

## Prof. Wei Wu

吳煒 教授

Ph.D. : Chemical Engineering, National Taiwan University of  
Science and Technology  
Email : weiwu@mail.ncku.edu.tw  
Phone : 886-6-2757575 ext 62689  
Office : Room No.93A13 (10F)



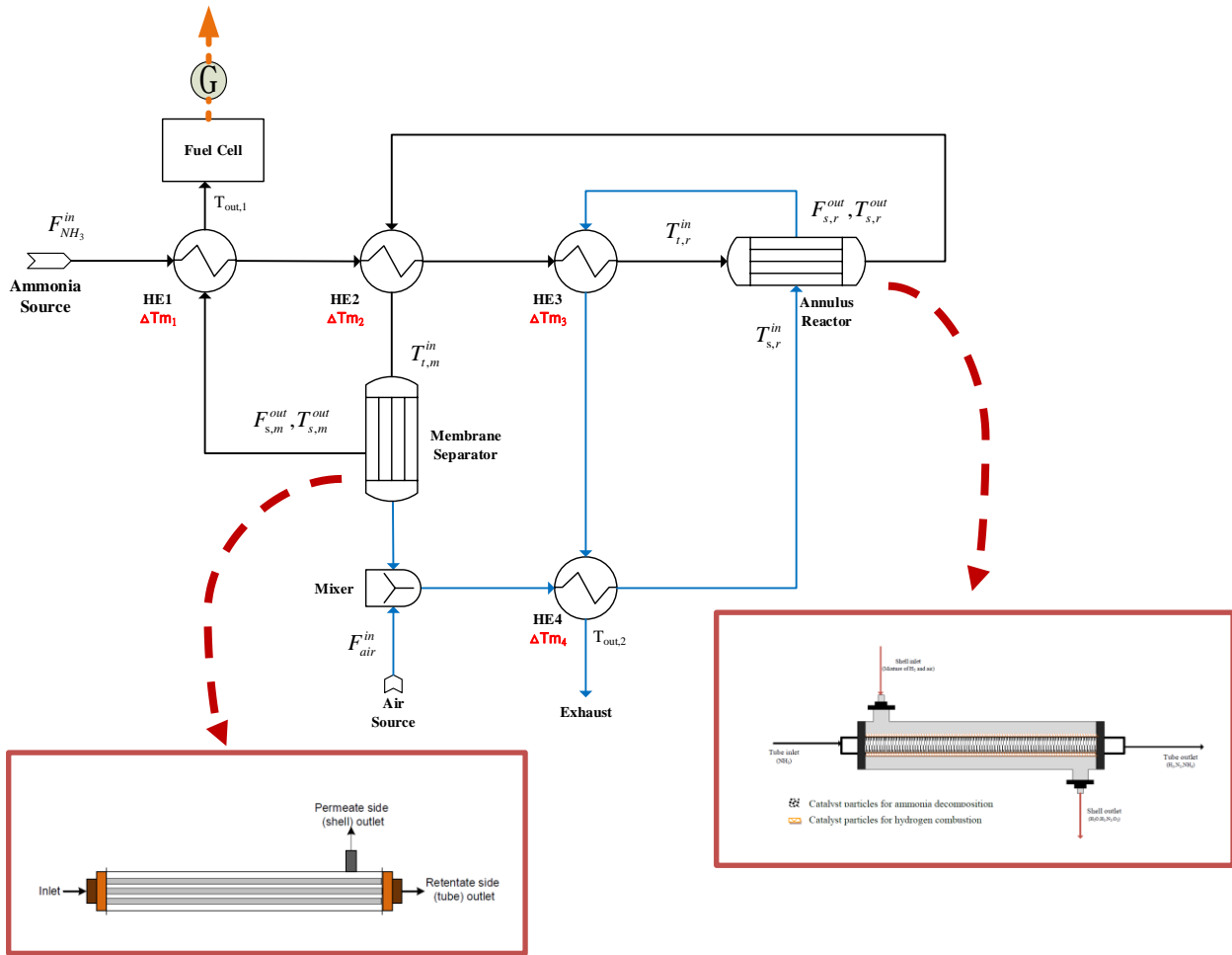
### Research Interests

Our research interests focus on development of hybrid renewable energy systems. Aims to reduce greenhouse gas emissions, improve energy/exergy efficiency, and develop economically viable techniques. The mathematical modeling, control strategies and optimization algorithms are significant. The design process software, e.g. ASPEN, gPROMS, and numerical computing software, e.g. MATLAB and MAPLE, precisely verify system performances. Currently, the research topics include: (1) stand-alone PV/FC/Battery hybrid power systems; (2) combined heat and power economic dispatch problem; (3) optimal hybrid power management; (4) stand-alone syngas production systems using biomass.

### Representative Publications

1. W. Wu\*, S.-A. Chen, and Y.-C. Chiu, 2016, "Design and control of a SOFC/GT hybrid power generation system with low carbon emissions," *Industrial & Engineering Chemistry Research*, Vol. 55(5), pp. 1281-1291.
2. P.-C. Kuo, W. Wu\*, 2016, "Design and thermodynamic analysis of a hybrid power plant using torrefied biomass and coal blends", *Energy Conversion and Management*, Vol. 111, pp. 15-26.
3. P.-C. Kuo, W. Wu\*, 2016, "Thermodynamic analysis of a combined heat and power system with CO<sub>2</sub> utilization based on co-gasification of biomass and coal", *Chemical Engineering Science*, Vol. 142, pp. 201-214.
4. W. Wu\*, Ya-Yan Zhou, and Yi-Shun Chiu, 2015, "Operational feasibility analysis of stand-alone methanol fuel processors with flexible waste heat recovery schemes," *Industrial & Engineering Chemistry Research*, Vol. 54, pp. 2129-2135.
5. H.-T. Chen, W. Wu\*, 2015, "Efficiency enhancement of pressurized oxy-coal power plant with heat integration," *International Journal of Energy Research*, Vol. 39 (2), pp. 256-264.
6. W. Wu\*, H.-T. Yang, J.-J. Hwang, 2015, "Dynamic control of a stand-alone syngas production system with near-zero CO<sub>2</sub> emissions," *Energy Conversion and Management*, Vol. 89, pp. 24-33.
7. W. Wu\*, H.-T. Chen, 2015, "Identification and control of a fuel cell system in the presence of time-varying disturbances," *Industrial & Engineering Chemistry Research*, Vol. 54, pp. 7141-7147.
8. W. Wu\*, P.-C. Kuo, 2015, "Conceptual designs of hydrogen production, purification, compression and carbon dioxide capture," *Energy Conversion and Management*, Vol. 103, pp. 73-81.
9. W. Wu\*, V. I. Christiana, S.-A. Chen, and J.-J. Hwang, 2015, "Design and techno-economic optimization of a stand-alone PV/FC/battery hybrid power system connected to a wastewater-to-hydrogen processor," *Energy*, Vol. 84, pp. 462-472.
10. W. Wu\*, B. Shao, X. Zhou\*, 2015, "Dynamic control of a selective hydrogenation process with undesired MAPD impurities in the C<sub>3</sub>-cut streams," *Journal of the Taiwan Institute of Chemical Engineers*, Vol. 54, pp. 28-36.

### @ Stand-alone PEM fuel cell power generation



### @ Stand-alone triple combined cycle system with calcium looping

