第699回　化学・物質工学セミナー 開催のお知らせ

One-step Flame Synthesis of Catalysts-Functionalized MOX Nanomaterials for Gas Sensing

Asst. Prof. Dr. Chaikarn Liewhiran
Department of Physics and Materials Science
Faculty of Science, Chiang Mai University, THAILAND

記

日時：平成30年10月22日（月）12:50～14:20
場所：総合教育研究棟2階　多目的ホール

タイ、チェンマイ大学のLiewhiran助教らのグループは、火炎噴射熱分解法で調製した金属酸化物を半導体ガスセンサ材料に応用し、従来の方法で調製された酸化物材料に比べて、ガス検出特性の改良を検討している。、今回の講演では、最近の研究成果をご講演いただきます。

Abstract

In significant research, the sensing materials based on pure and various catalysts functionalized metal oxide (MOX) nanomaterials have been established to produce by Flame Spray Pyrolysis (FSP), which has been recently demonstrated as a promising route to highly sensitive MOX gas sensors due to the ability to particularly synthesize SnO_2 nanostructures with high effective surface area, crystallinity, homogeneity, and uniform loading/doping of metal/metal oxide additives in one step. MOX loaded/doped with various catalytic metals have been practically manufactured by FSP in lab scale and selectively exhibited high gas-sensing performances. The functionalized MOX nanomaterials and their fabricated sensing films have been intensively characterized to perform the structural, chemical, physical properties by various advanced techniques as well as significant gas-sensing mechanisms. The gas-sensing performances have been systematically evaluated and optimized towards various gas categories including VOCs, toxic gases, greenhouse gases, and flammable gases with different limitation in dynamic range of TLVs, catalyst doping/loading levels, and working temperatures with high *S*-factors e.g. sensor response, selectivity, long-term stability. Therefore, the flame-spray-made catalysts-functionalized MOX nanomaterials based sensor is a promising candidate for highly sensitive and selective of gas detection/monitoring and may be useful for general and practical gas-sensing applications.

Keywords: Flame Spray Pyrolysis; MOX; Catalysts; Gas sensor.

オーガナイザー連絡先：　〒852-8521 長崎市文教町1-14
長崎大学大学院工学研究科　清水康博
TEL: 095-819-2642, E-mail: shimizu@nagasaki-u.ac.jp