



Faculty for the Future

# CONFERENCE PROCEEDINGS

## 2008



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“

The Schlumberger Foundation began developing the Faculty for the Future program because we were convinced that the lack of female role models was one of the most pervasive roadblocks preventing young women in developing and emerging countries from pursuing a scientific career. ”

**Jean-Marc Perraud**

*Chairman and President, Schlumberger Foundation*

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Hard statistical evaluations fairly consistently find that female education is the variable most highly correlated with improvements in social indicators. The benefits of education have a multiplier effect because they empower women to bring about other necessary changes.

**Investing in All the People**  
**Policy Research Working Paper Series #905**  
*World Bank*

*The fourth annual Faculty for the Future conference took place in Paris, France from September 29 to October 2, 2008 with 23 fellows in attendance.*



As the flagship program of the Schlumberger Foundation, Faculty for the Future is designed to create a force for change, one that will become even more effective as it turns into a thriving global community.

The largest and most ambitious Faculty for the Future meeting to date took place in Paris in October 2008 and was attended by 23 women scientists from 14 countries representing 23 home and 22 host universities. Clearly, in only four years the program has come a long way.

The three-day conference greatly expanded the growing sense of community among participants. In my opening remarks I noted that attendees had many things in common. They are bright, interested in science, ambitious and not afraid of challenges. Many of the women have had to prove their worth despite far-from-supportive environments. Most want to contribute to their home countries through research, teaching or in other innovative ways.

As Chairman of the Schlumberger Foundation I intend to ensure that Faculty for the Future will continue to grow, but I hope that it will always remain based more on quality than on quantity and that it will rely on participants and the work they are doing in their home communities to multiply its impact.

Already we can start measuring the success of this program through the increasing number of applicants and the quality of the candidates. Each year it becomes harder to make the selections. But real success will come down the road, when this small community becomes recognized for having fostered academic and scientific female leaders in countries where they are sorely lacking, and when their leadership has inspired many more young women to enter the sciences.

Sincerely,

A handwritten signature in black ink, which appears to read "Jean-Marc Perraud". The signature is written in a cursive style and is underlined with a single horizontal line.

Jean-Marc Perraud  
Chairman and President, Schlumberger Foundation

Study after study has taught us that there is no tool for development more effective than the education of girls and the empowerment of women.

**Kofi Annan**

*Former Secretary-General, United Nations*



I was delighted to see so many women attending our largest-ever gathering of Faculty for the Future fellows in October. It is always a pleasure to attach faces to names, and while the Internet gives us tools to connect, relate and work together, often without ever gathering in one room, nothing quite beats meeting face to face.

Two years ago for the first meeting, we brought together only four participants. Nevertheless, that first small group proved the merit of face-to-face contact—not only with each other, but also with those of us whose job it is to manage and grow the program into a powerful community of pioneering women.

The meeting in October 2008 was not only the largest, it was also the most ambitious to date. During the three days the focus was on getting to know each other, and on learning about each other's research and the key gender- and science-related issues facing participants in their home countries. We emphasized the importance of communication and provided a session to develop skills in this area. Participants also gathered in work groups centered on four themes: Careers, Work/Life Balance, Role Models/Mentoring, and Community Building/Networking.

It wasn't all work. We organized tours of Paris and we introduced participants to a number of leading academics who presented on a variety of interesting topics.

Our goal was to create a venue that would help the fellows get to know each other better, provide opportunities for them to learn or to improve essential skills, and help them craft a vision for themselves as role models.

Despite the ambitious nature of our agenda, we were encouraged by what we saw the participants achieving during the week. We are confident that our momentum will continue to grow, thanks to interaction supported by our new Faculty for the Future web forum as well as publications such as the one you are now holding.

Kind regards,

A handwritten signature in black ink, which appears to read "Johana Dunlop". The signature is written in a cursive, flowing style.

Johana Dunlop

Executive Director, Schlumberger Foundation



## Introduction

# OVERVIEW OF PROCEEDINGS

Nearly two dozen Faculty for the Future fellows converged in Paris in early October 2008 for the largest gathering of fellows since the program's inception in 2004. The fellows met for three days to discuss career issues with one another and with career development experts invited by the Schlumberger Foundation, which sponsors their research. Perhaps most significantly, the meeting was a chance to put real faces to the names that make up the Faculty for the Future network.

