

22<sup>nd</sup> International Conference on

## ADVANCED MATERIALS AND NANOTECHNOLOGY

September 19-21, 2018 Tokyo, Japan

**Development of QCM sensor based on  $\beta$ -CD with thiol functional group for sensing 2-nonenal****Hak Jun Do and Seong Ho Choi**  
Hannam University, Republic of Korea

Human body odor consists of various kinds of odor components. Among them, 2-nonenal which is representative material of old man odor occurs by oxidation of skin secretion. In order to measure 2-nonenal, Gas Chromatography-Mass Spectrometer (GC-MS) can be used as odor analyzer, but this analysis is difficult because of its very expensive cost, long measurement time, and sampling odor directly. On the other hand, Quartz Crystal Microbalance (QCM), sensor can easily be used for sensing human body odor because of cheap cost, short response time and without sampling. However, in order to use QCM sensor, the host compound, which is the selective compound of human body odor, is need for preparing QCM sensor. So, we have selected the  $\beta$ -cyclodextrin ( $\beta$ CD) as host compound in order to sensing 2-nonenal as guest compound. To deposit  $\beta$ CD on QCM sensor, we introduced thiol functional group in the  $\beta$ CD, and then the thiol functional group introduced  $\beta$ CD ( $\beta$ CD-SH) was modified on QCM electrode in DMSO/H<sub>2</sub>O (3:1, v/v) mixed solution of  $\beta$ CD-SH. Successful synthesis of  $\beta$ CD-SH was characterized via H-NMR, FT-IR and MS. Preparation of the QCM sensor based on  $\beta$ CD was characterized via X-ray Photoelectron Spectroscopy (XPS), Energy Dispersive Spectroscopy (EDS) and contact angle. Also, reliability of measured data was compared with GC-MS data. Finally, we measured the adsorption and desorption properties according to concentration of 2-nonenal by QCM analyzer.

**Biography**

Hak-Jun Do has completed his Bachelor's degree from Hannam University and he is currently pursuing his Master's degree at the same university. He has studied on QCM sensor for sensing of human body odor. His research interests are piezoelectric phenomenon and host-guest compound.

ehgkrwns123@naver.com

Notes: