

Seminar on
“Women in Science : A Career in Science”
29th November, 2008

Venue: S D V Centenary Auditorium, Alappuzha

Background:

Women in science comprise only a small percentage of the total number of working women in India. Although there is no explicit discrimination against women in enrollment and recruitment at the college, university or faculty levels, attitudinal biases and absence of supportive Institutional/Social structures have, over the years, operated as powerful forces against talented women realizing their full potential in the pursuit of productive and rewarding careers in science. It does not appear that there is a societal perception in India of women being incapable of intellectual attainment in science since women students are not in short supply at the under-graduate and post-graduate levels in science. Many of these university students do brilliantly and are gold medalists. Many of them also enter Ph.D programs. However their numbers drop in faculty positions, and drop even more in higher faculty positions, in selection committees, and so on. The under-representation of women in science, particularly at the senior levels of teaching and research in India, has become a serious cause of concern for women scientists and science policy planners.

There is an overwhelming body of empirical and qualitative evidence for this 'leaky' pipeline in science, as well as presence of gender inequity in the practice of science. There is a need to make women aware of a career in science as a possible career option and then to retain them in the profession. It is becoming increasingly evident that if we want more women to be successful in science we need to create, at all levels, support structures for and positive attitudes about a science career for women. The pressure for change has to come from within the scientific community, not just from women, but from all those who believe that the practice of science cannot be built on a foundation of iniquity.

The Panel on Women In Science of Indian Academy of Sciences has initiated conducting of seminars at various locations, with the intention of creating an awareness and inspiration among girl students to pursue a career in science.

The aims of the seminar were as follows:

1. To have presentations by leading women scientists on the latest developments in their respective areas of activity, to showcase the work done by women scientists, to an audience of both genders.
2. To inspire and motivate young women to take up a career in Science
3. To create awareness on various career options available to young women scientists
4. To explore avenues for entrepreneur development for women through Science

This was part of the role model program of the Women in Science (WiS) Panel of the Indian Academy of Sciences (<http://www.ias.ac.in/womeninscience/>). By holding this Seminar at Alappuzha, we hoped to target graduate and undergraduate students, research scholars, teachers and scientists in the neighbouring districts of Alappuzha and inspire more young women to take up a career in science, thereby benefiting the girl students and also women of this area.

The seminar had 450 registered participants comprising of students, research scholars, school teachers and teaching faculty from various colleges under University of Kerala and M. G. University, Kottayam.

The focal theme of the seminar was "**Recent Developments in different fields of science**", while simultaneously highlighting the career options for women scientists. The seminar had six speakers, one each from Agriculture, Bio Pharmaceuticals, Disaster Management, Mathematics, Nano-Biology and cancer research and High Energy Physics.

The names of the speakers with the titles of their presentations are given below:

(i) Dr. Indira Narayanaswamy, Scientist 'F', ADA, Min. of Defense, Govt. of India, Bangalore

"Light Combat Aircraft (LCA) PROGRAMME & AERODYNAMIC STUDIES"

(ii) Dr. Jayasree Krishnankutty, Associate Dean, College of Horticulture, Thrissur

"BIO-FERTILIZERS, BIO- PESTICIDES & BIO-COMPOSTS FOR A HAZARD FREE AGRICULTURE"

(iii) Dr. Lissy K. Krishnan, Scientist, SCTIMST, Trivandrum

"DEVELOPMENT OF INDIGENOUS BIO-PHARMACEUTICALS"

(iv) Dr. K. G. Thara, Head, Disaster Management Faculty & Member, SDMA, Govt. of Kerala

"DISASTER SUSCEPTIBILITIES & OPTIONS OF INTERVENTIONS- KERALA CONTEXT"

(v) Dr. Annie Abraham, Professor, Department of Biochemistry, Trivandrum

"NANO BIOLOGY & CANCER RESEARCH"

(vi) Dr. Rohini Godbole, Professor, Dept. of High Energy Physics, Indian Institute of Science, Bangalore

The title and abstract will be sent later.

