

# TCSUH SPECIAL SEMINAR

## Sibudjing Kawi

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**Monday, December 12, 2022**

2:00 p.m. – 3:00 p.m.

**In Person:** Houston Science Center (HSC), Room 102

**On line:** <https://uh-edu-cougarnet.zoom.us/j/9893378254?pwd=NjZnRlBFQXJBNG9mcHFuaEtjUGdydz09>

(Zoom ID: 989 337 8254 Passcode: 654321)

### Innovating Sustainable Catalysts in Tackling CO<sub>2</sub> and H<sub>2</sub> Challenges



**ABSTRACT:** Limiting the rise of CO<sub>2</sub> concentration in atmosphere by capturing and utilizing CO<sub>2</sub> from various emissions is a critical challenge the world is facing today. At the same time, biomass has become an attractive source of renewable energy since biomass gasification is an environmentally beneficial method in producing syngas, which can be upgraded to produce useful chemicals such as methanol and olefins by FT process. In order to get the desired product from CO<sub>2</sub> and biomass conversion, the role of catalyst is crucial. The major concern for the catalyst technology is deactivation due to coking and sintering during high temperature catalytic processes. In this presentation,

I will address how our research group has avoided these catalyst issues by systematically developing efficient non-noble metal catalysts for energy and environmental applications (such as biomass tar reforming, CO<sub>2</sub> methane reforming, water gas shift, CO<sub>2</sub> hydrogenation, and methane coupling) using structure-derived catalysts, bimetallic alloys and novel core-shell catalysts in order to prevent coke formation and metal sintering.

**BIO:** Prof. Kawi did his Bachelor, Master, Ph.D. degrees, and Postdoc at the Univ. Texas @ Austin, Univ. Illinois @ Urbana-Champaign, University of Delaware, and University of California @ Davis, respectively, before he joined National University of Singapore. His research focuses on integration of catalyst with membranes for tackling energy and environmental challenges (especially CO<sub>2</sub> and H<sub>2</sub> challenges) via valorisation of biomass waste, CO<sub>2</sub> and natural gas. He has published > 400 papers (citations > 22,000, h index = 78). He is the World's Most Highly Cited Researcher (2021 & 2022, Clarivate). He has served as Associate Editor for 2 journals, Guest Editor for 12 special issues (8 journals), and Editorial Board for 5 journals.

**Host:** Dr. Zhifeng Ren

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in attending this lecture should call 713-743-8212 as soon as possible.**