Schlumberger Foundation Board Chairman and President Jean-Marc Perraud greeted the fellows with an invitation to “take ownership of this community.” The most important goal of the meeting, he said, was to ensure that the fellows built a lasting community to help them throughout their careers, not just during their studies.

“In many places around the world today, women continue to face huge obstacles to the achievement of professional success in scientific and technical areas. Our mission is to help change this situation,” said Schlumberger Foundation Executive Director Johana Dunlop, who supervised the October event.

The first day kicked off with personal introductions by the fellows, each of whom answered questions about their career paths and expectations. The session was led by co-moderators Dr. Kenneth Rabin, a professor of communications and editorial board member of various academic journals, and Dr. Tineke Willemsen, a professor of work and organizational psychology specializing in gender issues.

“

Women continue to face huge obstacles in scientific and technical areas. Our mission is to help change this situation. ”



A handful of themes surfaced during the introductions, including the support many women had received from their families, the desire to make a positive contribution in their home countries and to become role models for other women and, conversely, the pressure to get married and settle into non-academic roles.

At a dinner that night at the Maison des Polytechniciens, the alumni clubhouse of the most prestigious engineering university in France, guest speaker Claude Allègre, former French Minister for Education, Research and Technology, commended the women for not shying away from the challenges of a research career. He called the fellowships a “marvelous idea,” adding that “many of you will do extremely good things for your countries and for women.”

The second morning the fellows participated in a communications workshop and shared tips and tools that can be used to convey their research to their peers and to other audiences in written and oral form. After hearing a presentation by Dr. Rabin, five fellows who had agreed to describe their work to the group delivered presentations they had prepared in advance of the meeting, and all the fellows offered feedback. Their comments revealed the importance these researchers give to the ability to communicate their science and technology not only to their peers, but also to wider audiences including the media, government and industry funding bodies.

The fellows got to know each other socially during an afternoon off to tour the city and have dinner together. When they arrived at the conference center the third day, they were brimming

## Profile

FOLASADE MAYOWA  
OLAJUYIGBE

NIGERIA

EXPERTISE: BIOCRYSTALLOGRAPHY



“When I was in primary school my dad used to encourage me to become a medical doctor. At the age of 11, I started keeping lists of drugs I wanted to make. Later he got me a chemistry textbook and I read it before the semester started.”

Folasade Olajuyigbe was born and raised in Nigeria and is married with three children.

Currently studying to obtain a doctoral degree in Applied Biochemistry, a “sandwich” program between the Centre of Excellence in Biocrystallography, University of Trieste, Italy and the Federal University of Technology Akure, Nigeria, Olajuyigbe credits her father as a source of early academic inspiration.

“When I was in primary school my dad used to encourage me to become a medical doctor. At the age of 11, I started keeping lists of drugs I wanted to make. Later he got me a chemistry textbook and I read it before the semester started,” she says.

Her research focus is on biocrystallographic and kinetic studies of drug-resistant mutants of HIV protease enzymes. She works with anti-retroviral therapies—drugs that are hindered by the emergence of viral strains that resist them. Drug resistance has become of urgent concern to the medical community because it renders treatment ineffective. As a result, medical science needs to develop inhibitors that can efficiently combat drug resistance.

Using state-of-the-art X-ray crystallography techniques, Olajuyigbe investigates the molecular basis of drug resistance with a US Food and Drug Administration-approved inhibitor,

ritonavir, along with a newly designed small inhibitor, FP3, and an irreversible covalent binding HIV protease inhibitor, EPX.

Describing her research, she says, “What I do is focused on three active site mutants that are multidrug resistant. I study the molecular basis for their resistance, and the results obtained are used by chemists to see how to improve current drugs and how to design new drugs that are more potent.”

In 2008 she presented the results of her research at Trends in Enzymology 2008, an international conference held in Saint Malo, France, where she won Best Poster and Young Investigator awards.

Her research on the roles of mutation in drug resistance of HIV-1 protease and her insights into the binding modes of new inhibitors will aid the design of potent inhibitors through structure-based drug design, and it will help predict the drug-resistance features of new compounds.

### Future Plans

*Olajuyigbe plans to teach at her home institution, Federal University of Technology Akure, Nigeria.*



with ideas for their breakout sessions on community building and networking, careers in science, work/life balance, and role models, mentoring and outreach to other young women.

