



SONIA GUIMARÃES – ENGLISH VERSION

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Abstract: Sonia Guimarães, born in São Paulo in 1956, daughter of an upholsterer and a housewife. She was always the second in the class in all subjects and was passionate about teachers of Mathematics, Physics and Chemistry. In 1974, she finished high school and then entered the São Paulo High School of Arts and Crafts, where she took the technical course in buildings. She enters the Bachelor of Science course at the Federal University of São Carlos (UFSCar) and concludes it in 1979. Then, in 1983, she completed her master's degree in Applied Physics at the São Carlos Institute of Physics and Chemistry, University of São Paulo (USP). In 1989, Sonia obtained a Ph.D. in electronic materials from the University of Manchester Institute of Science and Technology. In 1993, Sonia became a professor of physics at the Technological Institute of Aeronautics (ITA). (ITA). She is currently an employee of the Ministry of Defense of Brazil, in the Department of Aerospace Science and Technology (DCTA), as an adjunct professor at ITA.

Keywords: black woman; life trajectory; physics; science

SONIA GUIMARÃES

Resumo: Sonia Guimarães, nascida em São Paulo em 1956, filha de tapeceiro e de dona de casa, sempre foi a segunda da classe em todas as matérias e era uma apaixonada pelas professoras e pelos professores de Matemática, Física e Química. Em 1974, concluiu o colegial e, então, ingressou no Liceu de Artes e Ofícios de São Paulo, onde fez o curso técnico em edificações. Posteriormente, ela ingressou no curso de Licenciatura em Ciências, na Universidade Federal de São Carlos (UFSCar), e o concluiu em 1979. Então, em 1983, finalizou o mestrado em Física Aplicada pelo Instituto de Física e Química de São Carlos, da Universidade de São Paulo (USP). Em 1989, Sonia obteve o título de Ph.D. em materiais eletrônicos pelo Instituto de Ciência e Tecnologia da Universidade de Manchester. Em 1993, tornou-se professora de Física no Instituto Tecnológico da Aeronáutica (ITA). Atualmente, é funcionária do Ministério da Defesa do Brasil, no Departamento de Ciência e Tecnologia Aeroespacial (DCTA), como professora adjunta do ITA.

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Palavras-Chave: mulher negra; trajetória de vida; física; ciência.

SONIA GUIMARÃES

Resumen: Sonia Guimarães, nacida en São Paulo en 1956, hija de un tapicero y de una dueña de casa, siempre fue la segunda en la clase en todas las materias y fue una apasionada de maestros y maestras de Matemática, Física y Química. En 1974, terminó la escuela secundaria y luego ingresó al Liceu de Artes e Ofícios en São Paulo, donde tomó el curso técnico en edificios. Ingresó al curso de Licenciatura en Ciencias en la Universidad Federal de São Carlos (UFSCar) y concluye en 1979. Luego, en 1983, completó su maestría en Física Aplicada en el Instituto de Física y Química de São Carlos, Universidad de São Paulo (USP). En 1989, Sonia obtuvo un doctorado en materiales electrónicos del Instituto de Ciencia y Tecnología de la Universidad de Manchester. En 1993, Sonia se convirtió en profesora de física en el Instituto Tecnológico de Aeronáutica (ITA). Actualmente es empleada del Ministerio de Defensa de Brasil, en el Departamento de Ciencia y Tecnología Aeroespacial (DCTA), como profesora adjunta en ITA.

Palabras-clave: mujer negra; trayectoria de vida; física; ciencia

SONIA GUIMARÃES

Résumé: Sonia Guimarães, née à São Paulo en 1956, fille d'un tapissier et d'une femme au foyer, était toujours la deuxième de la classe dans toutes les matières et était passionnée par les enseignants de mathématiques, de physique et de chimie. En 1974, elle termine ses études secondaires puis entre au Lycée des Arts et Métiers de São Paulo, où elle suit le cours technique des bâtiments. Elle entre au Baccalauréat en Enseignement des Sciences de l'Université fédérale de São Carlos (UFSCar) et le termine en 1979. Puis, en 1983, elle a terminé son master en Physique Appliquée à l'Institut de Physique et de Chimie de São Carlos de l'Université de São Paulo (USP). En 1989, Sonia a obtenu un doctorat en matériaux électroniques de l'Institut des Sciences et Technologies de l'Université de Manchester. En 1993, Sonia est devenue professeur de physique à l'Institut Technologique d'Aéronautique (ITA). Elle est actuellement employée au Ministère de la Défense du Brésil, au Département des Sciences et Technologies Aérospatiales (DCTA), en tant que professeure auxiliaire à l'ITA.

