Terahertz Pioneers

A Series of Interviews with Significant Contributors to Terahertz Science and Technology

AS A TRIBUTE to individuals who have contributed significantly, and over many years, to the terahertz community, and as a guide and inspiration for those who are just beginning their professional association with this field of study, these transactions have included, on a regular basis, a series of biographical interviews with technical researchers who have appreciably impacted the THz community in a positive manner. In order to go beyond a strict technical review and to take better advantage of the information and commentary only available through a direct discussion, these articles take on a less formal style than the research articles that can be found within the remaining pages of the transactions. The Editor-in-Chief has taken some leeway in this regard, for the benefit of communicating more fully the character, experiences, and historic circumstances that have shaped our community and set the directions for our collective research. As a further means of assuring that the true flavor and circumstances of the contributions are expressed in the text, all of the articles are compiled after a face-to-face interview. The final text is shared with, and often helped considerably, by comments from the subject of the article. The Editor-in-Chief, with the support of the IEEE MTT Publications Committee, has chosen to incorporate these biographical articles within the more formal technical journal because of the diversity of disciplines that make up the THz community and the prior absence of a single unifying publication with sufficient outreach to extend across the whole of the RF and optical THz disciplines. The Editor-in-Chief hopes you will enjoy the short diversion of reading these articles as much as he himself enjoys the process of composing them.

In continuing with our *Pioneer* series this month, we again turn to the field of radio astronomy, which has had the most historic influence on the development of terahertz science and sensor technology. Our subject is Dr. Thijs de Graauw,¹ the recently “retired” director of the Atacama Large Millimeter

Array (ALMA), the largest and most expensive ground based telescope project ever realized. At age 71, Thijs is still working harder than most 25 year olds. He has just taken on two new challenges, buildup of the millimeter-wave astronomy capability throughout South America as mentor of the LLAMA (Large Latin American Millimeter Array) project, and Deputy Science Lead for the very exciting Millimetron mission (led by Nikolai S. Kardashev, deputy director of the Russian Space Research Institute, Moscow), a Russian submillimeter-wave space science telescope for L2 orbit with a projected 10 m diameter cooled deployable antenna.

Thijs is not simply known for his “post 65” accomplishments however. He began working on infrared and submillimeter-wave receivers as a graduate student at Utrecht University, the Netherlands, back in 1975 and continued in this endeavor as a member of ESTEC—the European Space Research and Technology Center in Noordwijk and then as a Director at SRON—the Netherlands Institute for Space Research. He was principal investigator on not one, but two major space flight instruments, and was one of the key motivators for the ultra-successful Herschel Space Telescope mission, an ESA Fourth Cornerstone project launched in 2009.

If you thought Thijs’s career was all smooth sailing however, read on. This feisty but driven scientist is not only unafraid to speak out for what he believes is the right thing to do, but backs up his rhetoric with actions. His mantra—*Intention, Attention, Execution* is one to which we should give much more *attention*. I think you will come to appreciate Thijs’s many contributions to THz science and instruments as you continue on with his story.

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¹This interview was conducted in the small town of San Pedro, perched on a high flat plateau in the Atacama Desert of northern Chile between November 18th and 20th, 2013. San Pedro is the closest town to the site of the Atacama Large Millimeter Array (ALMA), without doubt the most complex and technically ambitious astronomical science project ever undertaken. Dr. **Thijs de Graauw**, generously agreed to fly up from his home in Santiago to meet, talk, and take me to see this fabulous facility that he famously described as, “the largest science project ever, where nobody was in charge, but we have made it work.” Of course, Thijs was in charge, and was responsible for making ALMA work. As you shall see in this article, it was not the only thing that Thijs made “work”.