Dr. Ruly Terán Hilares

Ruly Terán Hilares, Peruvian, born on January 5, 1988 in the district of Lambrama, province of Abancay, Department of Apurímac, resident in Arequipa -Peru, began in 2004 the Bachelor's degree in Agro-industrial Engineering at the National University of Micaela Bastidas - Peru. During his graduation studies he obtains good qualifications, being the first of the class with various recognitions of academic merit. He participated in the organization of various scientific events and fairs of agroindustry products, being, in 2007, awarded at the National Congress of Agro-industrial Engineering Students with the second place in the research work contest with the work entitled “Parametric study of brown algae of the high Andean region”.

During the graduation period, he was at the company “Sociedad de Asesoramiento Técnico (SAT)-S.A.C”, a company that works in the area of physical-chemical and microbiological analyzes of food and audits of food processing factories. During this stage, he acquired knowledge of the most diverse methods of physical-chemical analysis in foods. Later, at the conclusion of the course in 2010, he returned to work at the SAT company, in the inspection area of food manufacturing facilities for the national infant feeding program. Afterwards, he was employed at the company “Sea Frost S.A.C” that operates in the area of fish canning production. During this period, he performed the role of quality supervisor, also giving various lectures on hygiene and good manufacturing practices to officials from the company's processing area.

After a period in a private company, he resumed his academic activities through his master's degree (2012), this stage being essential to set goals such as completing a doctorate abroad. During this stage he participated in various research works that further motivated the search for a scientific career.

Upon completion of the master's degree, he worked as a professor at La Molina National Agrarian University (UNALM) – Peru, where he taught classrooms for students of the Food Industry Engineering course in the following disciplines: Food Processing, Dairy Industries and Processing Technologies. At the same time, he participated in the development of work together with the Industrial Biotechnology Laboratory of UNALM. Still in this university, candidates for one of the scholarships that the National Council of Science and Technology - CONCYTEC/Peru offers, for the first time in the country, for PhD studies, with two 20 selected among the various candidates.

Later, in 2014, he began his doctorate at EEL/USP under the guidance of Prof. Dr. Júlio César dos Santos, having defended his thesis in 2017. During the doctorate period, he carried out various research works and exchanged them for 90 days to the laboratory “Environmental BioTechnology and BioEnergy Laboratory” (https://www.ebtel.kaist.ac.kr/) of the Korea Advanced Institute of Science and Technology (KAIST) – South Korea, under the supervision of Prof. Jong In-Han (jihan@kaist.ac.kr). During the stay, he developed the first work on the pre-treatment of sugarcane bagasse with hydrodynamic cavitation systems, which resulted in a publication in the journal Bioresource Technology, and now collaborates in various other works that, at the time, contributed as research development of the LBBSIM/EEL-USP group.

During a doctorate, he contributed to the development of research work for students of scientific initiation and post-graduation. After the conclusion of the doctorate, he carried out or post-doctorate at the Engineering School of Lorena (EEL)-University of Sao Paulo, where he developed or projected “Development of a continuous pre-treatment technology for sugarcane bagasse based on cavitation systems hydrodynamic” with CNPq fellow (Process No. 168930/2017-0), no period between November/2017- February/2018. Them, he development a post-doctorate with the project “Development of innovative approaches for the main stages of 2G-ethanol production: continuous pre-treatment using hydrodynamic cavitation and evaluation of the SSCF process with interconnected reactors”, with FAPESP fellow (process number 2017/11086-4), between 03/01/2018 to 08/30/2019. This period, the continued publishing scientific articles and developing the hydrodynamic cavitation system for continuous treatment of sugar cane bagasse, which resulted in a patent.

In 2019, the candidate will have to return to Peru to meet the condition imposed by the oil certificate of the doctorate bag. When he returned to Peru, he immediately joined as a post-doctor researcher in the project “Use of nanotechnology in the development of membranes for desalination, purification, and the food industry”, with resources of S/.1,690,327.00 soles (Peruvian currency, corresponding to about 500,000.00 dollars), financed by the National Council for Science, Technology and Technological Innovation (CONCYTEC)-World Bank (Process No. 06-2019-FONDECYT-BM-INC.INV), this project being led by the Catholic University of Santa Maria in Arequipa, Peru. The aforementioned project was executed between September 2019 and September 2021. During this period, he guided a student of the Biotechnological Engineering course at UCSM, and maintained the publication of scientific articles in collaboration with researchers from Peru, Brazil and the United States.

In September 2021, the candidate held a contest for research professor at UCSM, obtaining a qualification of 96,275 points out of a total of 100, therefore starting as a research professor in October 2021. As a research professor at UCSM, or current candidate as main researcher we projected "Treatment of effluents by hydrodynamic cavitation technology, biological process (microalgae cultivation) and membrane filtration systems", and "Identification of potential agro-industrial waste for the production of prebiotics" XOS- xylooligosaccharides”, alternatives for processing and purification with membrane technology”, both funded by UCSM.

During this period in Peru, the candidate ministered in post-graduation and graduation classes at the Catholic University of Santa Maria (UCSM), at the Technological University of Peru (UTP) and at the National University of the Altiplano (UNA). After graduating, he taught classes I, II, III, IV, the Health Sciences Doctorate program and the Environmental Sciences Doctorate program. At graduation, he ministered the course of Agro-industrial Biotechnology. Other courses taught correspond to short-term courses on scientific writing for students and teachers.

Based on the information described, the current candidate works in a biomass conversion area, with an emphasis on pre-treatment of lignocellulosic material; fermentative processes involving hemicellulosic hydrolysates for the production of polymers and pigments; natural antioxidants and food processing; use of membranes for product

purification; treatment of effluents and other compounds. Currently, published 31 publications in high impact journals (Bioresource Technology, Food Chemistry, Renewable Energy, Ultrasonic Sonochemistry, Environmental Chemical Engineering, Water, and others), 11 book chapters (Elsevier, Springer and Tyler and Francis) and 3 patent requests filed with the INPI-Brazil, still presenting an h-index of 19, second to Google Scholar Citation tool, or 17 second to tool SCOPUS. Finally, he acts as a reviewer for more than 12 international journals, including Bioresource Technology, Ultrasonics Sonochemistry, Scientific Reports, Trends in Food Science & Technology, Industrial Crops and Products, Energy Conversion and Management, and Bioresources and Bioprocessing.