

## Advanced Research Scholar – Post-doctoral

### Roque Ulep, Ph.D.

Mariano Marcos State University



**Field of Study:**  
**Research Period**  
**US University**  
**US Professor**  
**Research Title**

*Bioethanol Production*  
*March 2016 – March 2017*  
*Kansas State University*  
*Dr. Praveen Venkata Vadlani*  
*Bioethanol Production Using Low Cost and Effective Technology*

#### **Describe your research conducted in the US.**

The study was conducted to develop new technologies on bioethanol production using low-cost and effective processes adaptable to the local farmers in the Philippines. Fermentation trials were conducted to recover the yeast for further use to achieve not only a considerable amount of savings but also in the further optimization of fermentation protocol. Conversion efficiency of sugar to ethanol was improved to further reduce the cost of bioethanol production. Dehydration trials of azeotropic ethanol produced through reflux distillation were conducted to support the ethanol requirement of the country as an alternative source of energy.

#### **What was the highlight of your research in the US?**

In fermentation, the conversion efficiency of sugar to ethanol is mainly dependent on the initial concentration of sugar to produce the desired concentration of ethanol. Based on the results of the study, the yeast added in fermentation tend to become inactive when the desired ratio of unreacted sugar and ethanol in the mixture is attained. Different initial concentrations of sugar in fermentation tend to produce different concentrations of ethanol.

#### **In what way has the USAID scholarship changed you?**

Given this very rare opportunity, I was able to strengthen my interest and capability to do research. Through this experience, I learned how to become independent and self-regulating in conducting research. Moreover, the state of the art facilities that were provided in the conduct of my study made me understand the importance of research.

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

I look forward to helping improve Chemistry education in the Philippines, implement modern and low-cost technologies in bioethanol production, and assist Filipino farmers produce high quality grade of ethanol to meet the energy requirement of their farming systems and the ethanol requirement of my country.

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

Through science, technology and innovations, I envision a new world and new lifestyle in the next 10 years.

*Roque is currently a faculty and chairperson of the Department of Physical Sciences at Mariano Marcos State University.*

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