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강릉관광개발공사



사단
법인 한국센서학회
THE KOREAN SENSORS SOCIETY

Oct. 29 (Fri)							
Registration							
08:30-	Venue	Venue	Sandpine	Venue	Ho-Hae	Hae-Woon	
Session / Session Chair	[Invited Oral Session IV] Nano Gas Sensors : Prof. Hyoun-Woo Kim (Hanyang University)	Session / Session Chair	[Young Scientist Forum] : Prof. Dong-Weon Lee (Chonnam Nat'l Univ.) & Dae-Sik Lee, Principal Researcher (ETRI)	Session / Session Chair	[Invited Oral Session V] Wearable Sensors : Prof. Inkyu Park (KAIST)	Session / Session Chair	[Invited Oral Session VI] Nanobio-Optical Sensors : Prof. Ki-Hyun Jeong (KAIST)
09:00-09:20	GC-like Graphene-Coated Quartz Crystal Microbalance Gas Sensor Sung Myung, Principal Researcher (Korea Research Institute of Chemical Technology)	09:00-09:15	Defect-mode-induced Energy Localization of a Phononic Crystal and Its Application to Sensing and Transducing Systems for Elastic Waves Soo-Ho Jo (Seoul Nat'l Univ.)	09:00-09:20	Multi-Functional Soft Sensor for Soft Robots and Machine Learning Prof. Yong-Lae Park (Seoul Nat'l Univ.)	09:00-09:25	Lung Cancer Diagnosis by Deep-learning based Exosomes Plasmonic Signal Analysis Prof. Yeonho Choi (Korea Univ.)
09:20-09:40	Large-scale Fabrication of Highly Ordered Nanostructures via Soft-templating Methods for Gas Sensor Application Prof. Young-Seok Shim (Silla University)	09:15-09:30	Micro-actuator analysis of graphene panels using thermoacoustics Hyun-Kab Kim (KETI)	09:20-09:40	Wearable electronic textiles based on conductive fiber-based mechanical Prof. Jaehong Lee (DGIST)	09:25-09:50	Molecular detection technology using nanoplasmonic biosensor chips Sung-Gyu Park, Director (Korea Institute of Materials Science.)
		09:30-09:45	Facile and Area-Controlled Integration of Graphene Oxide onto Aluminum Nitride Surface Acoustic Wave Resonator for Stable Humidity Detection Soon In Jung (DGIST)				
09:40-10:00	Design of copper halide films for detecting NH3 at room temperature Prof. Ji-Wook Yoon (Jeonbuk Nat'l Univ.)	09:45-09:55	Break Time	09:40-10:00	Principles of energy harvesting for self-powered and wearable touch sensors: case studies Prof. Chang Kyu Jeong (Jeonbuk Nat'l Univ.)	09:50-10:15	On-demand delivery of colloidal plasmonic nanoparticles for ultrasensitive molecular detections Prof. Taewook Kang (Sogang Univ.)
		09:55-10:10	Self-rollable smart stent integrated with wireless pressure sensor for real-time pressure monitoring Nomin-Erdene Eyunbaatar (Chonnam Nat'l Univ.)				
10:00-10:20	Multi-dimensional Nanomaterials for Flexible and Wearable Gas Sensors Prof. Seon-Jin Choi (Hanyang Univ.)	10:10-10:25	Using Machine Learning to estimate Ankle torque by preprocessing EMG sensor data Inwoo Kim (Nonsae Univ.)	10:00-10:20	Three-Dimensional (3D) Electronic Devices Using Stretchable Substrates and Mechanical Buckling Processes Prof. Bong Hoon Kim (Soongsil Univ.)	10:15-10:40	Synergistic combination of plasmonic nanomaterials and analytical methods for Point-of-Care testing Minhee Kang, Principal Researcher (Samsung Medical Center.)
10:20-10:40	Solid Electrolyte Hydrogen Sensor Chong Ook Park, CEO (PSS Inc)	10:25-10:40	Electrical characterization for determining average grain size of polycrystalline graphene Junyeong Lee (Kyungpook Nat'l Univ.)	10:20-10:40	Skin-attachable Bimodal Tactile Sensor and Actuator Device for Wearable Telehaptic Communication Hye Jin Kim, Principal Researcher (ETRI)		
10:40-10:50	Break Time						
Venue	Lakal Ballroom II						
Session / Session Chair	[Plenary Session II] - Session Chair : Dae-Sik Lee, Principal Researcher (ETRI)						
10:50-11:20	Plenary Talk II-1 [Physical Sensors] High Technology Sensor and National R&D Hyo-Derk Park, Research Fellow (NNFC)						
11:20-11:50	Plenary Talk II-2 [Chemical Sensors] Machine Olfaction and It's Applications Prof. Hyung-Gi BYUN (Kangwon Nat'l Univ.)						
11:50-12:20	Plenary Talk II-3 [Biosensors] Biosensors for Diagnosis and Detection Yong Beom SHIN, Chairman (BioNano Health Guard Research Center)						
12:20-12:50	The 30th Anniversary Ceremony of the Korean Sensors Society - Moderator: Dr. Min-Suk OH (KETI)						
12:50-13:40	Lunch - Venue : Lakal Ballroom I & Hansong						
Venue	Lakal Ballroom II	Venue	Sandpine	Venue	On-line (URL : ksensors.online)		
