



#### EDITORIAL

The 20th century is best remembered in which the atom was split, the man landed on the moon, DNA was spliced and the silicon turned into the computing power. The 1999 world conference on Science held in Budapest, Hungary adopted a declaration to establish the basis for the alliance between science and society for the coming century and defined guidelines and commitments. One of the declarations says that there is an urgent need to use scientific knowledge from all fields in a responsible manner to address human needs as inspirations. The practice and use of science should always be aimed at the welfare of human kind, present and future. To preserve human well-being over the long term, people need to move towards new ways of meeting human needs, adopting consumption and production pattern that maintain the earth's life, support systems and safeguard the resources needed by future generation.

It is now universally accepted that science and technology play an important role in a country's socio-economic development. Now it is accepted by our leaders that application of science and technology is available tool for economic well being of Nepali people, the argument for the need of a National Science Policy in Nepal began to be raised at different scientific forum during early 1960s B.S. After long journey, Science and Technology and participation of women Scientist have made its place in the Interim Constitution of Nepal 2007.

Article 35 clause 1 (Interim Constitution of Nepal)

The state shall adopt the policy of prioritizing the development of science and technology as well as development of the local (indigenous) technology for the progress of the country.

Article 35 clause 8 (Interim Constitution of Nepal)

The state shall adopt the policy of making special arrangement for education, health and employment of the women and hence promote the maximum participation of women in the National development.

## National Seminar on Women, Science & Technology and Climate Change



A two day workshop was conducted during 3-4 Asar 2065 (17-18<sup>th</sup> June, 2008) at the premises of World Trade Center, Kathmandu, Nepal. One hundred and ten scientists from various field registered and attended the workshop. The seminar was divided into inaugural session, technical session, panel discussion and recommendation and finally closing session.

The inaugural session was chaired by Dr. Surya Laxmi Maskey, President WIST. The Hon'ble Minister for Physical, Planning and Work Ms. Hisila Yami kindly consented to be the chief guest. Mr. Iswar Singh Thapa, acting secretary, Ministry of Environment, Science and Technology (MoEST) was the guest of honor.

The chief guest, Hon. Minister for Physical Planning and Work Ms. Hisila Yami mentioned that this workshop on climate change is very timely. Rapid changes in climate is affecting day to day life and has great complicate on health. She also mentioned her happiness .... an organization in science and technology for women is established in Kathmandu and advised that WIST being a technical forum has

to take interest in politics for female of new Nepal.

The inaugural session started with a welcome address from Ms. Devaki Shrestha, Gen. Secretary, WIST.

During remarks, Ms. I.S. Thapa, Acting Secretary from MoEST informed that a natural network on climate change has been established in MoEST. Other guests Ms. Bingette Ledhoe, ICIMOD and Mr. P.L. Maharjan, Consumer Forum expressed the role of women in environment and climate change.

From the chair, Dr. Surya Laxmi Maskey, President WIST, in her closing remark informed that all WIST members are committed to work for environment management for better livelihood particularly in rural areas. Mr. Urmila Joshi, Vice President WIST, during vote of thanks, thanked all the participants specially the chief guest, guest of honor and invited guest for their valuable suggestions and participation.

Eleven papers were presented in the technical session chaired by Dr. Keshari Laxmi Manandhar, Mr. Ram Badan Padhan and Dr. Surya Laxmi Maskey. Each paper was followed by

lively discussion (proceedings of the workshop will be published with full papers and other details).

During panel discussion the participants were divided into 3 groups to discuss and made recommendations on 3 following themes:

**Theme 1 :** Role of women in

Environment, Science and Technology in relation to climate change.

**Theme 2 :** Effect of climate change on natural resource management and Agri Production.

**Theme 3 :** Awareness in climate change

The following guidelines were provided for discussion:

- Issues and policies
- Action Plan
- Role of WIST

The recommendations will be circulated to related stakeholders for proper implementation.

## Water Pollution and Health

- Tista Prasain

Nepal Academy of Science & Technology (NAST)

**W**ater is one of the earth's most precious and threatened resources, essential for human survival. Without water, life on earth cannot be sustained. From outer space, the earth looks like a "blue" planet because most of its surface is covered by water. But only 2.5% of the water is fresh, and most of that lies frozen and inaccessible in the icecaps and Greenland, leaving less than 1% of fresh water accessible in lakes, river channels and under ground. Water is required for basic human needs such as drinking, cooking and bathing, for irrigation to grow crops, for hydropower to produce energy, for industry and for the environment. Water is also an inherent component of the ecological chain on which all life and life-supporting systems depend.

