Dear International sisters in science

We welcome everyone into a New Year that is heralded with extreme cold weather in many countries. Even with our wealth of knowledge the weather can be unpredictable and we are unable to prevent the many problems it causes. If you are warm and safe and have the opportunity to help someone who is not, reach out to them.

This edition of the Iota Nu News Bulletin features international reports from our sisters in science from Nigeria and Romania. The reports will give you more insight into the experiences of our members from other countries. We are sure that as you read through these reports your mind will be filled with ideas and thoughts on how to make a global difference towards the promotion of women in science. Please feel free to send your comments to us and we welcome similar reports from our members. In the report, that we look forward to your writing, please send us a picture and consider the following as you write the report: What is the state of science in your country? The challenge of women in your country earning a higher degree in science and is this different from men? When did you first have an interest in science? What kind of support did you receive from family/friends? Suggestions for GWIS and what it can do to help you. The reports will help us serve you better.

We welcome Emelda Chukwu who volunteered to serve as our new liaison office. We would love to have a volunteer for the post of Vice President US featured in our next bulletin. Please consider this position and join Julie Ealy who is our US International President. We are happy to welcome our newest members from Australia, Canada, Colombia, Germany, Netherlands, Portugal, Taiwan, the United Kingdom, and the USA. Our chapter has such a wealth of expertise from women in science from all over the world. We look forward to interacting with everyone during our online chapter meeting scheduled soon and through our social media networks.

Enjoy reading our bulletin from the International chapter, Iota Nu, of the Graduate Women in Science.

Francisca and Julie
The Iota Nu website is still under construction but members can already leave comments and suggestions by following this link: http://gwisiotanu.wordpress.com/officers/. Don’t hesitate to leave comments; Iota Nu really appreciates your contribution! We also want to show that Iota Nu’s membership is from all other the world and to feature nice pictures of your country on the website’s frontpage; it can be famous monuments, beautiful landscapes, photos of your university,... Please, feel free to send one or more pictures to tsioryandrianavalona@gmail.com

Iota Nu welcomes its new Liaison officer  Ms. Chukwu Emelda Ebere
Affiliation: Dept. of Medical Microbiology and Parasitology,
College of Medicine, University of Lagos, Nigeria,

Ms. Chukwu Emelda studied Medical Laboratory Sciences at the University of Nigeria, Nsukka (UNN), Enugu state, Nigeria. After her graduation, she practiced for a number of years as a Biomedical Scientist before deciding to further her studies. She obtained her Masters degree in Medical Microbiology and Parasitology with distinction from the Department of Microbiology and Parasitology, college of Medicine University of Lagos, Nigeria and as such was offered a direct admission to the Doctorate degree in Medical Microbiology. With mentorship and laboratory support from Dr. Francisca Nwaokorie, of the Nigerian Institute of Medical Research, Lagos, she became interested in the study of anaerobes. She has been able to conduct research on the “Isolation and Characterization of Prevotella and Porphyromonas species from patients with odontogenic infections” amongst others. Presently, she is working on “Molecular studies on Clostridium species isolated from food commodities and clinical specimens in Lagos state” for her Ph.D. In her spare time, she volunteers at the Africa Network for Peace and Justice (ANPeJ) in advocating conflict prevention, management, and peace-building through peace education and training as well as alternative dispute resolution. Her hobbies are reading, mentoring young children, and riding a bicycle. She speaks English, Igbo, and a little of the Yoruba language. She is passionate about science and how it can be explored for the benefit of the human populace. She became a member of Iota Nu Chapter GWIS in 2013 to participate in promoting science education among women.

Iota Nu is still looking for a volunteer to serve as its US Vice President. If you are interested in taking advantage of this opportunity for leadership experience and helping our organization better achieve its goals, please send your interest to tsioryandrianavalona@gmail.com
Dual members of Iota Nu

By Dr. Robin Y. Woo, Treasurer Omicron & Iota Nu Chapter of GWIS

As of January 22, 2014, Iota Nu has 27 dual members* who are living in the United States. They come from many chapters and represent all levels of membership. Many are international students studying in the US, some have worked on international issues and have close colleagues all over the world; but all of these dual members support the efforts and dreams of Iota Nu members. Our success in obtaining support depends upon the strength of our numbers, so we thank these special GWIS dual members and hope that you will be able to actively participate in our programs.

*Alpha Omega – 4, Beta – 1, Kappa – 3, Kappa Rho – 2, Mu Sigma – 1, Nu – 1, Omicron – 5, Rho Tau – 4, Sigma – 2, Sigma Delta – 2, Tau – 1, Xi – 1

Launching 2014 in Paris: The International Year of Crystallography

By Dr. Susan K. Fetics, International Vice President, Iota Nu Chapter of GWIS. Post-Doctoral Fellow, Centre National de la Recherche Scientifique, Gif-sur-Yvette, France.

The United Nations and United Nations Educational, Scientific and Cultural Organization (UNESCO) has declared 2014 the International Year of Crystallography. As a scientist, more specifically, a protein crystallographer, this is an exciting time. This year marks the 100th anniversary of the discovery of X-ray diffraction of crystals. And interestingly, 25 Nobel Prizes in the past 100 years have been awarded for research involving X-ray crystallography. The opening ceremony took place on January 20 & 21 at the UNESCO building in Paris, in the 7th Arrondissement under the shadow of the Eiffel Tower. There were many inspiring talks: we heard welcoming remarks from Irina Bokova, the Director-General of UNESCO and Gautam R. Desiraju, the President of the International Union of Crystallography. Many exciting research presentations were also given, namely: Prof Brian Kobika from Stanford University USA, 2012 Nobel Prize winner in Chemistry, who discussed his work on G-protein
coupled receptors, which is the largest class of proteins used as pharmaceutical targets; Prof David Bish from Indiana University USA, presented the first X-ray diffraction data results from another planet, Mars. He explained that the soil on Mars is similar to the soil found on the dunes of Mauna Loa, Hawaii, USA. As a scientist starting her career in crystallography, it was comforting to hear that powerful results take decades of hard work with a singular focus on one research project. As a woman in science, it was uplifting to hear that crystallography has historically been a field where women, such as Dorothy Hodgkin, Kathleen Lonsdale and Rosalind Franklin, have made a significant impact - this is rare for a scientific field. Juliette Pardon from the Cambridge Crystallography Data Center, England, discussed how her organization is using X-ray crystallography to explore the natural ores and minerals in the Democratic Republic of Congo (DRC), Africa, in collaboration with professors and graduate students at the University of Kinshasa, DRC. These crystals are used in our everyday electronics. The use of these minerals has raised ethical and environmental concerns for the DRC.

From attending the opening ceremony, one can understand that crystallography is a field of science which reaches across many boundaries such as gender, politics, scientific disciplines, countries, continents, and now planets. Crystallography is used to make cement, it is found in lithium ion batteries, it is the reason windows on airplanes are circular and it aids in pharmaceutical drug design. Despite the fact that the technique is 100 years old, crystallography remains at the cutting edge of science.

Many events are occurring this year all over the world to celebrate crystallography. For example, on January 17 & 18 at the School of Medicine in Paris, the “Festival de la Cristallographie” allowed crystallographers to explain the concepts and applications of crystallography to children and adults of the general public. Throughout the year, many countries, such as France, Greece, Tunisia and USA, have organized national crystal growth competitions for high school students. Workshops, exhibitions and lectures for the public are taking place all over the globe. For more information on events near you, you can visit www.iycr2014.org
Women interested in joining Iota Nu increase! We are happy to welcome our new members:

- Dr Er-Chieh Cho from Taipei, Taiwan
- Dr Kirsty Short, Rotterdam from the Netherlands
- Dr Bahijja Raimi-Abraham from London, UK
- Ms. Melissa Bauer from Montreal, Canada
- Dr, Heidi Burdett, UK
- Dr Katrina Merkies from Ontario Canada
- Ms Sara da Silva from Toronto, Canada
- Ms Monica Natalia Gonzalez Perez from Bogota, Colombia
- Ms Carey DeMichelis from Toronto, Canada
- Ms Jessica Nowicki from Townsville, Australia
- Ms Sandra Tranquilli from Berlin, Germany
- Ms Maria Ribeiro from Coimbra, Portugal
- Ms Dr Maria Isabel Prata from Coimbra, Portugal
- Ms Chantal Tax from the Netherlands
- Ms Ana Neferu from North Carolina, USA
- Ms Aniekan-Augusta Eyo from Nigeria, Africa
- Ms Helen Nwaba from Nigeria, Africa
- Ms Karin Purshouse, Bath, U.K.
- Ms Patricia Alvarez Campos, Madrid, Spain
- Ms Jessica Silva, Ottawa, Canada
- Ms Jennifer Hope, Philadelphia, PA

Welcome to Iota Nu dear sisters in science!

Watch for this! 3rd USA Science & Engineering Festival, the largest STEM education event of its kind in the United States! The 3rd Annual Science Festival will kick off throughout 2013 with nationwide school programs, contests and events year-round, and culminate in a 2-day Grand Finale Expo on April 26-27, 2014 at the Walter E. Washington Convention Center in Washington, D.C. Over 750 leading STEM organizations will present hands-on science and engineering activities for people of all ages. The event is free of charge. Sneak Peek Friday will take place on April 25, 2014 - registration info for schools will be provided soon. - See more at: http://www.usasciencefestival.org/2014-festival.html#sthash.7biANLCn.dpuf

Coming soon!

- Iota Nu first Skype meeting is scheduled for 2nd February 2014 at 3:00 CST. It will be an opportunity to know each other more and to discuss about our Chapter. Full description of the agenda will be sent to all members but here is the outline:
  1. Opening Speech
  2. Iota Nu Programs
  3. Website/Communication
  4. Formation of Committees
  5. Available grants/fellowships
  6. Finances/fund raising
  7. National Issues
  8. Contribution from members (All)
  8. Any other issue

- Upcoming National Meeting
  The 2014 National SDE-GWIS Meeting, hosted in summer 2014 by the Xi chapter will be in Minneapolis/St Paul, Minnesota.
  GWIS 93rd Annual Conference hosted by Xi Chapter, at the University of Minnesota by the Mississippi River! Conference is scheduled for June 25-29, 2014. For more details please visit http://gwis.org/national-meeting/upcoming-national-meeting/
One fact that cannot be overemphasized is that women have been globally marginalized, and this has formed the core of organizations such as the GWIS whose existence lies in its bid to reverse this unhealthy trend. The situation in Nigeria, West Africa is no different and to-date women are still grossly underrepresented in science.

In times past, cultural beliefs that portrayed that a woman is to be seen and not heard played key roles in the marginalization of women. Unfortunately, years of such institutionalized sexism have forced Nigerian women to internalize this point of view. As such it is commonplace to find, even in this present day, the typical Nigerian woman to be docile and passive and would often times deny themselves opportunities in science and technology because of the self-acceptance that their role is in the kitchen or behind the scenes.

The status of science education for young girls has been similarly affected. In some cases, a Nigerian father would rather invest in his son’s education than his daughter’s. Girls are not motivated to aspire for a science-oriented discipline. Education of girls is perceived to lead to moral decadence. They are, therefore, sometimes encouraged to marry early thereby preventing the opportunity for education. The birth of a female child is sometimes seen as a disappointment as they are second-rate in society. Educated women are sometimes not regarded as good wives, and they find it difficult to marry at the right time. This causes an increase in the poverty and illiteracy levels in some occupations in Nigeria. In some cases males refuse to marry females who involve themselves in some careers that are culturally termed “masculine.” This, however, depresses the intellectual development, undermines the confidence, and dampens the aspirations of the females. All these affect the attitude of the females of the girl child towards science and technology (Stella, 2004).

It, however, must be noted that in recent times women campaigns have assisted in discouraging cultural segregation of gender in the Nigerian society, and over the years we have indeed seen an improved prominence and a positive trend towards the roles of women in science. The odds are, however, still quite heavy against women pursuing a career in science, and they may face a number of problems ranging from overt or covert discrimination to the practical difficulty of combining the dual-role demand of a profession and marriage. However, some women have demonstrated courage by surmounting these barriers, and have either forged ahead or are pursuing a career for themselves in the field. Nevertheless and very importantly, there are still a significant number of women in the society who would rather settle for marriage to a wealthy man than go through the rigours of scientific contributions. A significant number of women now have access to education in whatever discipline they choose but over the years there seems to have been a shift from science to wealth.
high value has been placed on the acquisition and display of wealth; and the general belief that it would take a much longer time, if at all, for women in science to achieve financial freedom and this has created a high disregard for scientific involvement by women. Some Nigerian women who graduate from professional science courses would rather settle for a comfortable possibly ‘stressless’ wealthy life with no aspirations to scientific contributions. Also, with the media seemingly giving prominence to celebrities and fashion this has only served to compound the situation.

Both of us authors came from different backgrounds. While I was fortunate to have professional career parents who assisted and urged me on with my career, the second author wasn’t and had to struggle through financial and social barriers to get herself a decent education and build a career for herself. On my part, while being fortunate to have supportive parents, I have not been altogether spared from the ‘struggle’ for career establishment in a male-oriented environment. In addition, building an academic career alongside building a home has been a tough struggle. The rules for climbing the academic ladder are certainly no different for a man or a woman. Certain academic departments and institutions in Nigeria headed by males still remain hesitant to employ women.

The GWIS can assist in reversing this trend by:
- Organisation of regular workshops to encourage Nigerian women in science;
- Organization of regular outreaches to female children in secondary schools and colleges;
- Providing motivational incentives, awards, and recognitions that can compete with what is obtained in the fashion and film industry today, in order to promote and encourage the involvement of women in science;
- Involvement of government and similar agencies in projects or schemes that will improve the plight of women in science.

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Sciences are dominated by men in Nigeria. According to the Global Gender Gap Report of 2012 published by the World Economic Forum, Nigeria ranked 110 out of 135 countries and 124 in educational attainment. However, some women who have had the opportunity to study sciences have achieved a lot. This year Professor Francisca Okeke, Professor of Physics, received the L’Oreal-UNESCO Award for Women in Science. More recently there has been a growing consciousness both at the grass roots and policy levels regarding the impact of gender issues in education. However, certain factors prevent full participation of women in science.

Socio cultural factors: In the northern part of Nigeria, a girls’ education is alleged to lead to moral decadence. They are, therefore, encouraged to marry early thereby preventing them from going to school. In the eastern part, the birth of a female child is seen as a disappointment, worse still, educated women are not regarded as good wives hence they find it difficult to marry at the right time. In some cases, males refuse to marry females who involve themselves in some core science
careers in engineering, mathematics and physics. These disciplines are seen to be “masculine.” This slows down their intellectual development, demoralizes their confidence, and dampens aspirations. Consequently the girl child shows negative attitudes towards Science, Technology, Engineering, and Mathematics (STEM). Instead of pursuing the sciences, they are encouraged to study courses that will make them good housekeepers and give them more time to look after their immediate and extended families.

**Lack of mentorship:** Although there are women professors in science and directors of research, young scientists who are interested in studying the sciences are not encouraged or mentored by professional women in higher posts. Observations have shown that some women in science don’t want to be challenged or withstand competition, and are afraid of losing their post to younger female scientists. They want to remain first in everything and they do not encourage younger scientists to speak their minds and share their ideas. They impose research topics on their students to further their personal ideas and goals.

**Lack of relevant educational facilities:** Science requires laboratories and experimentation. In Nigeria, there are limited functional laboratories and experimentation at all levels of education, especially in public schools harboring the larger population. In cases where structural facilities are available, they are not well-equipped, and where equipped, there are no skilled staff and where there are skilled staff, there is no electricity to perform and demonstrate experiments. There are no special agencies that fund women in the field of science and technology in Nigeria; Nigerian women in science fight for sponsorship with their male counterparts.

**Economic factors:** The cost of school fees for science courses are high and parents would prefer to spend such money on their male child, than on a female who would end up in another man’s house as a wife (more or less a wasted investment). Because of the economic situation in Nigeria, families who support their daughters to study science encourage them to do engineering courses that can earn them good money in the oil companies, medicine that has prestige, and biology-related courses presumed to be milder sciences. Those interested in mathematics end up studying accounting and economics and work in the banking industry. Nigeria is a major consumer of science and technology and not a producer. Furthermore, one would not expect a woman to study electrical engineering in a country where the provision of electricity or technological model is a major problem.
The Federal Ministry for Women’s Affairs and some NGOs strive to promote girl child education. Efforts are been made to balance the enrollment and completion of education at the primary school level, however, there is a low enrollment of women in science and technology in the universities. Some core science courses such as nuclear physics, aeronautical engineering, and forensic medicine are not offered in Nigerian universities.

Most families would never consent to their daughters going abroad to study for the fear that they may not get married after their education. This is the case with “determined Ugochi” who wants to produce equipment and diagnostic kits for forensic DNA analysis in Nigeria.

My career started in a rural community in the eastern part of Nigeria with the help of an educated mother whose parents managed to train her because there were all girls in their family, irrespective of the discouragements and pressures from society. I got married after my graduation so that my husband could help in training my brothers. Interestingly, he is an advocate of women’s empowerment and he encouraged me to continue with my education. I was greatly challenged with combining child bearing, schooling, and tried to remain a humble and good wife. I didn’t take any full employment until I completed my PhD at the age of 40.

Being employed in a research institute there are limited funds for health research. I carry out research and attend local and international conferences through financial support from my husband. I have to make sure my husband doesn’t get home before me.

