



26

My experience with research

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In my school days, I was equally interested in the studies of literature, mathematics and science. I studied in a rural girls high School where there was no teacher to teach mathematics in the higher classes. My father was Headmaster of the boys high school in that area. Having seen my interest he requested one of his colleagues to teach me mathematics during summer holidays when I was promoted to class nine. I was one of the first girls to take mathematics as a main subject in our Matriculation course in that school and did well in the examination. From my childhood, I was very eager to learn science; it seemed very exciting and I secretly desired to study science in college. It was also very inspiring when my father told me about the lives of great scientists like Einstein, Newton, Bose, Raman, etc. I was surprised to know that Marie Curie was the first woman to receive the Nobel Prize, because till then I thought that only men could become great scientists.

I was encouraged by my father to study science and sent me to Guwahati to Cotton College, the premier college of the North Eastern region. We had the good fortune of having some very good teachers in Physics who instilled in us an abiding love and passion for science. They stirred my imagination, describing

scientists as “Peeping Toms” at the keyhole of eternity and painted physics in such glorious colours as to make it worthy of life-long pursuit! That is when I decided to become a physicist. After graduation, I taught for some time in the same school where I studied, and then went to Dibrugarh University for postgraduate studies.

After passing the M.Sc., I joined as a lecturer in a graduate college. Although it was a very rewarding experience, I knew in my heart that scientific research was my true calling.

The Head of the Department of Physics at Dibrugarh University advised me to apply for a U.G.C. fellowship to do research in Solid State Physics. I received the fellowship and started my research career in 1976, studying conduction mechanism in thin polymer films. My research interest was further stimulated by attending national and international conferences. In the seventies few women scientists worked in experimental physics in northeast India due to lack of facilities, opportunities and also encouragement from their families: many scientifically-gifted women could not take research as their profession.

In 1980, just before submitting my thesis in the University, I went to the International Centre for Theoretical Physics, Italy to attend a research course on Polymer Physics and Liquid Crystals for three months. I continued my research for another year as a CSIR-postdoctoral fellow in the Dibrugarh University.

The scientific community of Assam, specially the Assam Science Society, realized the importance of a fundamental research laboratory to carry out advanced research in this region as early as 1959. But it took about two decades for fruition of this dream. In 1979, the society established a research centre by the name of Institute of Advanced Study in Science and Technology (IASST) at Guwahati. The institute was formally inaugurated by Dorothy Hodgkin, a Nobel Laureate, on 3rd November 1979.

This institute is multidisciplinary in character. Its beginning was very humble having to depend heavily on our hopes and dreams for its survival and growth. Luckily for me, research in Plasma Physics topped the list of priorities in the nascent research centre. This was a new area to explore in Physics, and I was initiated into this field at the Institute of Plasma Research in Gandhinagar. I spent nearly two years in Plasma Physics

Programme being carried out first in Physical Research Laboratory, Ahmedabad.

On my return I was invited to join the IASST as a faculty member and my first assignment was to set up the Plasma Physics Laboratory. It was a herculean task. I had to work without virtually any infrastructure or library. The institute did not have any corpus or regular fund. Let alone the State Government, even other physicists in Guwahati had no idea about a Plasma Physics Laboratory! Our theory group worked under a project financed by the Indian Space Research Organization and we submitted a project to the Government of Assam for funding. Our perseverance combined with the favourable reports of the experts of national level in this field yielded results and the Government of Assam provided us funds to start the experimental work. After preliminary work in the laboratory, I felt the need for more training to keep pace with the modern techniques. In 1988 I went to work in the Plasma Laboratory of the Institute of Space and Astronautical Science, Tokyo under the supervision of Dr. Y. Nakamura. My research work was very exciting and involved low frequency instability in low temperature plasma and propagation and reflection of solitary waves. Our papers published in reputed journals were frequently cited. On my return to Assam, Dr. Nakamura donated some important equipment to our laboratory that helped in developing and installing a Double Plasma device in the Plasma Physics division of the Institute.

After dedicating many years to the establishment and development of this Institute – the only one of its kind in the entire North-Eastern region, I became its Director in 2005. Only now I am facing the biggest challenge of my life, because I have to move from door to door to look for funding just to keep the Institute alive. Politicians and bureaucrats are so apathetic to scientific research that most of my time is taken up with them, leaving little time for my real job. But I am not the one to give up hope so easily. I am determined to create world-class research conditions and facilities in my Institute so that our talented young scientists can compete on equal footing with the scientists of the developed countries. I firmly believe that “study of science is an end in itself, and the path of science must be pursued for its own sake.”