Water supply system of Kathmandu valley is very old and unplanned; sources and distribution network cannot cater the present demand. The development of Kathmandu and distribution network is unplanned and haphazard. Some areas of the town are getting water only for one hour a day while some areas remain without water for several days. The Kathmandu valley suffers a severe drinking water supply crisis, particularly in the dry periods of the year. Nearly all of the surface sources and ground water sources have been exploited. The growing imbalance between supply and demand has led to chronic shortages and competition that have resulted in pollution and environmental degradation. Apart from quantitative shortages, the quality of drinking water in the Kathmandu valley is becoming a

serious public health issue for the past few years. Water supply seems to be one of the most crucial problems in the country.

Water contributes much to health. Good health is the essence of development. A large fraction of the world's population around 1.1 billion people does not have access to

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improved sources of water. For these and many others, contamination of water during transport and in the house hold presents a significant health risk. Many water sources in developing countries are unhealthy because they contain harmful physical, chemical and biological agents. As a consequence of such unhygienic water quality conditions water borne diseases such as diarrhoea, dysentery and gastroenteritis occur often. These diseases are prevalent in both urban and rural areas throughout the kingdom. Diseases caused by contaminated water are among the ten most prevalent water borne disease in Nepal (DoHS, 1998). Diarrhoea, which is caused by poor sanitation, hygiene and water quality, is one of the most prevalent water borne disease in Nepal. The World

Health Organization says diarrhoeal diseases remains a leading cause of illness and death in the developing world. Every year about 2.2 million people die from diarrhoea, 90% of these deaths are among children, mostly in developing countries.

There are many compounds whose present in the water could be harmful or even fatal to human life. Apart from an accidental discharge that could lead to acute effects, it is long term hazard due to exposure from very small concentrations that are of concern. Chemical pollutants of diverse nature derived from industrial and agricultural waste are increasingly finding their way into public water supplies. Some potentially chronic effects may occur in rural areas where overuse of agrochemicals leads to significant levels of pesticides in water sources. These pollutants include detergents, cyanides, heavy metals, minerals, and organic acids, nitrogenous substances, bleaching agents, dyes, pigments, sulfides, ammonia, toxic and biocidal organic compounds of great variety. Chemical pollutants may affect man's health not only directly, but also indirectly by accumulating in aquatic life (e.g. fish) used as human food

Therefore a series of treatment must be given to raw water before supplying to the public. The main objective of water treatment are to make the water potable i.e. to make water safe to drink, pleasant to taste and suitable for drinking purposes. The treatment of water is subjected, depends on the purpose for which the treated water has to be applied. The type of treatment required depends on the physical, chemical and biological characteristics of water.

# Introducing Women Scientists of Nepal and their views

## Roshani Shrestha



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### Present Status :

Senior Divisional Chemist/Under Secretary, Ministry of Environment, Science and Technology, Singha Durbar, Kathmandu, Nepal.

### Academic Record:

- Master of Science (M.Sc.) in Inorganic Chemistry, Tribhuvan University, Kathmandu, Nepal (1976).
- Winner of the J. Alan Croxford cup for the top student on Tropical Poultry Husbandry with distinction, Kesteven Agricultural College, Lincolnshire, England (1977).
- Diploma in Business English with Distinction, Business Training Limited, Manchester, England (1984).

### Experience

- 30 years of experience in chemical analysis of rocks ores, minerals, environmental samples such as gas, water, soil and dust particles.
- She started her career in Royal Drugs Limited as an Assistant Production Officer handling many aspects of quality control of Pharmaceuticals.
- She later joined the Department of Mines and Geology as a

Chemist/Chemical Analyst and Planning and Co-ordination Chief of the Department. She was basically involved in chemical analysis, preparation of technical reports, operation of analytical instruments such as Atomic Absorption Spectrometer, UV-visible Spectrophotometer, Gas Chromatography and several other sophisticated equipments.

- Responsible for planning co-ordination and evaluation of work performance of different subdivisions within the Department and preparation of annual budget for the Department.
- Conduction of talk programme on field investigation related with Departmental Research Works carried out by the Geologists and Mining Engineers.
- At present, she is the Chief of Technology Transfer Section in the Ministry of Environment, Science and Technology dealing basically with Bio-Technology, Bio-village, Bio-fuel, Biogas and Nuclear Technology.

### Views on Women in Science and Technology:

WIST provides a platform for women involved in the field of Science and Technology to encourage and assist women in overcoming obstacles, breaking down barriers and creating opportunities. It strives in ensuring full participation of women in the field of Science and Technology and helps them to pursue careers in the same area. More importantly it acknowledges them for their efforts, skills, and accomplishments hence, encouraging them further to utilize their skills and gain recognition and respect of the society; there by empowering them.

