ＡＲＧ セミナー

信州大学 アクア･リジェネレーション機構（ARG）は下記のセミナーを企画いたしました。皆様のご参加をお待ちしております。

日　時　：2025 年 10 月 16 日（木）　10：00～11：30

場　所　：信州大学長野(工学)キャンパス　AICS 棟 2 階

講　師　：Professor Sang-Sub KIM

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タイトル：Advancing Chemiresistive Gas Sensors via Surface Modification

Early and precise detection of hazardous gases is vital for safety in residential, industrial, healthcare, environmental, and defense sectors. Among existing sensing technologies, chemiresistive sensors have attracted significant interest due to their simple architecture, low cost, and compatibility with nanostructured materials. These devices function by monitoring resistance variations in semiconducting metal oxides triggered by the adsorption and desorption of gas molecules. However, their widespread application remains restricted by inherent drawbacks, including limited selectivity, signal drift, humidity interference, and pronounced temperature dependence.

To overcome these challenges, advanced surface modification strategies have been explored. This work highlights the role of surface functionalization approaches—such as noble metal nanoparticle decoration, formation of metal oxide heterojunctions, beam irradiation and integration of organic ligands—in enhancing gas sensing performance. These modifications improve gas–surface interactions, promote charge transfer, and boost catalytic activity. Experimental investigations demonstrate substantial improvements in sensitivity, detection limits, and long-term stability under diverse environmental conditions. Overall, the findings advance the development of highly selective and reliable chemiresistive gas sensors for practical deployment.

お問い合わせ：ARG 湯蓋特任教授