- Concepts of openness and open access [open access for researchers, 2]. Paris: UNESCO, 2015, ISBN: 9789231000799.
- Intellectual property rights [open access for researchers, 3]. Paris: UNESCO, 2015, ISBN: 9789231000812.
- Research evaluation metrics [open access for researchers, 4]. Paris: UNESCO, 2015, ISBN: 9789231000829.
- Sharing your work in open access [open access for researchers, 5]. Paris: UNESCO, 2015, ISBN: 9789231000836.

These Curricula and Modules are expected to be included as optional courses in pre-Ph D (M Phil, M Tech, M S Res, etc.) and Ph D programmes in Indian universities (and other universities across the world) in the near future. If included, the academic researchers will have informed choices in publishing in gold OA journals or self-archiving in a university's institutional knowledge repository (i.e. green OA channel). In this way researchers will be motivated to disseminate knowledge in public domain, produced from public funded research or utilizing taxpayers' money.

1. UNESCO, UNESCO's open access (OA) curriculum is now online, UNESCO, Paris, 2015.
2. CEMCA, International Multi-stakeholder Meeting on Development of Curriculum, and Self-Directed Learning Tools for Open Access, Commonwealth Educational Media Centre for Asia, New Delhi, 2013.

Anup Kumar Das, Centre for Studies in Science Policy, School of Social Sciences, Jawaharlal Nehru University, New Delhi 110 067, India
e-mail: anup_csp@mail.jnu.ac.in

MEETING REPORT

Women in science: A career in science*

A seminar on women in science (WiS) was organized on International Women's Day with the following goals: (i) to expose the postgraduate and doctorate women students to new and exciting ideas and directions in different subjects like physics, chemistry, mathematics, botany, zoology, biotechnology and astronomy; (ii) to equip them with basic concepts and technological tools to ask and answer relevant research questions; (iii) to inspire and motivate young women to take up careers in science and (iv) to create awareness on various career options available to young women scientists. It had the patronage of Meena R. Chandawarkar, Vice Chancellor, Karnataka State Women's University Vijaypura (KSWUB) and advice of Rohini M. Godbole, Indian Institute of Science and Chair Person of WiS, Indian Academy of Sciences, and Riddhi Shah, Department of Mathematics, School of Physical Sciences, Jawaharlal Nehru University, New Delhi.

About 240 students, research scholars and young faculty mainly from KSWUB, Vijayapur, attended the seminar which was supported by 11 staff members, 6 resource persons and a coordinator. A few students from other universities also participated.

S. A. Kazi (KSWUB) welcomed all the participants. M. S. Jogad (KSWUB), briefed the participants about the event and seminar lectures. Meena R. Chandawarkar (KSWUB) inaugurated the seminar. In the inaugural address, she said it was the most appropriate way of celebrating Women's Day by organizing a seminar on WiS. She mentioned that many women are discouraged from pursuing a career in science at the highest level. Much more needs to be done to address the reasons behind this potential waste of human talent. She also said that the presence of eminent women scientists and their interesting presentations would trigger enthusiasm in young women students. She offered unconditional assistance to promote science in the region. She opined that seminar lectures and interaction of participants with eminent scientists and speakers would help in shaping the career of students in science. She also released the abstract volume. This was followed by a keynote address by Riddhi Shah (JNU) in which she encouraged the young women science students and briefed them about the activities of WiS programmes and their importance.

Five special lectures were delivered by invited speakers.

In the special lecture 'Making the most from a protein sequence', Lalitha Guruprasad (University of Hyderabad) focused on some aspects of biological chemistry and structural chemistry. She said that the correlation from protein sequence to structural and functional information is more valuable in the current genomic era. Collections of complete nucleotide sequences from a variety of genomes are available. Using computational methods, one can identify novel domains, repeat and predict their protein structure and function. The binding of inhibitors/substrates to proteins and the molecular basis for their binding have been studied. In particular, proteins that are disease targets from *Mycobacterium tuberculosis*, *Helicobacter pylori* and *Plasmodium falciparum*, and human kinases are being pursued. She showed how as a complement to her computational studies, some of the hypotheses are validated experimentally. She also discussed her research results.

In the special lecture 'Fun with knots', P. Ramadevi (Department of Physics, IIT Bombay, Mumbai) explained the knot theory and connections to topological string theories, matrix models and supersymmetric gauge theories in physics. She also explained the properties of knots, the computation of Jones' polynomials with some examples. She showed an elegant method of obtaining polynomials and more generalized polynomials for these knots.

