Chemosensors and chemoreception

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The objective of this topical collection is to report on the most recent research into and applications of chemical sensing and olfaction. It focuses in particular on chemosensors (gas sensors) and chemoreception (artificial olfaction), and the interactions between them. With the widespread use of chemical-sensor devices, there has been much investigation of highly sensitive, selective, and stable chemoresistors using oxide semiconductors, conducting polymers, graphenes, and carbon nanotubes. The diversity of sensing materials provides a variety of benefits, including flexible design, low temperature (power) operation, and integration into portable devices, in addition to crucial “3S” requirements (sensitivity, selectivity, and stability), which will enable innumerable new applications using chemosensors. To realize these benefits, understanding and investigation of the mechanisms and materials of chemosensors are essential.

The information gathered from chemoresistors is extremely useful for enabling chemoreception in artificial olfaction devices. These devices, designed to mimic the mammalian sensory system, are gaining favor for odor and/or gas assessment applications in a variety of fields: environmental quality monitoring, food and beverage quality control, medical diagnosis, and others. In this paper collection, we invited front-line researchers to submit original research articles and critical reviews on chemosensors and chemoreception.

Altogether, this collection of papers should be a valuable source of information for all readers with an interest in chemosensors and chemoreception or related fields. We thank all authors for submitting their interesting contributions for this issue, the referees for their critical but constructive comments, and the Editorial Office and the Editors for their friendly cooperation.

Jong-Heun Lee is a professor at the Department of Materials Science of Engineering, Korea University, Seoul, Korea. He received a PhD. in Materials Science and Engineering from Seoul National University, Korea. He has published over 200 original papers and four invited reviews. His main subjects are chemical sensors using oxide nanostructures and solid electrolytes and their functional applications. He is a junior member of the Korean Academy of Science and Technology.

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