

Speech by Professor Mônica A. Cotta – the sworn in president – delivered during the inauguration ceremony of B-MRS's executive board for the February 2020 – February 2022 period.

Dear Professor Tereza, Brigadeiro Pazini Brandão, Professor Pascoal, Professor Osvaldo, and other authorities, colleagues, friends and family in attendance, good morning!

Personally, I find it very symbolic that this ceremony takes place in the IFGW auditorium. Several decades ago, when I was a student at the Institute and this auditorium was still a classroom, I told a very dear professor, with whom I always talked, that my PhD would be in semiconductor synthesis, or, as we call it in our area, in the growth of thin semiconductor films. To this day I remember the expression of horror on his face, saying “But that is not physics, it is kitchen cooking!” (Honestly, I don’t know if the term ‘kitchen’ came to mind because I’m a woman). His words made quite an impression; so much that I still remember it. But as I am stubborn, I continued my PhD in this area, working my backside off, as my students say...

Luckily, I had the opportunity to do a postdoc in an important research laboratory of a private company, in the USA. In fact, at the Materials Research Dept where I worked, no one ever asked me about my background; over time I discovered that everyone was there: physicists, chemists and engineers. The important thing, in that laboratory, was the focus of the research carried out, the development of wireless technology. I don't know if the younger audience here knows this, but not everything started by connecting wirelessly!

On my return to Brazil, in the 90's, I again found the “boxes” of the areas all disconnected. So, I was very happy to know that several colleagues, represented here by Professor Elson Longo, were articulating the creation of a multi and interdisciplinary society, B-MRS, founded in 2001. At that time two young children did not allow me to participate more actively, but I knew that this was the way forward the community would follow.

In 2008, a new milestone: the creation, at CAPES, of the Materials Coordination area, represented here by Professor Martinelli, a member of our board of directors. Note, however, that the coordination is not in Engineering or Science, but simply “Materials”, representing the merging of the areas. This is because Materials is in fact a highly interdisciplinary area, where basic concepts of natural sciences are integrated with applications in multiple areas, such as engineering, pharmacy, medicine, dentistry, for example. All this knowledge is used with a focus on the development of new properties of already known materials or new compounds that we have not yet found in nature.

In fact, materials are today the basis of all our technology. As Stephan Heck, a Silicon Valley businessman linked to the Energy Institute at Stanford University, said, until about 200 years ago, 3 chemical elements were the basis of our civilization: carbon, the main element of wood and coal; calcium, the base of cement, and iron, which replaced stones and bronze. In the last century, however, more than 70 elements in the periodic table have been incorporated and are commonly used in our current technology. Thus, one of the strengths of materials derives precisely from the synergy between the areas. And this necessarily requires good communication skills between researchers, respecting complementary expertise, sharing knowledge, to obtain a product that is greater than the sum of its parts. We believe that this is why the annual B-MRS events have steadily increased, even in times of crisis, as they are forums for all types of expertise and areas of knowledge.

It is this vibrant community of researchers that B-MRS represents and helps to foster, while seeking internationalization in partnerships with companies or societies aligned with the same interests. As a scientific society in Brazil, however, we have many challenges; unfortunately, many of them are disproportionate to the size of our community. One of these challenges comes from the use of technology that we, as researchers, help to provide. Virology knowledge can prevent coronavirus epidemics and create vaccines, but can also generate biological weapons. Today, our society uses cell phones and wireless technology, the same technology I saw being developed in my postdoc, allied to the internet, which in its early days benefited mainly the scientific community, to spread that vaccines are bad and that the Earth is flat... Fake news networks explore weaknesses in the

framework of our neurological system, developed slowly throughout the evolutionary process as a survival strategy for the species, to polarize and fragment the social network, with the most diverse objectives.

Arthur C. Clarke, the famous British science fiction writer, said that “Any technology sufficiently advanced is equivalent to magic.” And today, for a good part of the world population, and for the Brazilian population in particular, technology is like magic. Perhaps because it is too difficult to understand how it works, perhaps because no one has been willing to explain it. Thus, in order to reduce the distance between lay society and knowledge and technology, represented by academia, we have to relearn how to communicate, and especially, to win the attention of our interlocutors, a difficult task, as our colleagues who work in science popularization know very well. In addition, poorly made statements, such as that made by my professor so many years ago, can change life paths, particularly for those people who no longer see themselves as represented in society. Therefore, communication is essential. And this is one of the fronts where our management at B-MRS intends to participate in. The importance of materials in all areas of human life facilitates dialogue with society, and our researchers have the ability to communicate as part of their work strategy.

Materials research also impacts environmental and sustainability issues, so important in a degraded planet... How many materials have not yet been derived from our rich biodiversity, whose already identified compounds have their own American Chemical Society database? As a scientific society, we need to take care of all these aspects for the new generations and work together and more closely with them, in an environment of social, geographical, ethnic and gender diversity and representativeness. Because for science to not collapse, it needs the continuous renewal of researchers and all the talents it can raise - without being limited by barriers of any kind. To evolve, science needs creativity, innovation, and new ideas - and these come from people's experience throughout their life trajectory, not just from strict academic training. That is why representativeness, diversity and inclusion are essential elements for a knowledge-based and less unequal society, we hope. In this regard, public and free Brazilian universities, where most of the research is done in the country, have enormous experience to share.

Our management at B-MRS aims to encourage our students, through our University Chapters, to further interact with society, trying to show young people that doing science can be an exciting and even fun adventure! In the current scenario of economic and intellectual hardships, with little appreciation of scientific and technological research as a career, and continued funding cuts, this is an enormous challenge. But we hope we can contribute, acting together with other similar initiatives that are becoming more frequent in our country, such as the recently launched Bori agency, financed by Fapesp and Instituto Serrapilheira, whose name pays tribute to a pioneering scientist and first woman president of the Society for the Progress of Science, SBPC.

Finally, I would like to remind you that our duty as researchers or as a scientific society is not to regulate the use of knowledge, or the technology that comes from it – that is the role of society as a whole, or the legally constituted state that represents it. But we cannot ignore the misuse of knowledge or technology generated by science. We cannot neglect situations where mere opinions, without any scientific basis, are used to support decisions that affect the lives of millions of people or the future of the planet. For this reason, B-MRS will continue to support the excellent work that SBPC and the Brazilian Academy of Sciences have led in recent years, working with the National Congress in a purposeful and meaningful way, and strongly demonstrating defense of Brazilian research and science.

I would like to end this speech by thanking many people. First, on a personal perspective, I would like to thank my family, my greatest treasure. I was privileged to have parents who were present and who believed in education as the biggest investment for their children, a scientist husband who does not complain when I need to stay in the laboratory until late, and children who understand and accept their workaholic mother, who loves what she does. I am grateful to my colleagues and collaborators – many of whom have become dear friends – in this decades-long journey in the materials area, as well as to my students, who have become my adopted children, and who always make me learn more in our everyday life. Speaking now for B-MRS, I would like to thank Professor Pascoal, for welcoming

me to this ceremony at the IFGW, and to my colleague, Antonio Riul Jr for his role as master of ceremonies. I am also grateful for the confidence by my colleagues in the board, Andrea, Ieda, Ivan, Martinelli, Newton and Rubem (in alphabetical order), for this endeavor, because without them I would not be here. I count on your support and work so that we can deal with the many challenges ahead. I also take the opportunity to thank the support of the small but super-tough B-MRS staff, Marcia, Alexandre and Verónica, as well as the Aptor team, who take care of our IT structure. Everyone is “on board and fully committed” and make things happen, always undertaking the greatest responsibility. I hope to count on your support over the next two years. I also want to express my thanks to the board members at B-MRS for the past 4 years, and my special recognition to Professor Osvaldo, the famous Chu, our now former-president, for his valuable interaction and learning throughout his term, and for encourage me to occupy the presidency of the Society when it celebrates two decades of life. I sincerely hope to be up to the job.

Thank you for your attention and a good day to everyone.