*Panelists and Moderators:*

*Dr. Anna Wysocka-Rabin, Dr. Tineke Willemsen and Dr. Kenneth Rabin*

The fellows then interacted with a panel consisting of senior academics who shared stories of the challenges they had overcome as women in academics. According to the panelists, Dr. Minella Alarcon, Dr. Mary-Louise Kearney, Dr. Laure Meynadier, Dr. Anna Wysocka-Rabin and Dr. Tineke Willemsen, these challenges range from cultural issues to learning how to adapt academically and balancing family and work responsibilities.

The final workshop session, on networking and mentoring, was led by Dr. Willemsen and focused on mutually beneficial mentor/mentee relationships. Mentors often serve as advocates for mentees, and mentors also benefit from the relationship. Developing mutually beneficial relationships through networking is another way to keep women in the sciences, and at least as important as carrying business cards is having a ready, memorable answer when asked, “So, what do you do?”

The three-day workshop ended in a flurry of good-byes and promises to stay in touch. Numerous new friendships had been forged, and many of the fellows pledged to follow up on the work accomplished in Paris when they returned to their host universities and to their home countries. For many of the fellows, in fact, the end of the conference felt more like a beginning.

## Profile

### JEANNE THERESE HILARIO ANDRES



PHILIPPINES  
EXPERTISE: CHEMICAL ENGINEERING

“I became concerned about the environment during my undergraduate studies.”

A married mother of two young boys, Jeanne Therese Hilario Andres is passionately committed to the environment.

In previous career incarnations, Andres, who is from the Philippines, was a university faculty instructor and research assistant as well as a youth worker, singer, writer and environmentalist. Now, after taking a no-regrets family-related career break, she considers herself fortunate to be returning to academic life. “I’m a returner to science and engineering,” she says. “This is my second chance.”

In October 2008 Andres began pursuing full-time doctoral research as a Clare Hall student in the newly merged Department of Chemical Engineering and Biotechnology at the University of Cambridge in the United Kingdom.

At Cambridge she works with the Fluids and Environment research group, where her focus is on carbon dioxide sequestration, which seeks to study, predict and model the effects of Carbon Capture and Storage (CCS), a technology currently being employed to re-inject waste carbon dioxide from industrial sources back into subsea surfaces, spent oil and gas fields, or deep geological formations.

Focusing on mass, heat and momentum transport processes, diffusion, convection and fluid dynamics, Andres performs literature searches, conducts laboratory experiments, and develops and utilizes mathematical models to understand and simulate the long-term fate of CCS: its move-

ments, geochemical interactions and any potential hazards to the environment arising from accidental leaks.

“I became concerned about the environment during my undergraduate studies,” she says. “I consider myself to be an engineer and a scientist, but also at the heart of it there should be motivation, there should be purpose. I just have to look at my sons to be motivated because I’m trying to build a better world for them.”

After completing her doctoral requirements Andres hopes to continue in post-doctoral research, but ultimately she plans to regularly visit her home country to teach at the University of Santo Tomas Faculty of Engineering while maintaining academic ties with the University of Cambridge. One of her goals is to help young women in both countries to realize that a career in science and engineering is doable—that with a little time management and support from their loved ones, they can lead happy, fulfilled lives. “I want to do research but I also want to teach,” she says. “If you don’t teach you are like the Dead Sea—you have no outlet for sharing. When you teach, you create an impact on the future.”

#### Future Plans

*Andres plans to teach at the University of Santo Tomas Faculty of Engineering while maintaining links with the University of Cambridge.*

“

They are not only concerned about themselves, but also about the careers of the next generation and other women in general. ”



## Session I

# MEETING THE FELLOWS

**TUESDAY, SEPTEMBER 30.** Moderators Dr. Kenneth Rabin and Dr. Tineke Willemsen invited fellows to introduce themselves during the opening session held at the Schlumberger Riboud Product Center on the outskirts of Paris. Groups of five or six fellows were interviewed by the moderators and shared the many paths by which they have reached the present stage in their research and teaching careers.

At an age when most women in Indonesia are getting married and having children, Happy Primita Novanda is studying for a PhD in electrical engineering at the University of Manchester in the United Kingdom. Novanda's mother was a lecturer too, so Novanda thinks of her mother's generation as the ground-breakers. Novanda says she has bigger "issues from family than from colleagues," regarding her choice to pursue a research career.