Session / Session Chair	[Industrial Session] Organizer : KSIS, KSIA & COSAR Prof. Kukjin Chun (Seoul National University)	Session / Session Chair	[Special Session I] Micro Gas Sensor Systems for Environmental Monitoring : Prof. Jung Hwan Seo (Hongik Univ.)	Session / Session Chair	[e-Poster Session II] Session Chair : Dae-Sik Lee, Principal Researcher (ETRI) & Prof. Hongsik Park (Kyungpook Nat'l Univ.)		
13:40-14:05	The Challenges of Sensor Company: CAS Corporation History Indy Kim, CEO(CAS.)	13:40-14:00	A micro gas chromatography system for on-site monitoring of environmental hazardous gas mixtures Prof. Jung Hwan Seo(Hongik Univ.)	13:40-15:00	e-Poster Session II		
		14:00-14:10	Design of contaminating sampling device for air pollution gas detection sensor system: Research trend of dilution device Prof. Jeong-Heon Shin(Hongik Univ.)				
14:05-14:30	A Survival Strategy for K-Sensor Industry under Megatrends Sangick Park, CEO(Samyoung S&C)	14:10-14:25	Integration of CNT Adsorbent and nanopattern in gas chromatography sensors Prof. Jong G. Ok(Seoul Nat'l Univ. of Sci. & Tech.)				
14:30-14:55	Inductive Type Sensors for Automotive Kyu-Won Jung, Director (Trwin Co.,Ltd)	14:25-14:40	Structural Factors of Optical Maze-like 3D Thin Shell TiO2 for Photo-induced Ultra-sensitive NO2 Gas Responses: Toward Heatless Chemiresistors Prof. Young-Seok Shim (Silla Univ.)	Venue	Ho-Hae	Hae-Woon	
14:55-15:20	A Review on Lidar Industry in Korea Jong-Taek Chong, CEO (Carnavicom Co. Ltd)	14:40-15:00	Development of alternative core materials for performance improvement of hybrid gas sensor system Wooseok Song, Principal Researcher (KRICT)	Session / Session Chair	[Special Session II] Quantum Sensors : Dr. Taek-Yong Kwon (Korea Research Institute of Standards and Science)	[Special Session III] Advanced Sensors : Prof. Hongsik Park (Kyungpook National University)	
		15:00-15:15	Atomic layer deposition: An efficient tool to prepare highly conformal and precisely controlled nano-materials of noble metals (Ru, Pt, Ir) for various applications Prof. Soo-Hyun Kim (Yeungnam Univ.)	15:00-15:25	III-V Semiconductor-based nanostructures grown by MIST MBE for the application to quantum sensing technology* Jindong Song, Principal Researcher (Korea Institute of Science and Technology)	Simultaneous Measurement of Total Phosphorus and Total Nitrogen Utilizing Photocatalytic Reaction Kyungpook Nat'l Univ.	
15:20-15:35	Break Time	15:15-15:35	Break Time				
15:35-15:55	Contactless RF/MW Sensing Technology for Liquid Kyu Young Lee, CEO (Multipath Co.,Ltd)	15:35-15:55	Classification of gases by dynamic responses of sensor arrays Prof. Kyu-Tae Kim (Korea Univ.)	15:25-15:50	Sensing and imaging magnetic fields using diamond NV centers Sangwon Oh, Principal Research Scientist (Korea Research Institute of Standards and Science)	AI Controlled Active Microfluidic Device Operated by Smartphone for ELISA-based COVID-19 testing Prof. Joon S. Shim (KwangJoon Univ.)	
15:55-16:15	Industrial Sensor Moon-Sik Kang, CEO(InnerSensor, Co.,Ltd)	15:55-16:10	Novel deep learning-based gas detection by time-variant illumination of a single micro LED-embedded photoactivated gas sensor Prof. Inkyu Park (KAIST)	15:50-16:15	Rotation Sensing based on Atomic Spin Precession: Nuclear Magnetic Resonance Gyroscope Sangkyung Lee, Senior Researcher (Agency for defense development)	Simultaneous information and power transmission technology for long-distance communication of unpowered IoT devices Yongju Park, Senior Researcher (Korea Electronics Technology Institute)	
16:15-16:35	Development and commercialization of exhaled gas analyzer based on sensor technology Yong-Sahn Choe, CEO(SenLab Inc)	16:10-16:30	Development of electrochemical CO, HCl gas sensor and gas monitoring technology for air pollution gas detection SeungChul Ha, CEO(Senko)	16:15-16:40	High-sensitivity gravimeter based on an atom interferometer Sang-Bum Lee, Principal Researcher (Korea Research Institute of Standards and Science)	Precise evaluation of electrical properties of physiological solutions Prof. Hongsik Park (Kyungpook Nat'l Univ.)	
16:50-17:10	General Meeting of the Korea Sensors Industry Society						
17:30-20:30	Best Poster Paper Awards & Closing - Venue : Sandpine						
	Business leader's day - Venue : Hansong						

