

## **Resume: Suelia de Siqueira Rodrigues Fleury Rosa**

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Latin America – Brazil

**Job title:** Associate Professor at University of Brasilia

**Background:** Professor and Researcher in Latin America, located in the Center-West microregion of Brazil. Has 16 years of experience. She has demonstrated its capacity to build innovative equipment applied to national health. She holds more than 15 patents and has engaged in dialogues with the state and private environments, taking her research to society.

**Summary:** Holds master's and PhD degrees and has engaged in post-doc education. Extensive experience in scientific initiation training. Highly motivated professional, knowledgeable in technology, Exceptional analytical skills. Extensive experience in the development and management of research groups. Energetic activity in local society, taking engineering to public schools, involving associations and universities, and expanding work and development networks. Has taught subjects such as circuit practices, digital control, and biocomplex systems. Influences young students, teaching an average of 12 students per semester from the final undergraduate final project. Works to increase institutional indicators by promoting collaborative work, and application for patents and licenses.

### **Education**

PhD in **Electronic Engineering and Biomedicine**, University of Brasília, Brasilia-DF, Brazil, 2008.

Master's degree in **Electronic Engineering - Mechatronics**, Aeronautics Institute of Technology (ITA), São José dos Campos-SP, Brazil, 2005

Undergraduate degree in **Electronic Engineering**, São Paulo State University (UNESP), São Paulo-SP, Brazil, 2001.

### **Activities**

Postdoctorate in the Media Lab of the Massachusetts Institute of Technology (MIT), 2013.

Volunteer on a Human Research Ethics Committee; Volunteer as coordinator of competition student teams; Assistant Leader for organization of a book collection in biomedical engineering.

**Other Information:** Has received all her education and training in public schools. Dreamed of being a scientist from early childhood. She is proud to point out that her children also study at public institutions and follow this path. Her parents had no higher education, and her father was illiterate, so her parents saw education as her chance to build a better future. She always wanted to grow and see other worlds, and always wanted to pursue her studies outside the state. She was not intimidated by being a black woman from a low-income family in Goiás. In 1997, she began her path to becoming a scientist and engineer when she went to São Paulo to start her education. A pioneering spirit has always been one of her outstanding characteristics, as a student and in her future as a professional. She acts with discipline, commitment, and humility.

### **Project Coordination Experience**

The Vesta® project is a pragmatic, randomized, controlled clinical trial to assess the effectiveness of respirators with chitosan nanoparticles to reduce the incidence of contamination and infection by SARS-CoV-2 among healthcare professionals. A mask was developed for national use, and the primary outcome of the study will be counting the number of professionals who experience the occurrence of SARS-CoV-2 contamination and infection, confirmed by laboratory tests. In addition, measures will be taken to identify and quantify the viruses retained in the respirators used. This project is expected to determine whether the VESTA respirator is more effective than the standard N95 respirator. The effectiveness of an individual protection semi-facial respirator, model N95, will be compared by assessing the absence or presence of coverage with chitosan nanoparticles (called VESTA). The respirators will be tested by healthcare professionals who work

in a hospital environment. The respirators' effectiveness will be measured by whether their use leads to lower incidence rates of contamination and infection by SARS-CoV-2. It may also be possible to attribute the effectiveness of these respirators to their function of filtering these viruses after use by healthcare professionals exposed to potentially contaminated environments. A controlled and randomized clinical trial will be carried out in two stages: i) Pilot Clinical Trial with a reduced sample; and ii) Controlled and Randomized Clinical Trial.

The Sofia® project is a research and development project for a national prototype for an ablation solution to liver cancer treatment. Its purpose is to generate innovation in the area so that it can be internationally traded. Due to the epidemiological incidence of hepatocellular carcinoma (HCC) and the limitations of therapeutic approaches to this disease, radiofrequency ablation equipment (ARF) with an umbrella electrode was created with entirely national technology, motivated by scientific and practical evidence. The purpose of the project was to compare this equipment with the use of similar foreign-made equipment. The construction of this equipment was carried out at the Biomedical Engineering Laboratory (LaB) of the University of Brasília (UnB), coordinated by Prof. Suélia Fleury Rosa, through the Cooperation Agreement between the University of Brasília Foundation (FUB) and the Ministry of Health (MS). This allowed development of liver ablation equipment with totally national technology, including intense ablation (SOFIA software). SOFIA was designed to provide radiofrequency (RF) energy in coagulation and ablation of soft tissues percutaneously, by laparoscopy, or intraoperatively, created by a generator, electrodes, and control software. The objective of the SOFIA project is the development of a device to be used as medical assistance equipment (EMA) and promotion of its assimilation into the Unified Health System (SUS).

The Rapha® project focuses on a portable medical device for the treatment of wounds and tissue healing in diabetes patients that can be acquired by SUS and included in their diabetes treatment. One of the essential disorders linked to chronic diabetes is so-called diabetic foot. Currently, the Unified Health System (SUS) receives a large part of the demand for treatment of diabetic foot, but the technologies incorporated in its system (such as silver alginate), and light technologies such as wound dressing, are not sufficient for healing and are accompanied by complications leading to lower limb amputation in severe cases. This project is a partnership between the University of Brasilia Foundation (FUB) and the Ministry of Health (MS). Its purpose is to develop and produce equipment that aims to treat and cure this condition, reducing amputation rates, and, in particular, the healing time for wound. This research's innovation is to combine in a single piece of equipment latex dressing with characteristics of new tissue formation and the LED lights that accelerate this process.

### **Professional Experience:**

University of Brasília - UnB, Associate Professor, 2005-present.

Coordinator of the Graduate Program in Biomedical Engineering (PPGEB), Faculdade Gama, UnB, in two administrations 2017-2019.

Industrial Automation Engineer, SIEMENS Ltda Company, 2001-2003

Professor at the Higher Education Institute of Brasília - IESB, 2005-2006

Research Biomedical Products SARAH Network of Rehabilitation Hospitals, 2006.

Permanent member of the Human Research Ethics Committee - FS.

Fellow of the Brazilian Society of Professionals in Clinical Research.

Fellow of the Brazilian Society of Biomedical Engineering - SBEB.

Fellow of the ABCM Committee of Nonlinear and Chaotic Phenomena. -

Associate Member of the Brazilian Diabetes Society - SBD

President of the Regional Chapter: R9 - Latin America Section: Central-North Brazil Section (2020-2022) - IEEE - Member

Member of the following Societies : IEEE Electron Devices Society; Engineering in Medicine and Biology; Microwave Theory and Techniques; and Women in Engineering.

Fellow of CNPq (National Council for Scientific and Technological Development) productivity and technological development since 2014.