

## **Martha Lucía Zequera Díaz PH.D**

**Martha Lucía Zequera Díaz PH.D** is a professor of Bioengineering and Biomechanics at the Department of Electronics, University of Javeriana, Colombia.

She received her Doctorate of Science in Bioengineering from the Bioengineering Unit of Strathclyde University, Glasgow U.K. 2003. (Thesis in Computer Model for Diabetic Foot Diagnosis and treatment). She joined the Signal Analysis and Image Processing research group BASPI at Javeriana University. She is currently teaching and leading projects in biomechanics tissue properties and pressure measurements. She has lectured at several universities in Colombia.

Martha Zequera has been invited speaker at a number of international conferences and she has published a number of papers in journals and conference proceedings, since 2004 she has been the secretary of the Latin American Regional Council on Biomedical Engineering (CORAL), an organization cosponsored by IEEE / EMBS and IFMBE.

She was the founding president of the Colombian EMB/ IEEE Chapter and She is EMBS AdCom member as Region 9 (Latin America) Representative 2009 – 2011.

### **COMPUTER SYSTEM FOR THE DESIGN OF A NOVEL INSOLE BASED ON CLINICAL, ANTHROPOMETRIC AND BIOMECHANICAL PATIENT INFORMATION**

It has been well documented that subjects with peripheral neuropathy resulting from diabetes mellitus are at high risk of developing foot ulceration. The aim for this project was to design a computer model for the design of an insole based on clinical, anthropometric and plantar pressure distribution patient information.

The insoles produced by the computer system model (CAD/CAM and Expert system) showed the best results, specifically by reducing pressure found in areas such as the hallux, metatarsal heads and heel. This new method confirmed the importance of combining clinical and anthropometric pressure measurements and biomechanics of soft plantar tissue information during the design of proper-fitting insoles for subjects with peripheral neuropathy resulting from diabetes mellitus.