Novanda's concerns were representative. Several other fellows reported that their relatives and friends exert pressure on them to start families instead of pursuing graduate studies or an academic career. Yet many also pointed to supportive spouses, parents or supervisors as major factors in their success, reflecting the ambivalence many communities have towards women who achieve success in the academic realm during the traditional child-bearing age.



We are scientists first. ”



Other fellows hesitated to dwell on their status as female scientists. “We are scientists first,” declared Parinda Vasa, an Indian post-doctoral student at the Carl von Ossietzky University in Oldenburg, Germany.

Still, the fellows pointed to cultural factors that create difficulties for women working in senior positions. “Some men do not like to take orders from women,” chuckled Arul Mani Shanthi, a Malaysian PhD student in geology at Imperial College, London, during her group’s discussion. Even in academic environments that welcomed women, Mani Shanthi and other fellows reported, they are often saddled with administrative duties which threaten to limit their time in the field performing original research or writing up results.

In order to defend her research time, Dupe Nihinlola Saka says she had to be more assertive and “out there” than she would be naturally. But then her male colleagues at the University of Lagos in Nigeria, where she was an assistant lecturer, began referring to her as the “Iron Lady.” Saka, now studying for a PhD at Lancaster University in the United Kingdom, asked the other fellows: “How do you balance that?”

While the women’s frustrations did come up occasionally during the self-introductions, they focused more on plans for turning their fellowship experience into a vehicle for change for women back in their home countries. Mani Shanthi emphasized how teaching young women motivates her and how she sees that they are motivated by seeing her in an academic position: “It’s a two-way thing.”



## Profile

MARYIA NUDNOVA

REPUBLIC OF BELARUS

EXPERTISE: PHYSICS



“ When I was still in school I started to win physics competitions—that’s when I decided to become a scientist. I like working on things that are new. ”

Maryia Nudnova was born in Minsk, capital of the Republic of Belarus, where at an early age she became interested in a career in science. Eventually, she landed a job working in the Department of Physics and Cosmic Research at the Moscow Institute of Physics and Technology.

“When I was still in school I started to win physics competitions—that’s when I decided to become a scientist,” she says. “I like working on things that are new.”

Awarded a Faculty for the Future fellowship in 2007 and currently studying for her PhD in plasma physics at The Ohio State University in the United States, Nudnova has co-authored numerous academic papers and regularly attends international conferences. In her research on plasma physics, she works with nanosecond pulse discharges and does experimental investigations of streamer discharge and sliding DBD discharge.

“You have seen these types of discharges—in nature they are called lightning,” she says.

In her current research Nudnova is using three-dimensional numerical and experimental investigations of pulse discharges for ultrafast plasma control to control boundary layer separation in aerodynamic applications.

When air flows over the wing of an aircraft, a thin layer of undisturbed air called the boundary layer flows smoothly across much of the

wing’s surface. At the separation point, however, the boundary layer breaks away from the surface of the wing, creating additional drag.

Because an abrupt flow separation has disastrous effects on the aerodynamic characteristics of an aircraft wing, Nudnova is working to develop devices that can rapidly change the position of the separation point. If she is successful, her research will result in more efficient airplane wings.

### Future Plans

*After she obtains her PhD, Nudnova plans to teach at the Moscow Institute of Physics and Technology. But not at the expense of her first love—research. “I think if you want to teach students you should also do some research,” she says. “I want to find a balance between academic teaching and research.”*



## Session II

# COMMUNICATING YOUR RESEARCH

**WEDNESDAY, OCTOBER 1.** The most critical communication tool for academic researchers is the academic journal article, according to Dr. Rabin, who led the session on communicating your research on Wednesday morning.

This session focused on a topic of great importance, albeit one that is often neglected in academic settings—communicating science and research. The communications workshop was followed by feedback on sample presentations given by five fellows.

Collaborating with senior colleagues familiar with the publishing process is useful, said Dr. Rabin, because they can often advise young researchers on how to design research worth publishing in the first place. Even academic journals are subject to the kinds of business pressures that influence newspapers and magazines, so journals can only afford to publish the most novel, attention-grabbing results.

As for navigating the submission and review process, again, “a lot depends on who your supervisor is, because they know the ropes and you don’t.” Good mentors can help a young researcher decide which journals to approach and how to tailor a manuscript or a revision for a particular publication’s audience.

