



Patricia MUÑOZ-ESCALONA

Home Country
Venezuela

Degree
PhD in Manufacturing
Engineering

Expertise
Mechanical Engineering

Research Focus
Tool Wear and Workpiece
Surface Roughness

Host University
University of Bath, United
Kingdom

Fellowship Awarded
2005

Patricia Muñoz-Escalona was born in Germany but has lived in Venezuela since she was four years old. Now married with two children, she obtained her undergraduate degree in materials engineering and her master's degree in mechanical engineering at the Simón Bolívar University in Caracas, Venezuela.

Since 1992 Patricia has been lecturing on manufacturing processes at Simón Bolívar University, and in 2005 she began pursuing a doctoral degree in manufacturing processes at the University of Bath in the United Kingdom.

Patricia's research focus on the prediction of surface roughness prior to a machining process has attracted a great deal of attention, since the geometric structure of rough surfaces influences a multitude of physical phenomena such as contact resistance friction, wear and lubrication – all of which is relevant to many engineering applications.

The evaluation of surface quality based on surface roughness, which generally plays an important role in such things as wear resistance and ductility as well as tensile and fatigue strength for machined parts, cannot be neglected in design. To be able to select an appropriate combination of parameters that provide desired surface quality, it is important to ascertain the influence of different factors involved in the cutting process. These factors depend on the properties of the workpiece material, on the cutting tool, and on the cutting conditions and process phenomena.

Patricia aims to improve prediction methods of estimating surface roughness on face milling parts under different cutting conditions. She hopes this will lead to a geometric analytical model to be developed for Al 7075 T7351, an alloy considered especially important in the aerospace industry.

When she completes her studies, Patricia will continue teaching at Simón Bolívar University in Venezuela.