In the special lecture 'Chemistry, biology and physics of stars and galaxies', Annapurni (Indian Institute of

*A report on the seminar on 'Women in Science: A Career in Science' organized on 8 March 2015 at the Karnataka State Women's University, Vijayapur (Bijapur) and sponsored by the Panel on Women in Sciences, Indian Academy of Sciences, Bengaluru.

Astrophysics, Bengalaru) while drawing attention to the fascination for the beauty of a starry sky at night, explained why we study the stars and galaxies up there in the sky. She discussed the necessity for understanding the universe, its chemistry, biology and physics. She also talked about the new challenging projects and the contribution of women to them.

In the special lecture 'Shape optimization problems via the problem of Queen Dido', Anisa Chorwadwala (Indian Institute of Science Education and Research (IISER), Pune) shed light on the shape optimization problems, calculus of variations and geometric analysis. A typical shape optimization problem is, as the name suggests, to find the shape which is optimal, in the sense, that it minimizes a certain cost functional while satisfying given constraints. Mathematically, we need to find a domain Ω that minimizes a functional $J(\Omega)$ possibly subject to a constraint of the form $G(\Omega) = 0$. In other words, it is about minimizing a functional $J(\Omega)$ over a family F of admissible domains Ω. In many cases, the functional being minimized depends on the solution of a given partial differential equation defined on the variable domain. She talked about one such shape optimization problem in the Euclidean space and its generalization to certain other Riemannian manifolds and configurations.

In the special lecture 'Eavesdropping on chitter chatter at a synapse using computational simulations', Suhita Nadkarni (IISER, Pune) spoke on the biophysics of synaptic transmission in normal function and pathological states. She explained how neurons talk to each other via a special junction called a synapse. Here an incoming electrical signal from the presynaptic neuron gets converted to a chemical signal and back to an electrical signal at the post-synaptic neuron. This is the basic unit of signal transmission in the brain. Strengthening and weakening of synaptic connections, known as synaptic plasticity, is the cellular underpinning of learning and memory. Also, a majority of neurological disorders arise out of aberration in synaptic transmission. It turns out rather than merely being input/output devices, synapses are extremely complex. They come in different shapes and sizes, have myriad of receptors, ion channels, transmitters and second-messenger pathways operating at multiple temporal and spatial timescales. Given the complexity and constantly moving parts involved in synaptic transmission, it is difficult to quantify mechanisms and arrive at general principles that govern the functioning of the brain. Detailed computational models of synapses and neurons are developed that complement experimental studies and can aid one's understanding. She talked about her '*in silico*' experiments on a small synapse in the hippocampus, a part of the brain, crucial for learning and memory and some interesting insights on synaptic plasticity that was gathered from her studies.

Following these interesting and highly informative seminar lectures, there was a Panel discussion. Members of the panel included Riddhi Shah, all the five invited speakers, Renuka Meti and M. S. Jogad. In the panel discussion, many participants asked questions regarding how to balance career and the responsibilities at home, how to manage family while doing research in science, etc. The panelists shared their experiences and views and provided guidance to the participants.

Participants were asked to provide an overall assessment of the seminar. After the panel discussion, during the short valedictory session, participants were allowed to present their views. According to the participants: (i) the lectures delivered in the different fields of science and the panel discussion were useful because basics of the different science subjects were well explained during the lectures; (ii) the resource persons invited for the seminar were excellent; (iii) the seminar provided them a chance to discuss their research ideas/methodologies with the resource persons; (iv) they felt that it would have been better if the seminar was of a longer duration along with the inclusion of poster sessions and (v) display of different scientists, including Indian scientists was good. Lalitha Guruprasad, expressed that, she was happy to see the vibrant young women and their energy on the day. She noted that participants were interactive, and outside the auditorium and this was a positive sign. Annapurni expressed that the seminar was a well arranged and conducted even in a remote place and that she was surprised by the enthusiasm, passion and response shown by the participants and she was happy to interact with students. The speakers thank Menna Chandawarkar, Rohini Godbole and G. Madhavan for their help in holding this seminar.

M. S. Jogad, Department of Physics, Karnataka State Women's University, Vijayapur 586 108, India.
e-mail: jogad1952@rediffmail.com