

## **WS<sub>2</sub> Nanoparticles and Multiwalled Carbon Nanotubes Counter Electrode for Dye-sensitized Solar Cells**

*Thursday, May 21, 2015 1:00 PM (3h 30m)*

WS<sub>2</sub> nanoparticles and multiwalled carbon nanotubes (MWNTs) were hydrothermally prepared and used as a counter electrode (CE) for dye-sensitized solar cells (DSSCs). The highest energy conversion efficiency of 6.69 % was achieved from the produced WS<sub>2</sub>/MWNT CE, closely comparable to that of the Pt CE which was 7.34 %, whereas the pure MWNT based DSSC gave the efficiency of 5.2 %. The WS<sub>2</sub> nanoparticles therefore played a crucial role in this enhanced cell efficiency. This superior efficiency was attributed to the combination of the high catalytic activity of the WS<sub>2</sub> nanoparticles and the high electric conductivity of the MWNTs, which were investigated by cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS) measurement, respectively.

**Primary author:** Ms KAEWPHAISAN, Ladavan (Materials Science and Nanotechnology Program, Faculty of Science, Khon Kaen University, Khon Kaen, THAILAND 40002)

**Co-authors:** PIMANPANG, Samuk (Department of Physics, Faculty of Science, Khon Kaen University, Khon Kaen, THAILAND 40002); HARNCHANA, Viyada (Department of Physics, Faculty of Science, Khon Kaen University, Khon Kaen, THAILAND 40002)

**Presenter:** Ms KAEWPHAISAN, Ladavan (Materials Science and Nanotechnology Program, Faculty of Science, Khon Kaen University, Khon Kaen, THAILAND 40002)

**Session Classification:** Poster-3

**Track Classification:** Material Physics, Nanoscale Physics and Nanotechnology