In Nepal, which is a patriarchal society, the importance and necessity of WIST is even greater. WIST can help women to realize and achieve their full potential, work freely, choosing as they wish to work and strengthen their skills to contribute for the betterment of the society.

## Padma Prajapati



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### Present Status :

Superintendent Chemist, Department of Mines & Geology, Lainchaur, Kathmandu.

### Academic Record:

- M.Sc., Chemistry (Inorganic), Tribhuvan University, Kirtipur, Kathmandu Nepal.

### Experience

- 32 years of experience in Medicinal plant and Phyto Chemistry including 10 years of experience as a Training Coordinator.

### Some Highlights of Her Work are:

- Extraction of Pyrethrin from Pyrethum flower [Preparation of Pyrethrin powder, Pyrethrin oleo-resin, Pyrethrin oil]
- Extraction of Antrquinone glycosides from Rheum emodii
- Digoxin from digitalis purpurea
- Salicylic Acid from wintergreen oil
- Ephedrin Hydrochloride from Ephedra plant
- Ergot alkaloids from Clavicep purpurea
- Diosgenin from dioscorea deltoidea

### Phytochemical Section

- [Extraction, purification, isolation and identification]
- Thalictrum foliolusum (Thalictrum alkaloids)
- Clavicep purpurea (Ergot alkaloids)
- Rheum emodii wall (Anthraquinone glycosides)

### As Training Officer she has experience in:

- Cultivation, Conservation, Utilization of Medicinal plants
- Facilitator training
- Nursery development of medicinal plants gardening training
- Tissue Culture Training
- Processing of Medicinal plants in Bench Scale, Pilot Scale

- Herbs development training
- Entrepreneur development of Medicinal plants

### Views on Women in Science and Technology:

More than fifty percent of the population is women in our country. So far women working in field of science and technology can provide their skill, knowledge in the respective field for the betterment of rural women. Medicinal, Aromatic plants and Herbs are important natural resources of our country but we have not been able to utilize such resources properly.

A huge quantity of medicinal, aromatic plants and herbs are exported abroad from our country every year. Collection and trade of medicinal and aromatic plants could be source of income especially to rural women of Nepal but they are yet to be realizing its commercial value. Women have great role for sustainable development and poverty alleviation of the country. By conducting chemical and biological research with an aim for optimum utilization of such natural resources, we (women scientist) could provide necessary assistance and training to rural women for cultivation, collection

and trade of medicinal, aromatic plants and herbs in their field for income generation.

### WIST ACTIVITIES:

- ▶ Ms. Devaki Shrestha, the General Secretary of WIST conducted two lots of Farmers' Skill Development Training on Mushroom cultivation to 15 women in Banke and Bardia for one day in each district. The training program was organized by Ms. Shrestha with the support of the local women's groups in Adarsa Nagar, Banke and Maina Pokher, Bardia on January 7 and January 8, 2009 respectively.
- ▶ Mr. Kiran Prakash Hada, an Agricultural Engineer of Integrated Development and Management Centre (IDMAC) and Mr. Surya Prakash Hada, the General Manager of Gobar Gas Company delivered the talk program on Compact Bio Gas Plant for Household Organic Waste Management on 22 August, 2008.
- ▶ Dr. Ramesh Man Singh of Nepal Academy of Science and

Technology delivered the talk program on Problem and Prospects of Bio-briquette in Nepal on 7 March, 2009. He focused on the use of biomaterials and its advantages in his deliberation.

- ▶ Dr. Raju Adhikari, a professor of Dev Sanskritic Vishwavidyalaya, Shanti Kunj, Haridwar, delivered a talk program on Science and Spirituality on 8<sup>th</sup> June, 2009. It was organized in coordination with Ms. Sharada Marhatta of Nepal Gayatri Pariwar.
- ▶ Dr. Surya Laxmi Maskey, President WIST, attended a meeting on "Establishing a legislature and Regulatory Framework for Radiation Safety and the Security of Radioactive Sources in the Federal Republic of Nepal" held at Kathmandu on 12 May, 2009, jointly organized by GTRI and NUSON.

### CONGRATULATION

The Executive Committee and all members of WIST congratulates Ms. Jeevan Prabha Lama for her promotion to highly responsible post of Director General of DFTQC. We wish her success during her tenure.

### Membership

Total Members of the WIST: 145

#### Membership fee:

Entrance	Rs. 50/-
General Members	Rs. 150/-
Asso. Members	Rs. 300/-
Life Members	Rs. 2000/-

Please submit CV/Biodata :

WIST is compiling and upgrading the CV/Biodata of Women Scientists and Technologists of Nepal. Please fill in the format and help in upgrading its publication. WIST also invites the project proposals on research and development from the women scientists for annual program 2064/65. Please contact Dr. Surya Laxmi Maskey for further information.

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