For help with structuring a manuscript and its figures, it was suggested that new authors consult their target journal’s submission guidelines. Exactly which journals new researchers should target is worth discussing with mentors and senior colleagues, who will understand the pecking order of the journals in a given field, and may even know (or be) editors at some journals.

“Once you’ve done the research work, present it clearly,” added Dr. Rabin. “Your methodology has to be explained because your

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A lot depends on who your supervisor is, because they know the ropes. ”



work is going to be read by a reviewer before it ever gets published.” If a reviewer does not understand the work, he or she cannot be expected to recommend it for publication.

The same goes for other scientific communications venues, such as talk abstracts or poster presentations at meetings. To begin with, choose a simple title, perhaps broken up with a colon, to explain in plain language what your research seeks to show.

The body of the paper, poster or talk should be written using verbs in the active voice and using the simplest words possible. For non-native speakers of English, it might be worth asking a native English-speaking colleague to quickly edit the paper. The importance of eye-catching figures, both in manuscripts, posters and for oral presentations, was also stressed.

Academic venues may be the best way to reach scientists, but to reach the public, researchers must deal with the media. Dr. Rabin emphasized the importance of crafting communications for each kind of audience, and that dealing with the media and the public is not the same as dealing with fellow researchers.

The first contact many young researchers have with the media is after they have had a paper accepted. They are often contacted by public information officers at the journal, the institutions for which they work, or the granting bodies that fund them to help prepare a press release for wide distribution.

Before calls start, scientists should prepare by defining what Dr. Rabin called their Single Overriding Communication Objectives, or SOCOs. He advised the fellows to think of two or three simple, memorable points that they want to convey, and to prepare hard

“

Scientists should prepare by defining their Single Overriding Communication Objectives. ”

facts to offer journalists as evidence for each of these. He suggested repeating those two or three points several times, in slightly different ways, to ensure journalists absorbed them.

After the presentation, five of the fellows gave presentations summarizing their current research that they had prepared in advance of the workshop, and the other fellows offered feedback.

Mayrina Firdayati, a PhD student at the Technical University of Hamburg, Germany, gave the first talk, titled Graywater Reuse for Urban Agriculture/Aquaculture in Indonesia. She colorfully defined the different types of wastewater handled by the current infrastructure in her home country, Indonesia. After defining these and the limitations of existing filtering technology, she explained that her research was devoted to treating water for agricultural re-use in urban environments. Unfortunately, she had little time to talk about her ideas for this because she had reached her time limit. Firdayati was praised for engaging her audience by asking them questions during the talk, and it was suggested that jumping to the main point of her talk sooner would leave more time to discuss her own work.

Emily Benice Ngubia Kuria, a native Kenyan studying for a PhD at Humboldt University of Berlin, delivered the second research presentation, titled Gender Research on Science Attitudes: A Psychological Perspective. Kuria studies how gender subtly influences our body language, and therefore body language can be an indicator of gender-based behaviors. Explaining the implications of her work, she impressed the audience with her enthusiasm. Feedback from the group included the suggestion that Kuria’s enthusiasm was a great way to connect with the audience, but that an audience unfamiliar with the topic might be overwhelmed. It was suggested that she prepare the audience with a little bit more explanation of the original research that led to her intriguing

findings that people move differently based on the gender of nearby people. Visual clarity is another key to a successful oral presentation. Arul Mani Shanthi, a PhD student from Malaysia studying at Imperial College, London, garnered praise for some of her slides on the geology of earthquakes, which used a large typeface with high-contrast colors for ease of reading. In her research presentation, called Subduction Zone Earthquake-Triggered Tremors, one slide contained a conceptual map of her research plan, but it may have been too crowded for an audience to follow during the limited time it was visible.

The next presenter, Folasade Mayowa Olajuyigbe, spoke about HIV drug resistance. Her talk, Using X-ray Crystallography to Counter Drug Resistance in HIV, contained a wide assortment of slides, some with visual representations of proteins, some with conceptual diagrams of her laboratory work, and others with more traditional bullet points and words. The Nigerian PhD student at the University of Trieste in Italy even improvised successfully when her equipment malfunctioned briefly, showing exactly the sort of on-the-spot thinking that oral presentations require.

