



Prof. Ho-Hsiu Chou 周鶴修

National Tsing Hua University

- Chemical Engineering, Associate Professor
- College of Semiconductor Research, Adjunct Professor
- OCIC, IP &Tech. Transfer Group, Director
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### Education & Academic experience

National Tsing Hua University\_Ph.D. (2010)

Stanford University, USA\_Postdoc Fellow (2013-2016)

IMEC, Belgium\_Visiting Scholar (2013)

### Research Interests

-Advanced functional polymers

-Electronic skin (self-healing materials, recyclable materials, sensors)

- Artificial photosynthesis (water splitting, hydrogen evolution, CO<sub>2</sub> reduction, ammonia synthesis)

### Awards

- LCY Outstanding Research Award for Young Professors
- Ta-You Wu Memorial Award
- Outstanding Polymer Technology Award for Young Scientists
- FuTech Breakthrough Award from NSTC
- Outstanding Research Award for Young Professors (NTHU)
- NSTC Young Scholar Fellowship

### Short Biograph

Prof. Ho-Hsiu Chou received B.S. in Chemistry in 2005 from National Tsing Hua University, Taiwan, and Ph.D. degree in Chemistry from National Tsing Hua University in 2010 under the supervision of Prof. Chien-Hong Cheng. He worked as a postdoctoral researcher at National Tsing Hua University from 2010-2013, and subsequently joined the Interuniversity Microelectronic Center (IMEC), Belgium as a visiting researcher in 2013. After that, he worked as a postdoctoral researcher in the Chemical Engineering of Stanford University from 2013-2016 under the supervision of Prof. Zhenan Bao. His group focus on the design and synthesis of organic semiconducting materials for the applications in electronic skin and artificial photosynthesis. In 2017, he relocated back to his alma mater, National Tsing Hua University, as an Assistant Professor in the Department of Chemical Engineering, and he was promoted as an Associate Professor in Aug. 2020. Prof. Chou received the Award of LCY Outstanding Research Award for Young Professors (2022), Ta-You Wu Memorial Award (2021), NTHU Outstanding Research Award for Young Professors (2021), Outstanding Polymer Technology Award for Young Scientists (2020), FutureTech Breakthrough Award from NSTC (2020), NTHU CoE Outstanding Teaching Award (2020), NSTC Young Scholar Fellowship (2018).

**Title:** Conjugated Polymers for Nature-inspired Electronics and Energy

**Abstract:**

In the past, polymers have been widely used in many fields. Designing the structure of polymers to affect their functions is a crucial topic in academia and industry, which is the core research of our group. In this talk, we will introduce our design strategies of polymer structures for nature-inspired applications, including the application in electronic skin and artificial photosynthesis as follows.

Inspired by the human skin, this conformable, stretchable and biodegradable organ formed a remarkable functions for us, such as tactile sensing, temperature sensing, stretchability, and self-healing ability. In this part, we are interested in exploring the field of electronic skin (e-skin) by adopting the polymer molecular engineering, dreaming to mimic the properties of skin, especially in stretchability and self-healing ability, to create novel applications.

By mimicking natural photosynthesis, converting solar energy into useable fuel in an environmentally friendly and high-energy-density manner is an almost ideal process. In a search for efficient photocatalysts that mimic such a function, here we will describe several series of newly designed polymers and polymer dots as photocatalysts for solar-driven hydrogen evolution from water. How to address the interface barrier between the polymer, water, and reagent will be included, to give a clear strategy for understanding the recent advances in this field.