Advanced Research Scholar – MS Thesis

Andres Philip Mayol

De La Salle University

Field of Study:	*Bioenergy, Computational Fluid Dynamics*
Research Period	*April 2017 – March 2018*
US University	*University of Arizona*
US Professor	*Dr. Joel Cuello*
Research Title	*Hydrodynamic simulation of the ACCORDION photo-bioreactor using computational fluid dynamics simulation and experimentation*

Describe your research conducted in the US.

My research focused on improving the design of photo-bioreactors for efficient microalgae cultivation through Computational Fluid Dynamics (CFD). Optimizing the photo-bioreactors' design and determining its mixing efficiency is an important factor in microalgae cultivation, which has a potential to cater several demands from human nutrition, energy, and environmental rehabilitation.

What was the highlight of your research in the US?

The highlight of my study is that I have learned more about Computational Fluid Dynamics (CFD) in investigating photo-bioreactors (ACCORDION) and improving the design of photo-bioreactors for efficient microalgae cultivation.

In what way has the USAID scholarship changed you?

The scholarship changed my perspective on the impact of research and innovation to a country's economy. I also learned to become independent while living in the US.

How would you use the knowledge and skills gained through your research to contribute or influence economic growth in the country?

CFD is a powerful tool in addressing physical problems especially when you are dealing with fluids. One application of this is on the assessment of wind impact on structures or buildings. Thus, it can be used to determine if structures are resilient to typhoons. In terms of microalgae research and development, CFD can be a vital tool in simulating equipment that can be used to convert microalgae biomass to its final product.

As a young scientist, what do you envision for the Philippine science, technology and innovation ecosystem in the next 10 years?

Philippine science, technology and innovation ecosystem is growing and improving. 10 years from now, a collaboration between academe, government, and industry will be improved. By then, it will be easier for Filipino inventors to commercialize their research products. In return, more companies will be set-up, more jobs will be generated, and the economy of the Philippines will grow.

Andres intends to pursue a PhD degree as a way to strengthen his research capability after returning to the Philippines. As a future PhD apprentice, he will teach young researchers the methodologies and discipline that he had learned in the US. He also plans to apply techno – entrepreneurship and pursue a startup for technology commercialization in the Philippines as a way to create jobs for the Filipino people.

E-mail: andres_mayol@dlsu.edu.ph