hei, Zhang Li</i>	
<b>A WIRELESS VISUAL ATTENTION BRAIN SIGNAL MONITORING SYSTEM</b> .....	88
<i>Massai Simone, Routhu Sudhamayee, Wright Dustin, Moon Kee S., Ozturk Yusuf, Lee Sung Q</i>	
<b>6DOF OPTICAL TRACKING SYSTEM USING AFOCAL OPTICS FOR IMAGE GUIDED SURGERY</b> .....	94
<i>Chae You Seong, Lee Seung Hyun, Lee Hyun Ki, Cho Hyungsuck, Kim Min Young</i>	

<b>MOTION COMPENSATION OF TENDON-SHEATH DRIVEN CONTINUUM MANIPULATOR FOR ENDOSCOPIC SURGERY .....</b>	<b>97</b>
<i>Lau K. C., Leung Esther Y. Y., Poon Carmen C. Y., Chiu Philip W. Y., Lau James Y. W., Yam Y.</i>	
<b>POSE ESTIMATION OF SURGICAL INSTRUMENT USING SENSOR DATA FUSION WITH OPTICAL TRACKER AND IMU BASED ON KALMAN FILTER.....</b>	<b>103</b>
<i>Oh Hyunmin, Chae You Seong, An Jinung, Kim Min Young</i>	
<b>REGION OF INTEREST SELECTION INTERFACE FOR WIDE-ANGLE ARTHROSCOPE .....</b>	<b>108</b>
<i>Jung Kyunghwa, Kekatpure Ashay. L., Hong Hanpyo, Adikrishna Arnold, Jeon In-Ho, Cho Hyung-Suck, Hong Jaesung</i>	
<b>DESIGN AND DEVELOPMENT OF NONLINEAR OPTICAL MICROSCOPE SYSTEM: SIMPLE IMPLEMENTATION WITH EPI-ILLUMINATION PLATFORM.....</b>	<b>111</b>
<i>Ryu Jiheun, Kim Jayul, Kim Hyunjun, Yoo Hongki, Gweon Daegab</i>	
<b>PARAMETRIC OPTIMIZATION FOR HIGH SPEED FLIM IMPLEMENTATION .....</b>	<b>115</b>
<i>Kim Jayul, Ryu Jiheun, Gweon Daegab</i>	
<b>FLUORESCENCE MICROSCOPE BY USING COMPUTATIONAL GHOST IMAGING.....</b>	<b>119</b>
<i>Mizutani Yasuhiro, Shibuya Kyuki, Iwata Tetsuo, Takaya Yasuhiro</i>	
<b>EVALUATION OF MICRO STRUCTURE BY FUSION OF THREE DIMENSIONAL SHAPE MEASUREMENT AND ULTIMATE ANALYSIS USING SEM .....</b>	<b>123</b>
<i>Arai Yasuhiko</i>	
<b>CLOSED-LOOP AUTOFOCUS SCHEME FOR SCANNING ELECTRON MICROSCOPE.....</b>	<b>126</b>
<i>Cui Le, Marturi Naresh, Marchand Eric, Dembélé Sounkalo, Piat Nadine</i>	
<b>EFFICIENT TRIGGER SIGNAL GENERATION FROM WASTED BACKWARD AMPLIFIED STIMULATED EMISSION AT OPTICAL AMPLIFIERS FOR OPTICAL COHERENCE TOMOGRAPHY .....</b>	<b>132</b>
<i>Kim Seung Taek, Kim Hyung Tae, Cho Young June, Eom Tae Joong</i>	
<b>HIGH PRECISION STOKES POLARIMETRY FOR SCATTERING LIGHT USING WIDE DYNAMIC RANGE INTENSITY DETECTOR .....</b>	<b>137</b>
<i>Shibata Shuhei, Hayasaki Yoshio, Otani Yukitoshi, Yatagai Toyohiko</i>	
<b>AN APPLICATION OF MUELLER MATRIX POLARIMETRY FOR CHARACTERISING PROPERTIES OF THIN FILM WITH SURFACE ROUGHNESS .....</b>	<b>141</b>