Morning Session: 10 AM to 1 PM

The seminar was presided by Sri. S. Mahadevan, President, Sanatana Dharma Vidyasala, while Sri. J. Krishnan, Manager, S. D College, Alappuzha welcomed the gathering. In his presidential address, Sri S Mahadevan stressed the role of Women in the development of Science. Dr. Indira Narayanaswamy, Scientist working with ADA, under the Ministry of Defense, Govt. of India gave the outline of the day's programme. The seminar was inaugurated by Dr. Rohini Godbole, Chair person of the Women in Science Panel, Indian Academy of Sciences. Felicitations were offered to the speakers by Prof. M. V. Sudarsanan, Principal, S D College, Alappuzha and Smt. C P Deepthi, Coordinator of the seminar, HOD of Mathematics, S. D College, Alappuzha delivered the vote of thanks.

The presentations by the invited speakers began after a short break for tea and refreshments

Session I

Dr. Indira Narayanaswamy, Scientist 'F', ADA, Bangalore on

"LCA PROGRAMME & AERODYNAMIC STUDIES"

The Light Combat Aircraft (LCA) is a light weight, multi-role, multi mission supersonic fighter aircraft, meant to replace the MIG 21 of the India Air Force. She threw light on the indigenous efforts on the design and development of fighter aircraft in the country and proceeded to highlight the key design features of the fighter aircraft LCA and also her contribution to this prestigious project of the country.

As the work is highly classified, the details are not included here.

Session II

Dr. Jayasree Krishnankutty, Associate Dean, College of Horticulture, Thrissur

"BIO-FERTILIZERS, BIO-PESTICIDES & BIO-COMPOSTS FOR A HAZARD FREE AGRICULTURE"

The speaker discussed some of the technical innovations in agriculture moving from a chemical oriented agriculture to an organic agriculture. The topic covered some points about modern farming. Since the groundwater is being contaminated by the use of the residues of chemicals, it leads to the increase of the cost problems for farmers.

Session III

Dr. Lissy K. Krishnan, Scientist, SCTIMST, TVM

"DEVELOPMENT OF INDIGENOUS BIO- PHARMACEUTICALS"

The speaker mainly covered the research work being done at SCTIMST on biopharmaceuticals for curing patients. She pointed out the elaborate use of indigenous materials to stimulate the development of tissues and the stimulation

of blood clotting in human beings. Fibrin glue is used as an adhesive which help in wound healing, thereby saving the life of wounded persons.

Session IV

Dr. K. G. Thara, Head, Disaster Management Faculty & Member, SDMA, Govt. of Kerala

"DISASTER SUSCEPTIBILITIES & OPTIONS OF INTERVENTIONS- KERALA CONTEXT"

The speaker, at the outset of her talk, mentioned that the basic problem of Science is the gap between Science and Audience. She exposed the audience to the after-effects of drought, Tsunami, earthquakes and cyclones by some excellent real-life clippings. She also pointed out that Kerala is disaster prone; cyclones and Tsunami can happen in Kerala. Also, drought is caused by converting all the wetlands into buildup lands.

After lunch break, the afternoon session started at 2.30 PM

Afternoon Session: 2.30 AM to 4.30 PM

Session V

Dr. Annie Abraham, Professor, Department of Biochemistry, TVM
"NANO BIOLOGY & CANCER RESEARCH"

She began her talk by "Science is simply Knowledge & Knowledge is gained through research". Hard work, sincerity and commitment are the essential requirements that one needs in any area of work to excel. She went on to talk about nan biology and pointed out that unique physical characteristics and stable chemical properties of nanoparticles has tremendous applications in Bioscience.

Session VI

Dr. Rohini Godbole, Chair Person

The abstract will be sent in a week's time.

Concluding Session

The One day seminar on 'Women In Science' concluded with a panel discussion on ' Women in Science'- lack of participation at all levels. The panel discussion was moderated by Dr. S. Krishnakumar, Vice Principal, S D College, Alappuzha, with the invited women scientists presenting their views.