The fifth and final research presentation, called Opto-electronic Oscillator for Onboard Systems, was given by Margarita Varon, a Colombian PhD student at the Higher Institute of Aeronautics and Space (SUPAERO) in Toulouse, France. Varon talked about a promising laser-based telecommunications device that would be lighter and smaller than existing models. She hopes to adapt the technol-

ogy for aviation, where size and weight are especially important. Members of the audience were intrigued; they asked numerous questions.

At the conclusion of her presentation, the main communications suggestion for Varon was that she speak more loudly. As Dr. Willemsen reminded Varon and all of the fellows, “What you have to say is important enough that we should all hear it.”

## Profile ARUL MANI SHANTHI

MALAYSIA  
EXPERTISE: GEOLOGY



“ I approached two potential supervisors in the UK and they were more than keen to have me join their team. In fact, one of them told me about the Faculty for the Future fellowships! ”

Malaysia has no earthquakes but is affected by nearby tremors and aftershocks in Indonesia and the Philippines. Beginning in 2000, Malaysia began experiencing tremors of increasing size and frequency, causing much concern. Malaysian geologists working with engineers and builders began developing building regulations that incorporate the tremor factor.

Arul Mani Shanthi was one of them. She was working as an engineering geologist and freelancing as a research assistant and lecturer when she concluded that a national earthquake and tremor center was needed along with a regional earthquake and tremor center. Her proposed centers would monitor seismic activity in Malaysia and the surrounding region and develop maps of tremor hazards and risks.

She feels that with a PhD added to her credentials she'll be in a better position to approach government authorities with her ideas, and to lead the research. As well, she wants to pave the way for more women to be given an opportunity in similar research. This sentiment is shared by other Faculty for the Future fellows: while an increasing number of women in developing and emerging countries serve as technicians or research assistants, they are rarely encouraged to obtain their PhDs and develop their own independent research programs.

“So last year I decided to go international,” she says. “I approached two potential super-

visors in the UK and they were more than keen to have me join their team. In fact, one of them told me about the Faculty for the Future fellowships!” She is using her fellowship to study for a PhD in engineering seismology and earthquake engineering at Imperial College, London.

Her work is on subduction zone earthquake-triggered tremors—deep and intense forms of earthquakes common to the Pacific Rim that affect Malaysia. Part of her project involves obtaining historical records of similar tremors and mapping risk zones throughout Malaysia. These maps—a first step toward the work she hopes to do in her proposed national earthquake and tremor center—could in an advisory capacity help inform government building codes, construction plans and emergency procedures.

She hopes that her PhD research will help her develop the expertise and persuasiveness she will need to make government and academic officials in her home country give her earthquake and tremor plan a fair hearing. And that might generate a little earthquake tremor of its own.

### Future Plans

Arul Mani Shanthi plans to teach at the University of Malaya in the Geology Department.

### Key Points

1. Visual clarity
2. Legible fonts and colors
3. Avoid overcrowding of slides
4. Speak at an audible level
5. Pace your presentation

## Session III WORKING GROUPS

“

You're not going to solve these issues this morning in a one-hour workshop. Part of it is to give you a taste of working on these themes. We hope that you will continue discussing them via the web forum and when you come together in the future. ”



**THURSDAY, OCTOBER 2.** After an afternoon and evening free to tour Paris and get to know each other informally, the fellows reconvened Thursday morning to discuss a series of themes of major concern to these women academics. The themes included community building and networking, science-specific career issues, the challenges of maintaining a healthy balance between work and personal life and role models, mentoring and outreach to girls and young women.

The day started with a presentation about how best to build this amazing, energetic community. One tool at the disposal of all of the fellows is a web-based electronic forum. Faculty for the Future Community Coordinator Muriel Barnier discussed the results of a recent survey of all 93 fellows, and encouraged the fellows attending the Paris gathering to make good use of this resource.

After the presentation by Barnier, the fellows split into four working groups to discuss issues and challenges they had faced. After the breakout sessions, each group presented the challenges and potential solutions to the rest of the assembly.

## Working Group 1

# COMMUNITY BUILDING AND NETWORKING



### Participants

Zakia ABIDI

Emily NGUBIA KURIA

Arul MANI SHANTHI

Maryia NUDNOVA

Margarita VARON

Zohra MOKEDDEM

The first group organized its thinking with “visions.” The first vision was “magnetizing the community” of Faculty for the Future fellows. They hope that communication will happen in an informal way. To encourage it, they came up with their first step: make the virtual forum sticky—improve it so it becomes a go-to venue. They suggested a Faculty for the Future day once a week when fellows check in on the online community website. They also proposed a message board where researchers post ideas and discuss research collaborations. The team listed real-time chat as a possible feature for the site. Another idea was a searchable directory containing professional histories of fellows, home-country profiles and possibly information about which researchers within Schlumberger are doing similar work.

