

INTERVIEW



Gisele Birman Tonietto, a coordinator of development projects and a dynamic researcher also dedicated to the dissemination of science, kindly spoke to BrJAC

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Prof. Dr. Gisele Birman Tonietto is a professor in the Department of Chemistry at the Pontifical Catholic University of Rio de Janeiro (PUC-Rio) and Coordinator of Development Projects at the Analytical Center of the same university. Prof. Tonietto holds a degree in Industrial Chemistry from the Fluminense Federal University (1989), a master's degree in Chemistry from PUC-RIO (1995), and a Ph.D. in Chemistry from PUC-RIO (2006). Her research focuses on analytical chemistry, working mainly on ion chromatography, microwaves, arsenic and selenium speciation, and isotopic analysis of carbon, hydrogen and oxygen. Prof. Tonietto is also dedicated to the dissemination of science, developing digital content and promoting interviews, round tables, and training in various areas of chemistry. She received the University Merit Diploma from PUC-Rio in 2021 and is a member of the Technical Chamber of Oil and Gas of the Regional Council of Chemistry of Rio de Janeiro.

What early influences encouraged you to study science? Did you have any influencers, such as a teacher?

Fortunately, I had an excellent basic education. Curiosity and critical thinking were encouraged in me both at home and at school. Regarding science specifically, it was an innate curiosity in me. In elementary and high school, I had excellent teachers in both history and chemistry, and for a long time, I was very unsure about which career to pursue. I took the entrance exam for both university courses.

What motivated you? How was the beginning of your professional career?

I started studying industrial chemistry at the Fluminense Federal University (UFF), as it was, at that time, the only course that was not a Licentiate nor a BSc degree. At that time, I was sure that I would not be a teacher. My dream has always been to be a researcher, no matter the subject or the area of research. I am a very curious person; I like to study and apply scientific methodology towards discoveries. And this has always been my guide.

I took a new entrance exam because my father insisted very much that I study chemical engineering. He believed that chemical engineering would expand my professional possibilities. I ended up attending

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two courses: industrial chemistry and chemical engineering, both at UFF, which was possible at that time.

I was a Scientific Initiation scholarship holder and then an intern at Shell Co. located in “Ilha do Governador”, an island in Guanabara Bay, Rio de Janeiro city. For nine months, I sailed through the Guanabara Bay by ferry-boat several times a day. In the morning, I took the ferry-boat from “Praça XV” in downtown Rio de Janeiro, heading to the UFF Chemistry Institute in the “Morro do Valonguinho” in downtown Niterói, a city on the other side of Guanabara Bay. At noon, I took the ferry-boat heading to “Ilha do Governador” for the internship at Shell. In the late afternoon, I returned to Niterói for the chemical engineering classes. I loved being on the ferry-boat and not in a bus!

Later, I did an internship at the Petrobras Research Center – CENPES. As I was studying industrial chemistry and chemical engineering, I was an intern at the Chemistry Department and then at the Refining Division, so I could experience both chemistry and engineering.

After graduating from the university, I worked for the Center of Mineral Technology (CETEM, RJ), a research unit linked to the Ministry of Science, Technology and Innovations. Then, I returned to CENPES, where I worked in the Chemical Department for many years.

What has changed in the student’s profile, ambitions and performance since the time you started your career?

My relationship with teaching began at the CENPES research center, where more experienced professionals were required to disseminate their knowledge in different ways, including training less experienced professionals. At CENPES, I gave classes on ion chromatography and on microwave energy and its use in the oil industry. At PUC-Rio, I taught analytical chemistry and general chemistry. Students at a research center are very different from students at a university, obviously. However, on the other hand, a student is always a student, and it is up to us, the teachers, to involve and encourage the students as well as to provide moments where learning can go beyond the classroom. Chemistry offers the possibility of applying theories to practices. I always believed that this is the best way to learn: applying!

Could you comment briefly on the recent evolution of analytical chemistry, considering your contributions?