Prof. Rohini Godbole began the discussion with a definition of the problem – **women do not participate at all levels in science**. There is a drop in the numbers of girl students from graduate to doctoral levels, and more drastically so after doctoral programmes, so much so that in most institutions the numbers of women scientists and faculty members are small. While several policy changes have already been made and several more are in the pipeline, it is evident that more importantly a social change is required.

Dr. Godbole appraised the gathering of the Panel on Women in Science initiative to compile a databank of all women doctorates in India with special categorization into four groups:

- (a) whether engaged in research,
- (b) whether engaged in teaching,
- (c) whether engaged in industry,
- (d) whether discontinued and if so, the reason for doing so.

The databank would be analysed by both scientists as well as sociologists doing gender studies, so as to understand what needs to be done to retain more women in science. The other major initiative of the Panel is the "Role model programme". The aim of this initiative is to inspire more participation by girl students and bring home the fact that women can "do" science and that a "scientist" could be of either gender. The present seminar was part of the 'role model programme' by showcasing the work done by women scientists

The interesting feature of the panel discussion was the enthusiastic participation of the audience. During the discussion, interesting questions from the audience were answered and clarified with illustrations. A general observation that came from the audience was that women prefer family to career and that they did not want to sacrifice the family for career. That there is a gender disparity with reference to career in science, particularly in research, was

generally accepted. But the reason for the disparity was contested. The need to break the traditional role of women and involvement of women in the society / nation building process was also generally accepted. The question of practising science was more elaborated and clarified in the panel discussion. It was also suggested that awareness programmes should be organized so that more and more women would take up career in science.

Prof. Rohini Godbole summarized the panel discussion and the following recommendations were made:

1. In the case of women, the child bearing period inevitably coincides with the period of active research and career advancement. Consequently, women scientists are often faced with questions of priority of family or career, often resulting in hard choices of one or the other. There is, thus, need for more fellowships, such as those instituted by Department of Science and Technology(DST) and Department of Bio-Technology(DBT), for women who have had a break in career to return to active research.

2. A break in career however makes it inordinately difficult for a woman to regain the tempo of research and is often associated with a lack of confidence to do '**cutting edge science**'. In certain fields, numbers of women scientists are few and hence the opportunities for keeping abreast of recent developments, due to lack of peer consultations, is very noticeable. Therefore, it was felt that there should be frequent short term refresher courses and workshops for women scientists to keep themselves up-to-date, thereby benefiting those who have had a break in career as well as for those who have been in teaching or technical services and would like to do research. The initiative of the various Indian Institutes of Technology (IIT) to host refresher courses for their alumni to keep them updated with more recent developments in their field is laudable and should be adopted by other teaching and research institutions.

3. A break in career can be avoided if women scientists are provided adequate social and institutional support. A few of the recommended support systems are:

- Flexible working hours – pregnant, nursing or mothers with infants could be given the option of putting in the requisite hours on a 24hr routine rather than the prevalent 9 to 5 routine.
- Reduced working hours with pay commensurate to the number of hours for women with infants.
- Pay allowances for engaging help for child/ geriatric care to be availed by one self or spouse for a period specified on a case by case basis
- Infrastructural facilities in research and teaching institutions to be made mandatory

These include:

- Hygienic and clean toilets and a rest room in each department
- Crèche/ old age home / community centre with trained staff
- Basic health centre with a doctor on call
- On-campus 24 hour transport shuttle service for commuting between quarters/hostels/departments and the main gate or nearest public transport stop

Conclusion

The seminar brought home the need for social and institutional support for women to 'do' science. The seminar was appreciated by the participants for the attempt to sensitize students and scientists of both genders to the need for gender parity in science practice. To quote Prof. V.L.Chopra, Member, Planning Commission, "*...these seminars are laudable initiatives to highlight the need of women scientists being visible as major contributors to science practice and promotion. This should be viewed more as a 'rights' than a 'favour' proposition.....*".

Let us hope that this one day seminar on 'Women in Science' has succeeded in bringing an increased awareness of a possible career option in '**SCIENCE**' for women, thereby paving the way for better development of the women community.