Here are my suggestions for GWIS to develop programs that can help to further improve the status of women in science:
- Design stimulation toys and teaching models that are female friendly and that should be in used during teaching to visualize science discoveries, promote learning and encourage participation.
- Produce science text books and curriculum materials with reference to female models who have achieved successful careers in science both locally and internationally.
• Establish training programs that would increase the number of female teachers and provide them with adequate teaching skills in a field of science, its application/uses.
• Mathematics is one of the major subjects for science courses in Nigerian universities. There is a need to introduce and maintain practical learning of mathematics starting with nursery schools.
• Organize excursions for young girls to enable them to see companies, factories, industries, and universities where science courses are studied and applied.
• Design scholarship programs for women, especially those in rural areas to fish out talents and capture them young.
• Organize grant proposal writing workshops for women to enhance their ability to identify sources and secure grants in a competitive environment with men.
• Promote mentorship programs between women scientists and aspirants thereby directing them to successful and fulfilling careers.
• Association for women in science should not only be centered on undergraduates and graduates, but there should be proactive younger clubs at the nursery, primary, secondary school levels.
• Encourage establishment of science engineering and technology-based companies with equal demands to absorb manpower irrespective of gender.
• Provision of functional laboratories and experimentation in schools.
• Life style and training of women geared towards the home, teaching practical science in local languages to improve public understanding and participation.
• GWIS should create Science Clubs for women to encourage participation, assignment, monitoring, and progress evaluation.
• Products and recent technology should be made available to women at all levels.
• Encourage women entrepreneurs in the field of science and related products.
• Vocational training geared toward science, technology, engineering and mathematics should be established. There is a need to encourage women in rural areas, find out their needs, discuss their ideas and help them develop science project proposals.
• Council women on how to plan and manage their homes and combine their career with their responsibilities as Nigerian women.
• Create more awareness and educate parents on the importance of giving equal opportunity to both male and female children, disabuse their minds about traditional beliefs, and make available to them the contribution of successful women who have had the same opportunities as males.

At Primary six, there are more boys in class, observe the sitting position: the girls sat separately from the boys, there are 11 boys (73.3%) and 4 girls (26.7%)
Romania is a country still in a transition period, recovering slowly after the communist regime and facing the typical problems of such a society. I should say that, in general, the system is male dominated and that there are many professions that are considered to be “more suited” for men. Those in the STEM fields are such examples. However, the presence of women in key sectors of life is more and more encountered.

In my opinion, one of the most important factors that prevent women to enter some work fields are dominated by parental education and the social system. Of course there is also the money issue (working in science is not well-paid) but this affects both genders. However, I have heard complaints that in some companies for the same (research) job, a man was better paid than a woman.

In many regions of Romania (especially in the country side) the girls are raised to believe that the role that they should play in the society is that of mothers and that the husband should be the one who “provides” more in all aspects of life. They should choose a simple career such as to be able to perform their mother/wife duties. Moreover, the social pressure is higher on girls who are being told that they are not smart/talented/skilled enough to do some jobs.

Even at an older age (at university) the girls are treated differently from boys by their professors and even graded less on exams. There is also the “acceptance” problem: a scientist woman is considered to be “weird” because of the rarity of the situation.

Later on, male specialists are being given more credit than women by both men and women. I guess that in Romania scientist women lack credibility.

I can say that science education is very high in Romania. In secondary school (age 14-18) the children have to choose between theoretical studies or “technological 2 college” (where they can learn a certain profession, e.g. waiter, hair dresser, etc.). Most choose the theoretical studies where they can follow one of the scientific directions: Mathematics/ Natural Sciences or Philology/ Social Sciences. However, Mathematics, Physics, Chemistry, History, Biology/Anatomy/Zoology, Geography and Psychology/Philosophy are compulsory no matter the direction chosen. The difference is only in the number of weekly hours. All children in a given direction attend the same classes (thus they can choose the direction, not the lectures).

In primary school all children have to learn two languages: first starting at age ~8 and the second at ~11.

I would say that most of challenges appeared when doing my PhD. I did it in an “unconventional” subject for my University (neutrino detectors), and I remember that some of the
comments sounded like “missy, you should think about neutrino detectors in about 20 years from now”. Anyway, I was told from the very beginning by my older colleagues that I will have to deal with a lot of misogyny.

Two years after the moment when I got my PhD (together with a lot of published papers, research in foreign labs, etc.), the behavior of my colleagues and superiors changed a little. However, they still seem “not to see” my three published books (as sole author) and give me “friendly” advice about how to write a book.

Compared to other female colleagues I have always been well-accepted by the students (and I can see that by the large number of students who have approached me to be their thesis supervisor). I think that the reason for this is that I show a lot of enthusiasm, and I really get involved in teaching and research activities.

In the end my feeling is that I have had to work much harder just to compensate for the “gender factor”.

My suggestion for GWIS is to develop some programs to promote active women scientists. I believe that by personal example many young girls can be attracted into science.

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These were a few point of views about how is science and women are perceived in their country. Please let us know your opinion about their statement and any comments are always welcome!

For the next bulletin, we will stop in Saudi Arabia and South Korea

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