



第218回 OPERA研究交流セミナー  
第209回 ISIT有機光エレクトロニクス研究特別室セミナー  
第276回 未来化学創造センターセミナー



日時: 2023年1月27日(金) 15:00~  
場所: ハイブリッド開催/ISI棟3階セミナー室・-Zoom-

## Amperometric Gas Sensors based on Molecular Design and Structural Optimization of Conductive Organic and Carbon Materials

**Prof. Wi Hyoung Lee**

School of Chemical Engineering, Konkuk University

Gas sensors based on conductive organic and carbon materials have received a significant attention as a soft electronic component for the detection of harmful gases. In this talk, amperometric gas sensors are introduced with a special attention on the detection mechanism of dipolar gases (i.e., NO<sub>x</sub>, SO<sub>x</sub>, ammonia). In particular, gas sensors based on carbon nanotube and CVD-grown graphene were fabricated and sensing performance depending on the interfacial buffer layer, supporting substrate, and molecular doping was systematically analyzed for boosting their sensitivity and selectivity to target gases. Furthermore, several types of organic semiconductors were synthesized and their sensing performance was investigated by measuring response to target gases. Morphology, film microstructure, and thickness of the organic semiconductor films critically affected gas sensing performance such as sensitivity, recovery, limit of detection, and cross-sensitivity to target gases. Our works will be useful for the molecular design and structural optimization of soft gas sensors based on conductive organic and carbon materials.

主催:九州大学 最先端有機光エレクトロニクス研究センター  
:財団法人九州先端科学技術研究所(ISIT)  
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