

## Asst. Prof. Hsiao-Tsu Wang 's 2 Academic Papers Published in Leading Materials and Nanotechnology Journals

Campus focus

Assistant Professor Hsiao-Tsu Wang from the Department of Physics has consecutively published 2 academic papers in prestigious high-impact international journals. The first paper, “WS<sub>2</sub> Moiré Superlattices Supporting Au Nanoclusters and Isolated Ru to Boost Hydrogen Production,” was published in the top-tier materials science journal *Advanced Materials*. The second paper, “Interrogation of 3d Transition Bimetallic Nanocrystal Nucleation and Growth Using In Situ Electron Microscope and Synchrotron X-ray Techniques,” was featured in *Nano Letters*, one of the most prominent journals in nanotechnology.

As one of the corresponding authors, Wang explained that *Advanced Materials* has an impact factor of 27.4, making it one of the most prestigious and influential journals in the field of materials science. It focuses on publishing groundbreaking discoveries in materials physics. The study highlights how Au nanoclusters and Ru single atoms distributed within WS<sub>2</sub> bilayer superlattices form a stable porous structure. Through electronic interactions between the metallic atoms and the supporting material, the dissociation of water molecules can be effectively enhanced. “This research allowed us to uncover how the latest two-dimensional catalytic materials can improve hydrogen production efficiency.” He also mentioned that Cheng-You Lee, an undergraduate physics student, conducted independent experiments and data analysis for this study. Lee plans to pursue a master's degree in Tamkang University's Physics Department and a Ph.D. in Applied Sciences under the College of Science, moving toward a path in academic research.

*Nano Letters*, with an impact factor of 10.2, focuses on nanoscale science, covering both fundamental and applied research that integrates at least two different disciplines. The published paper utilized cutting-edge in situ synchrotron techniques to study the growth mechanism of 3d transition

bimetallic nanoparticles at the nanoscale. The study was completed in collaboration with academic institutions in the United States and Canada. As the corresponding author, Wang explained that the research primarily analyzed the competitive advantages of 3d bimetallic nanoparticles in catalytic reactions. In situ techniques overcame the limitations of traditional observations, enabling a more precise understanding of the growth processes of nanoscale materials. By gaining deeper insights into the nucleation and growth mechanisms of Fe–Ni bimetallic nanoparticles, scientists can develop targeted bimetallic nanostructures with specific functionalities, paving the way for future applications in biomedical, energy, and electronic fields. Wang expressed his gratitude to Distinguished Chair Professor Way–Faung Pong from the Department of Physics for his invaluable participation and extensive experience, which greatly contributed to the success of the research.