Exhibition

Self-rollable smart stent integrated with wireless pressure sensor for real-time pressure monitoring

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Abstract

Cardiovascular diseases are the leading cause of death in the world [1]. Metal stents have been widely used in vascular treatment for last two decades, it is supports to expand the narrow blood vessels with the help of a balloon catheter. However, sometimes, long term use of intravascular metal stent is associated with the growth of vascular cells. (restenosis- effect of re-narrow) [2]. In order to detect the restenosis at the early stages, it is necessary to use a tiny pressure sensor in the stent to check the blood flow status in real-time. In this paper, we propose a new fabrication method of a smart stent integrated with a passive pressure sensor, which has a unique characteristic of being able to transform itself from a 2d plate to a 3D circular structure through high-temperature heat treatment (Figure 1a). Photosensitive biocompatible SU-8 photoresist is used as a polymer base and all fabrication processes are based on MEMS fabrication technique. The phase and impedance of the wireless pressure sensor is measured after rolling the polymer stent integrated with the LC pressure sensor. The measured results are shown in Fig. 1b and 1c, respectively.

Keywords: LC passive sensor, pressure sensor, polymer stent

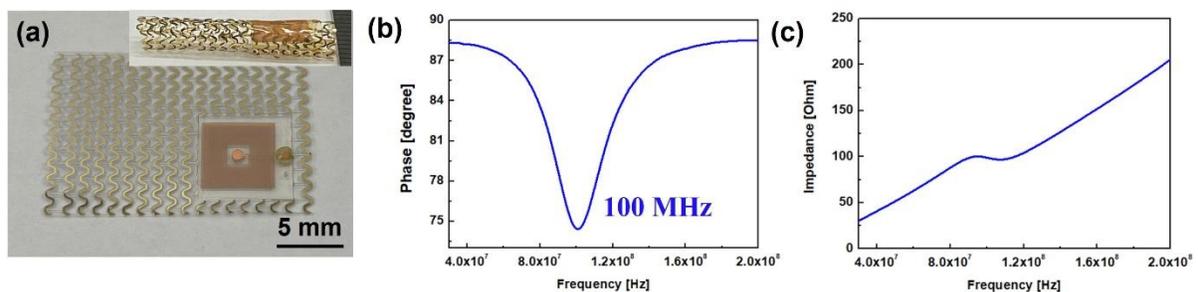


Figure 1. (a) An optical image of a smart stent integrated with a pressure (inset: after thermal treatment at 250 °C for 5 min), (b) phase and (c) impedance characteristics of the fabricated smart stent

References

- [1] J. Park, J.K. Kim, D.S. Kim, A. Shanmugasundaram, S.A. Park, S. Kang, S.H. Kim, M.H. Jeong, and D.W. Lee, "Wireless pressure sensor integrated with a 3D printed polymer stent for smart health monitoring", *Sens. Actuators B Chem.*, Vol. 280, pp. 201-209.
- [2] J. Park, j.K. Kim, S.A. Park, and D.W. Lee, "Biodegradable polymer material based smart stent: Wireless pressure sensor and 3D printed stent", *Microelectron Eng.*, Vol. 206, pp. 1-5.

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