I tried to solve special physical sciences problems that I was given weekly by an assistant. I was amazed by the power of physical science to explain many problems in our everyday life.

Q. How did you get started in your academic career?
A. In the eleventh grade, I was looking for a high-ranked university to study physics. I applied for a scholarship at Moscow State University, and started my studies there. During my diploma thesis, I studied tunneling in narrow gap semiconductors. For my PhD thesis, also at Moscow State University, I studied Shubnikov-de Haas oscillations in bismuth under high pressure and high magnetic fields under the supervision of Professor Brandt. Following my PhD, I then took up my first post-doctoral position at the University Jena studying low-TC and high-TC Josephson junctions.

Q. When did you start working in the terahertz field?
A. In 1996 I started my studies in terahertz technologies by developing mixers for 345 GHz based on YBa$_2$Cu$_3$O$_{7-x}$, a new high-temperature superconductor with a transition temperature of 92 K. These devices worked very well and gave noise temperatures of 500 K at 500 GHz at an operation temperature of 77 K. This was amazing because of the ease of cooling, and the greatly reduced size of the mechanical cryocooler.

Q. Has the terahertz field developed as you might have expected? What have been the biggest surprises?
A. In the area of terahertz devices, some very important new discoveries have been made. The ones which I find the most surprising are the demonstration of hot-electron bolometers based on ultra-thin films of NbN for use as terahertz mixers, and the demonstration of quantum cascade lasers, with their potential for use as local oscillators. Using both devices compact terahertz heterodyne receivers have been built for the first time. More surprising was the finding that these receivers achieved a noise temperature of 850 K at 2.5 THz, which is close or identical to the best noise temperature of 850 K at 2.5 THz, the finding that these receivers achieved a noise temperature of 92 K. These devices worked very well and gave noise temperatures of 500 K at 500 GHz at an operation temperature of 77 K. This was amazing because of the ease of cooling, and the greatly reduced size of the mechanical cryocooler.

Q. What one key thing would transform the terahertz field?
A. A clear demonstration of terahertz spectroscopic measurements of biological macromolecules would be of enormous importance for biologists, and would enable the terahertz spectral range to become a major field in science.

Q. What are the potential applications that you find the most exciting?
A. Radio astronomy and spectroscopy.