

ISSN 1598-7442

2016년 韓國센서學會 綜合學術大會 論文集

제 27 권 제 1 호

www.sensors.or.kr



- 일시 : 2016년 11월 11일(금) ~ 12일(토)
- 장소 : 경북대학교 테크노파크 IT융합산업빌딩
- 주최 : (사)한국센서학회
- 후원 : 경북대학교
- 공동주최 : 경북대학교 기능성소재융합플랫폼연구센터
경북대학교 반도체융합기술연구원



사단
법인 한국센서학회
THE KOREAN SENSORS SOCIETY

Poster Session

- <http://www.sensors.or.kr>
- P2-5** Smartphone imaging-based label-free dual wavelength detection of estradiol on fluorescent enhanced microarray with high sensitivity and accuracy
Won Il Lee¹⁾, Sajal Shrivastava²⁾, Le-Thay Duy²⁾, Bo Yeong Kim³⁾, Young Min Son¹⁾, Nae-Eung Lee^{1,2,3),†}
¹⁾Department of Advanced Materials Science & Engineering, SKKU, ²⁾Sungkyunkwan University(SAINT), ³⁾Sungkyunkwan University(SAIHST)
- P2-6** Analysis on lung-cancer diagnosis biomarker detection using LSPR and interferometry in nano-porous structure
Sae-Wan Kim, Kyung-Lyul Kim, Young-Woo Park, Oh-Sung Kwon, Cheol-Min Lee, Dong-Kyung Kim, Min-Soo Kim, and Shin-Won Kang[†]
School of Electronics Engineering, Kyungpook National University
- P2-7** Temporal noise analysis of a non-contact respiration detection device based on an IR-UWB device for brain-machine interface
Jaesung Kong¹⁾, Sangwook Park¹⁾, Seong-jun Lee¹⁾, Sung Suk Oh¹⁾, Jong-ryul Choi¹⁾, Bong Keun Kang¹⁾, Jeong-Woo Sohn^{1),†} and Jang-Kyoo Shin²⁾
¹⁾Daegu-gyeongbuk medical intonation Foundation, ²⁾Kyungpook national University
- P2-8** Plasmonic metamaterial absorber as refractive index sensor
Joo-Yun Jung[†]
Korea Institute of Machinery & Materials
- P2-9** Fabrication and evaluation of the wireless inductor-capacitor pressure sensor by using SU-8 polymer
Jongsung Park¹⁾, Swati J. Patil¹⁾, Ji-Kwan Kim²⁾, Dong-Weon Lee^{1),†}
¹⁾Chonnam National University, ²⁾Gwangju University
- P2-10** Tuning the Phase Transition Properties of Vanadium Dioxide Thin Film for Thermal Biosensor
Soo Deok Han^{1,2)}, Bo Yun Kim²⁾, Jin-Sang Kim¹⁾, Sahn Nahm²⁾ and Chong-Yun Kang^{1,2),†}
¹⁾Center for Electronic Materials Research, KIST, ²⁾KU-KIST, Korea University
- P2-11** Role of Deep Learning in Biomedical Data Analysis
Muhammad Zubair, KiBong Song[†], Changwoo Yoon
Electronics and Telecommunication Research Institute

- P2-12** Breath analysis of respiratory diseases using a portable device
Myunghwan Lee, Kang-Ho Lee
¹⁾School of Electronic Engineering, KIMM
- P2-13** Heart Rate Monitoring using ECG
Jung Woo, Electronics
- P2-14** Development of a carbon ID biosensor
Deepti Shrivastava, Ulsan National Institute of Science and Technology
- P2-15** A Novel Testing Method for Hyung J. Moon Y.
¹⁾Electronics and Telecommunication Research Institute (ETRI).

Chemical Sensors

- P3-1** Ultrasensitive detection of dopamine using a carbon nanotube-based sensor
Bo Y. Chul, ¹⁾Korea Institute of Science and Technology
- P3-2** Pd-based thin film for high performance hydrogen gas sensor
Yoon J. Kim, ¹⁾KAIST
- P3-3** M...

Self-powered wireless pressure sensor for biomedical applications

Jongsu Park¹⁾, Swati J. Patil¹⁾, Ji-Kwan Kim²⁾, Dong-Weon Lee^{1),†}

¹⁾ Department of Mechanical Engineering, Chonnam National University

²⁾ Department of Defense Science and Technology, Gwangju University

†mems@jnu.ac.kr

Abstract

In this paper, we describe the design and fabrication of a wireless pressure sensor for bio-medical applications. The pressure sensor employs SU-8 polymer as a structural material and it has $2 \times 2 \text{ mm}^2$ and $5 \times 5 \text{ mm}^2$. The sensor of the multilayer is fabricated using simple and inexpensive SU-8 thermal-pressure bonding process. This fabrication method provides easy path to connect top and bottom layer for the electric junction. SU-8-based wireless pressure sensor has biosafety characteristic can be applied in blood pressure monitoring or intraocular pressure. The sensitivity of the fabricated wireless pressure sensor with 18 and 30 turn inductor coil is about 160 kHz/mmHg and 150 kHz/mmHg, respectively. The fabricated pressure sensor is integrated with a commercial stent and the feasibility of the smart stent was evaluated using small animals.

Keywords: Pressure sensor, L-C circuit, SU-8, Wireless sensing.

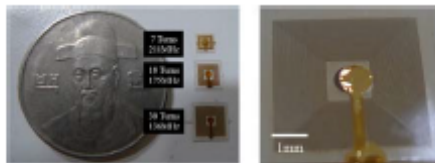


Figure 1. Fabrication process for SU-8 based pressure sensor

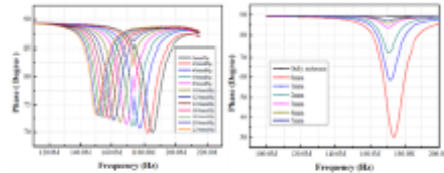


Figure 2. Results of the sensor(Frequency shift)

References

- [1] J. Park, J. K. Kim, S. J. Patil, J. K. Park, S. Park, and D. W. Lee, "A Wireless Pressure Sensor Integrated with a Biodegradable Polymer Stent for Biomedical Applications", *Sensors*, Vol. 16, No. 6, pp. 809, 2016
- [2] S. H. Cho, S. H. Son, H. J. Chung, and J. B. Lee, "A wireless powered fully integrated SU-8-based implantable LC transponder", *Microsyst Technol*, Vol. 16, pp. 1657-1663, 2010
- [3] M. Luo, A. W. Martinez, C. Song, F. Herrault, and M. G. Allen, "A Microfabricated Wireless RF Pressure Sensor Made Completely of Biodegradable Materials", *J Microelectromech Syst.*, Vol. 23, No. 1, pp. 4-13, 2014