Intelligent Sensor System for Non-Invasive Health Care Monitoring

Hyung-Gi Byun

School of Electronics, Information & Communication Engineering,
Kangwon National University, Samcheok, Kangwon-do, 245-711, Korea

Many diseases are accompanied by characteristic odors, and their recognition can provide diagnostic clues, guide the laboratory evaluation, and affect the choice of immediate therapy.

In the last few years, the non-invasive analysis of exhaled breath has emerged as an innovative tool for diagnosis. Novel immunosensor technology and volatile sensing technology allow quantification for many potential biomarkers near the patient's bedside (point-of-care testing).

Because of the potential impact on health care, Lung Cancer, Stomach Cancer, Tuberculosis, and Chronic Obstructive Pulmonary Disease (COPD) are selected target diseases.

We are developing an intelligent sensor system for non-invasive health care monitoring combined a laboratory based sensor module, pattern recognition subsystem and non-invasive sampling of volatile emitted from a patient into a highly intelligent sensor system that allows the rapid processing of these samples. It is capable to assist early and rapid diagnosis of changes in state of a patient, and aid decision marking by medical personnel in the treatment of such patients.

In the workshop, we present results obtained from exhaled breath analysis for lung cancer patients using array based gas sensing system incorporating an automated Solid Phase Micro Extraction (SPME) desorption system to enable the system to be used for clinical validation.

EBERHARD KARLS UNIVERSITÄT TÜBINGEN

Workshop organized by:
Nicolae Barsan - University of Tübingen, Germany
Kengo Shimanoe - Kyushu University, Japan
and Udo Weimar - University of Tübingen, Germany

KYUSHU UNIVERSITY

ISOCS
International Society for
Olfaction and Chemical Sensing