Working in a research center with super competent and committed colleagues, with a very complete and complex instrumental infrastructure, and with thought-provoking challenges and goals was, without a doubt, a privilege. Working in a university that values professionals and contributes to the viability of their projects is also a privilege. I followed these paths, which, despite being distinct, both made up my professional career. At CENPES, I had the opportunity to work with cutting-edge analytical techniques and to be responsible for their dissemination throughout Brazil. In addition, I was part of international groups of scientists who tested instruments before they were introduced to the market. I gave several courses and trainings in the use of ion chromatography – an analytical technique that was entering the market and would revolutionize the way we detected ions – and courses in the use of microwave energy. In my doctorate, I employed high performance liquid chromatography hyphenated to inductively coupled plasma mass spectrometry (HPLC-ICP-MS) analytical techniques for chemical speciation, which was a great novelty from both a theoretical and practical point of view. Nowadays, hyphenated analytical techniques are being used in different ways, and I am very proud to have been able to contribute to their development.

What are your lines of research?

I am currently the Manager of the Analytical Center at PUC-Rio. In this position, I am responsible for coordinating and making research projects and services possible. I coordinate several teams of specialists dedicated to various lines of research to meet the different demands that come to the Analytical Center. Analytical chemistry provides a very broad view of chemistry, and my professional experience brought me the possibility of management that I really enjoy, in addition to providing me with the best network of friends, colleagues, and professionals! Bringing the best people to work together is my favorite highlight.

There are several conferences on chemistry in Brazil and in the world. To you, how important are these meetings to the scientific community?

Academic meetings are essential for us to meet researchers and update our knowledge.

You also work in the dissemination of science. How do you develop this work?

I promote nice people who do interesting things! I like the backstage, the audience, to put everyone together and be in the organization, in the management, in the support. I do this by being the curator of Platform ECOA (ecoa.puc-rio.br) at PUC-Rio, our scientific dissemination streaming that offers open content in an integrated way, in a browsing experience in the best style of the famous video streaming platforms. Together with other professors, I elaborate digital content on topics of interest to society and participate in scientific podcasts such as SciCast with the purpose of providing access to science.

For you, what is the importance of the national funding agencies for the scientific development of Brazil?

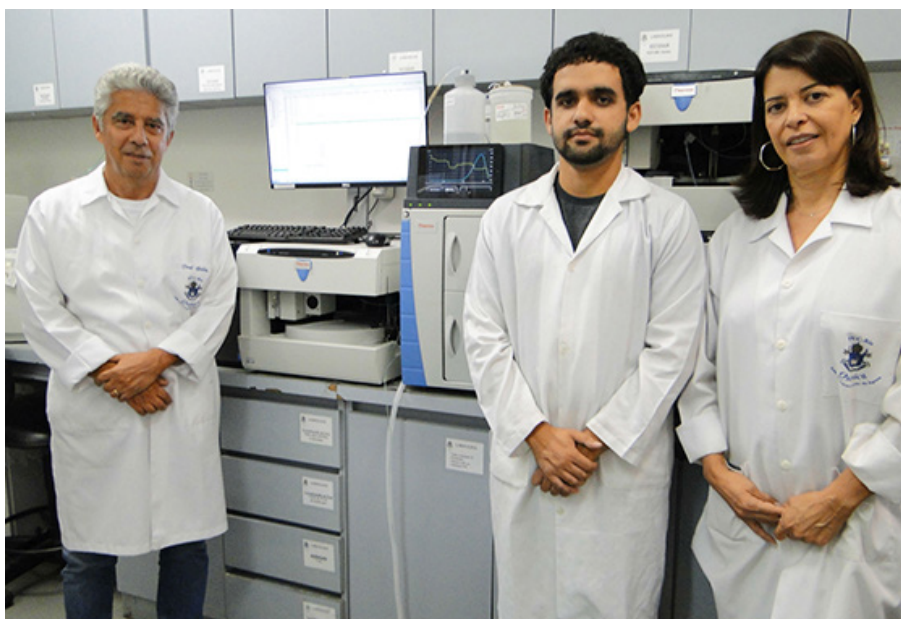
In one word: fundamental! The funding agencies provide autonomy to researchers and national sovereignty.

At the moment, the situation for scientific research in Brazil is one of decreasing investment. How do you see this situation, and what would you say to young researchers?

Although we are living a very serious, worrisome, sad, and even shameful moment, I would say to the young people: Don't give up, because we don't give up on you, and we believe and need you to rebuild this nation. I believe that our role as older researchers is, above all, to encourage the younger ones, always, even in the darkest times.

What advice would you give to a young scientist who wants to pursue a career in analytical chemistry?

Keep your curiosity, your critical spirit. Don't accept obvious answers, formulate your questions, and seek your own answers.



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