

Zoom

Online Talk

1 μ m

1 μ m

ZnO nanomaterials: From synthesis to photocatalytic applications



6.30pm – 8.30pm

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Speaker:
Assoc. Prof. Ts. Ir. Dr. Pung Swee Yong



Moderator:
Ir. Dr. Jason Tan

BEM Approved
CPD/PDP Hours: 2
Ref: IEM22/PG/026/T (w)

This event is organized by:
Material Engineering Technical Division (MaTD)
Penang Branch

Synopsis

ZnO is a II-VI Semiconductor material with wide bandgap (3.37 eV) and large exciton binding energy (60 meV) at room temperature. It is known for its diverse nanostructures, whose configurations are much richer than any known nanomaterials. ZnO is unique because it exhibits dual semiconducting and piezoelectric properties. Conventionally, ZnO is used as a functional additive/component for rubber, concrete, medicine, cosmetics, sun lotions, food, feed, and electrodes of electronic components. The renaissance in ZnO research can be back tracked to mid 1990s. Diverse forms of ZnO such as epitaxial layers, nanostructures, as well as quantum dots were also used in for opto-electronics and photocatalysts applications.

This presentation aims to share the fundamental knowledge of ZnO and recent developments on the synthesis, engineering, and application of ZnO nanomaterials. This includes the synthesis of ZnO nanomaterials by ALD, CVD, sol-gel, and solution precipitation; properties-tailoring of ZnO nanomaterials via doping, size & morphology modification, metal/metal oxide coupling. The presentation will be concluded by application explorations for commercialization such as organic pollutants removal by photocatalysts, inactivation of bacterial by metal ions, mechanism study by scavenger test.

About the Speaker

Dr. Pung Swee Yong received his PhD study in Materials Engineering from University of Nottingham, United Kingdom in 2010 for his work on synthesis and characterization of ZnO nanowires. He is currently an Associate Professor of School of Materials and Mineral Resources Engineering, Universiti Sains Malaysia. He is also one of the editors of Malaysian Journal of Microscopy. His research works include the synthesis of a collection of metal oxide semiconductor nanoparticles - ZnO, TiO₂, WO_x, V₂O₅, MnO₂ and CCTO; applications exploration; and fundamental understanding of their photocatalytic potentials.

The technical relevance, innovation and significance of his research is recognized by the scientific communities. This is reflected by continuous funding, both internationally and locally; 86 publications in indexed journals; numerous invitations to international conferences and symposiums; and 4 national awards.