The group’s second vision was using the community to improve the state of women in the fellows’ home countries. They suggested tools such as international exchanges in which women could visit one another in different countries. They also wanted to encourage opportunities to jointly publish with other fellows and other women in science. Finally, the team brought up the possibility of raising funds for women’s networking organizations from outside funding sources.



### CHALLENGES

*VISION I—Magnetizing the Community:*

- General knowledge challenges
- Faculty for the Future Day
- Post-it notes (notification)
- Chat (individual and group)
- Country information (pictures, introduction, gender situation, science)
- Mentor link

### SOLUTIONS

*VISION II—Motivating and Helping Other Women in Our Countries:*

- Conferences and meetings
- Publishing together
- Doing scientific projects together (joint venture)
- Outsourcing funds

## Working Group 2

### CAREERS IN SCIENCE



#### Participants

Zoila Luz EPOSSI NTAH

Mayrina FIRDAYATI

Yasaman SHADROKH

Parinda VASA

Lena Dzifa MENSAH

Nur HIDAYATI

The fellows in Working Group 2 considered broader strategies for succeeding in a science career. Many of their ideas overlapped with those discussed in the other breakout groups.

Yasaman Shadrokh, an Iranian PhD student at Imperial College, London, declared that the fellows “need to show ourselves off maybe a little bit,” and appear in the media to show the wider community that women exist and thrive in science roles. But the extra scrutiny women get in the sciences means that they also need to be extraordinarily well-prepared.

The first step is getting good qualifications in an individual’s field. This should contribute to a durable self-confidence. Meeting competent women elsewhere, such as through the Faculty for the Future program, is another good way of gaining self-confidence, suggested the group. It’s especially important to reinforce the message that women can succeed in fields that in developing and emerging economies are often heavily dominated by men.

All scientists, male or female, need to secure funding for their work. Coming from these developing and emerging economies makes that even harder, but the fellows said that thanks to their fellowships they have the confidence to look for further sources of international funding outside their home countries.

#### CHALLENGES

- Getting education and qualification
- Self-perception (what is the role of women?)
- Getting and keeping a job/coping with the environment
- Resources: financial, facility, network/communication
- Sources of support: family and community



#### SOLUTIONS

- Educating the society/family, policies and role models, using media/mass publication
- Role models, networking with other women (women’s associations), education about changing perceptions of the family
- Government policy, strong women’s society (international, national, local), proving ourselves, believing
- Government, industry, women’s associations, NGOs
- Educating the society/family

In that respect, networking internationally and finding out about opportunities throughout the network can be very helpful. This group also came up with the idea of starting a women’s association in their home countries and looking for funding from non-governmental organizations and local governments to support women-in-science initiatives.

They also cited the importance of family support and suggested that fellows with a teaching role should not hesitate to encourage promising young women and their families.

**Working Group 3**

**WORK/LIFE BALANCE**



**Participants**

Jeanne Therese Hilario ANDRES

Hauwa RAJI

Maria Isabel ROCHA GASO

Dyah Ayu Mira OKTARINA

Dyah Ekashanti Octorina DEWI

Not everybody finds the time to help or influence other scientists, and the group of fellows charged with discussing work/life balance issues agreed that it takes an explicit effort to free up that time.

First, researchers need to take charge of their own personal time management. It is necessary to explicitly include priorities into a schedule, so these things do not get nudged out by emergencies or things that come up. They need to decline work that distracts them from their career goals and not be afraid to delegate or ask for help when they fear being overwhelmed.

With all the demands to be Wonder Women, “the important thing is that you don’t forget to be happy,” said Maria Isabel Rocha Gaso, a Mexican PhD student at the Polytechnic University of Valencia, Spain. The solution is to make time for yourself, she suggested, away from work or family responsibilities. Doing personal things such as taking a walk can be a good way to recharge.

As for avoiding the inevitable guilt that might follow, the fellows advised taking the attitude that you must be your own best friend instead of your harshest critic, and that it can be worthwhile to stop and remind yourself why you do the work you do.