<i>Phan Quoc-Hung, Lo Yu-Lung</i>	
<b>GENERATING SELECTED COLOR USING RGB, AUXILIARY LIGHTS, AND SIMPLEX SEARCH .....</b>	<b>143</b>
<i>Kim HyungTae, Kim SeungTaek, Kim Jongseok, Jin KyungChan, Kim Hong-Seok</i>	
<b>LINEAR ENCODER BASED LOW FREQUENCY INERTIAL SENSOR.....</b>	<b>148</b>
<i>Collette Christophe, Lambert Pierre, Hellegouarch Sylvain, Roza Lionel Fueyo, Artoos Kurt</i>	
<b>MICROROBOTIC STATION FOR NANO-OPTICAL COMPONENT ASSEMBLY .....</b>	<b>153</b>
<i>Komati Bilal, Clévy Cédric, Courjal Nadège, Ulliac Gwenn, Lutz Philippe</i>	
<b>PLATFORM-BASED SHEAR FORCE SENSOR.....</b>	<b>156</b>
<i>Wang Wei-Chih, Chang Tien-Hao, Tsui Chi-Leung</i>	
<b>A MULTI-VIEW STEREO BASED 3D HAND-HELD SCANNING SYSTEM USING VISUAL-INERTIAL NAVIGATION AND STRUCTURED LIGHT.....</b>	<b>161</b>
<i>Ayaz Shirazi Muhammad, Danish Khan, Bang Joon-Young, Park Soo-In, Roh YoungJun, Kim Min Young</i>	
<b>SPECKLE REDUCTION FOR A LASER LIGHT SECTIONING SENSOR .....</b>	<b>166</b>
<i>Tutsch Rainer, Han Sida, Dierke Hanno</i>	
<b>DEFECT DETECTION IN PIPES USING A MOBILE LASER-OPTICS TECHNOLOGY AND DIGITAL GEOMETRY .....</b>	<b>170</b>
<i>Tezerjani Abbasali Dehghan, Mehrandezh Mehran, Paranjape Raman</i>	
<b>DESIGN OF A VISION GUIDED QUAD-LEGGED ROBOT.....</b>	<b>176</b>
<i>Park Sukhee, Jeong Kyuwon</i>	
<b>DEEP TISSUE WAVEFRONT ESTIMATION FOR SENSORLESS ABERRATION CORRECTION.....</b>	<b>179</b>
<i>Ibrahimovic Emina, Taaa Xiaodong, Reinig Marc, Li Qinggele, Kubby Joel</i>	
<b>LARGE MICRO-MIRROR ARRAYS: KEY COMPONENTS IN FUTURE SPACE INSTRUMENTS FOR UNIVERSE AND EARTH OBSERVATION .....</b>	<b>183</b>
<i>Zamkotsian Frederic, Lanzoni Patrick, Canonica Michael, Noell Wilfried, Lani Sebastien</i>	
<b>AN ENCLOSED VARIABLE FOCUSING LENS FOR REMOTE WELDING .....</b>	<b>186</b>
<i>Kuwano Ryoichi, Tokunaga Tsuyoshi, Morita Sho, Okane Yuta, Otani Yukitoshi</i>	
<b>RAPID AUTOMATIC LIGHTING CONTROL OF A MIXED LIGHT SOURCE FOR IMAGE ACQUISITION USING DERIVATIVE OPTIMUM SEARCH METHODS.....</b>	<b>189</b>
<i>Kim HyungTae, Cho KyeongYong, Kim SeungTaek, Kim Jongseok, Jin KyungChan, Lee SungHo</i>	
<b>ADAPTIVE MICRO AXICONS FOR LASER APPLICATIONS.....</b>	<b>194</b>
<i>Wallrabe Ulrike, Brunne Jens, Treffer Alexander, Grunwald Ruediger</i>	
<b>Author Index</b>	