
Smart Nanosensor Watch for Saving Life from Toxic Gases

Chatchawal Wongchoosuk^{1,*}

¹*Department of Physics, Faculty of Science, Kasetsart University, Chatuchak, Bangkok, 10900, Thailand*

**corresponding author, E-mail: chatchawal.w@ku.ac.th*

Abstract

The world's population has increased every year at a rate of 83 million people, resulting in rapidly expanding urban and industrial areas, natural resources decrease, climate change and pollution productions, especially air pollution. A report from the World Health Organization found that air pollution causes premature death of up to 7 million people annually from both outdoor and household air pollution. In order to protect against the dangers that occur to human bodies and organisms, today, gas sensor technology is used to detect toxic gases and/or volatile organic compounds. However, to the best of our knowledge, the gas sensor in platform of smart watch has not been available in market yet due to limit of gas sensor technical problems such as size, power, principle, cost, and flexible properties. In this work, smart watch for real-time toxic gas detection has been fabricated based on novel flexible gas sensors by a low-cost normal inkjet printer. The electronic inks were synthesized by using various nanomaterials and conducting polymers. The smart watch can alter the gas sensor upon the desired target gas. The smart watch will alarm and display the message on the watch when user encounters the toxic gas. Development of flexible low-cost gas sensors with nanostructures will be presented. Key technology and technical process will be highlighted and discussed in details.

Keywords: Flexible Sensor, Printed Sensor, Toxic Gas Sensors, NH₃ Detection, Carbon Nanostructures