Mots-clés: femme noire; trajectoire de vie; physique; science

FIRST BLACK WOMAN WITH A PhD IN PHYSICS

Sonia Guimarães (figure 1) was born in São Paulo, on June 20, 1956. Daughter of José de Souza Guimarães Filho, tapestry maker, and Clélia dos Santos Guimarães, housewife. Sonia was a student who always loved maths, physics and had a propensity of learning languages very easily.

Figure 1: Sonia Guimarães



Source: CDES, 2017.

The young student was always the second in the class in all subjects and was passionate about teachers of Mathematics, Physics and Chemistry. In December 1971, she graduated from her elementary studies (so called “ginásio”). At that time, there was an entrance exam to move from elementary to high school and Sonia passed the test with the second-best grade. In 1974, she finished high school as the second-best student. She then entered the Lyceum of Arts and Crafts of São Paulo, where she attended the technical course in Building Constructions.

Upon completion this course, Sonia took the last of the MAPOFEI entrance exam, an entrance exam for the main engineering universities in São Paulo. After filling for 13 engineering institutions, there were three left in which she filled in with the option of Physics and was approved under the 15th position. Thus, she entered the Science course at the Federal University of São Carlos (UFSCar).

When she was in her third year of graduation in Physics, Sonia took a new entrance exam for Civil Engineering, as UFSCar started offering this course. However, in that same year Sonia started to study Quantum Physics and Semiconductors when such area was still quite new. Fascinated by the possibilities of technological innovations in semiconductors in microelectronics, Sonia lost interest in engineering.

She completed the Bachelor of Science course at the Federal University of São Carlos, in 1979. Shortly after that, she developed research on anti-reflective layers of solar cells, a semiconductor device, in the master's degree in Applied Physics by the Institute of Physics and Chemistry of São Carlos, from the University of São Paulo (USP), in 1983. During her studies, she met an Italian professor, Dr. Giancarlo Celoti, who was spending a sabbatical in Brazil. He suggests that Sonia go to Italy. Later, Sonia joined the doctorate in microelectronic devices at the Polytechnic School of the University of São Paulo.

Then, through a split-site doctoral program granted by the National Council for Scientific and Technological Development (CNPq), she went to Bologna to do the experimental part of her thesis. However, when she was in Italy, Sonia received a proposal to do a doctorate in England, also with a scholarship. She leaves to Manchester and completes her doctorate researching shallow junctions in microelectronics.

In 1989, Sonia obtained a Ph.D. in electronic materials from the University of Manchester Institute of Science and Technology. Upon returning to Brazil, Sonia started working on microelectronics at the Centro Técnico de Informática in Campinas, in the interior of São Paulo. In 1993, she attended a public tender to become a physics teacher at the Instituto Tecnológico da Aeronáutica (ITA), and got approved on it.

Currently, Sonia is an employee of the Ministry of Defense of Brazil, in the Department of Aerospace Science and Technology (DCTA), as an adjunct professor at ITA. In this institution, which until 1996 did not accept women as students, Sonia Guimarães participates in the training of professionals in the undergraduate and graduate courses of engineering courses unique in the country, such as Electronics and Computing applied to Aeronautics, Aircraft Mechanics, Civil Engineering for airport construction, Aerospace Engineering, and other courses that train professionals dealing with air defense, rockets and satellites.

Sonia has experience in the field of Applied Physics, with an emphasis on electrical and optical properties of epitaxially grown semiconductor alloys. She works mainly on issues related to the epitaxial growth of layers of lead telluride and indium antimonide by diffusion, processing, obtaining, and characterizing photoconductive devices and infrared radiation sensors. Sonia also has experience in the field of Physics

Teaching applying the Problem Based Learning / Project Methodology (Problem Based Learning, PBL), using the computational tools: Tracker, Arduino and Mathematica.

In addition, Sonia Guimarães has the title of the first Brazilian black woman to obtain a doctorate in Physics. Along with her academic excellence, she is aware of her position as a black woman in Brazilian society and academia. She collaborates with the Brazilian Association of Black Researchers (ABPN), works as a volunteer to teach English to black students and is an advisor to Afrobrás, a black organization that runs the Faculty of Citizenship Zumbi dos Palmares, the first black university in Brazil.

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