

Chun-Yen Chen

Affiliation: National Cheng Kung University (NCKU), Taiwan

Research title for the award: Engineering strategies for enhancing microalgae lipid production using effluents of coke-making wastewater



Dr. Chun-Yen Chen is a Research Fellow at National Cheng Kung University (NCKU), Taiwan. His research interests encompass biochemical engineering, environmental biotechnology, and applied microbiology, with a recent focus on microalgae-based CO₂ reutilization for biofuels and biorefineries. He has developed innovative and effective photobioreactor technology for converting CO₂ into feed, health food, and fuels by integrating microalgae isolation, cultivation system design, harvesting techniques, and other downstream technologies. More recently, his research interests have shifted towards microalgae-based wastewater treatment and the utilization of microalgal feedstock in aquaculture or livestock feeds. Dr. Chen has established one of the world's leading teams in microalgae biorefinery and bio-based CO₂ capture and utilization.

Dr. Chen has received numerous academic awards, including three Future Tech Awards from Taiwan's Ministry of Science and Technology, three National Innovation Awards, the LEKO Technical Award, Elsevier's Most Highly Cited Papers recognition, the Elsevier Best Paper Award, the Elsevier Top Cited Papers Award, and the Elsevier Taiwan Scopus Young Researcher Award. Moreover, he was recognized as one of the "World's Top 2 % Scientists 2021/2022." Many of Dr. Chen's research findings have been published in high-impact and top-ranking journals. He has authored over 110 SCI-indexed journal papers, which have collectively received over 9,500 citations and earned him an h-index of 50 (Web of Science). He is also the author of three books and holds nearly 23 patents.

Dr. Chen is also the co-founder of NCKU's Center for Microalgae Biotechnology and Engineering. His team has constructed a commercial-scale microalgae cultivation and biorefinery plant located at NCKU's An-Nan Campus. Many of his technologies have successfully been applied in the industry. It is noteworthy that in January 2023, Formosa Plastics Group invested over 3 million US dollars to commercialize some of Dr. Chen's key technologies related to microalgae-based wastewater treatment and carbon capture/utilization.

[Message as a prize winner]

I would like to express my sincere thanks to the Society for Biotechnology, Japan for selecting me as the

recipient of the prestigious Young Asian Biotechnologist Prize 2023. It is truly an honor to receive this recognition, and I am deeply grateful for the affirmation it provides. This esteemed acknowledgment serves as a catalyst for me to redouble my efforts in crucial research areas, such as carbon dioxide reduction and circular economy in the years to come.

I particularly thank Prof. Jo-Shu Chang for nominating me for this esteemed award, as well as for his invaluable research guidance and advice throughout my research career. My sincere appreciation also goes to my supervisors, colleagues, collaborators, postdoctoral researchers, and students for their assistance and support in my work. I would also like to express my gratitude to the National Science Council, the Ministry of Education, NCKU Headquarters of University Advancement, and our esteemed collaborators for their generous financial support and valuable insights.

Looking ahead, I eagerly anticipate collaborating with the Society for Biotechnology, Japan and researchers across Asia as we collectively navigate the challenges of achieving the 2050 net-zero carbon policy. Together, we can make significant strides towards a sustainable and prosperous future. Once again, thank you for this esteemed recognition, and I am truly honored and proud to be the recipient of the Young Asian Biotechnologist Prize 2023.

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