**CHALLENGES**

- Time management
- Satisfaction/happiness (we have to be Wonder Women but we must not forget to be happy)
- Socio-cultural expectations (stereotypes—especially responsibility to family)
- Government policies (Nigeria has women ministers)
- Unsupportive work environment—having to work more than men
- Guilt

**SOLUTIONS**

- Develop skills for managing time (and draw on others to help)
- Make time for yourself—recharge your spirit with something you like
- Strong support system for empowering women, raising awareness of our rights and abilities
- Advocacy
- Be less hard on ourselves, be our own best friends, focus on what we can do rather than what we cannot do. Adjust our own expectations. Remember why we are doing it and focus on the overall plan. Not burden ourselves too much. Learn something, move on. We are not alone.



But that is easier said than done, and Dyah Ekashanti Octorina Dewi, an Indonesian PhD student at the University of Groningen, The Netherlands, pointed to the necessity of building a social support system. Other women, scientists or not, can help with the logistical challenges of child care and daily errands. They can also provide an emotional support network, gently telling a friend that it is acceptable to delegate certain tasks or to ask for help.

Cultural expectations, unsupportive work environments and unfavorable government policies all add up to serious external burdens on female researchers, said the fellows. One step female researchers can take is to lobby for government laws protecting the right to part-time or flex-time work so that when they ask for family-friendly work arrangements, “it’s the law, not a favor.”

## Working Group 4

# ROLE MODELS, MENTORING AND OUTREACH TO YOUNGER WOMEN



### Participants

- \_\_\_\_\_  
Folasade OLAJUYIGBE
- \_\_\_\_\_  
Isil AYRANCI KILINÇ
- \_\_\_\_\_  
Ifeyinwa Eucharia CHIKA
- \_\_\_\_\_  
Patricia MUNOZ-ESCALONA
- \_\_\_\_\_  
Happy Primita NOVANDA
- \_\_\_\_\_  
Dupe Nihinlola SAKA

The fourth group of fellows reported on challenges women scientists face when they try to reach out to mentor other women. The team defined role models as “people who inspire through their activities and image in society,” said Happy Primita Novanda, who is from Indonesia and who is now studying for a PhD in electrical engineering at the University of Manchester in the United Kingdom.

The challenges of being a role model are manifold, but the team came up with five major areas. The team listed overcoming male dominance first. All six women in the group were able to share stories of being discouraged by their families, friends or males in science. They also said that their personal role models were able to create a healthy work/life balance. The fellows said they value a good attitude in their own role models. “You have to be enthusiastic about what you’re doing!”

Next is cultivating a positive profile “not only at the career level but also at the personal level,” said Novanda. One of the fellows in the group cited a high-profile role model in another country who was surprisingly accessible even by email, so the group added approachability to their list of traits for good role models.

### CHALLENGES

- \_\_\_\_\_  
• Overcoming male dominance
- \_\_\_\_\_  
• Work/life balance
- \_\_\_\_\_  
• Great attitude
  - Being active
  - Enthusiasm
  - Positive profile
- \_\_\_\_\_  
• Open and approachable
- \_\_\_\_\_  
• Mentoring

### SOLUTIONS

- \_\_\_\_\_  
• Empathy
- \_\_\_\_\_  
• Time management
- \_\_\_\_\_  
• Communication skills
- \_\_\_\_\_  
• Counseling
- \_\_\_\_\_  
• Career talks to high school students



The fellows raised the issue of discouraging talk from family and male scientists, but were more excited when they talked about how to find the time to serve as mentors. When they are trying to balance teaching, research and family responsibilities, it can be difficult to have energy or time left over to reach out to younger women. It will be important to work on time-management skills, said Novanda. “We want to have balance between our families and our careers.”

Next the group listed communication skills. Mentors need to be able to communicate their work clearly to potential mentees, but even before the fellows reach that point, they need to clearly communicate their career goals to their mentors and to other senior colleagues.

Fellows in a position to reach out to younger women scientists will need to “be down-to-earth and giving and have a positive attitude



#### ROLE MODELS INSPIRE THROUGH

- Achievements
- Activities
- Images

#### GIVE THEM TOOLS TO MAKE THEIR OWN DECISIONS

- Provide information
- Sharing personal experience
- Methodology of assessment

so that young women will follow them,” added Novanda. Speaking to people from different cultural backgrounds can require developing empathy, she said. The group concluded that being a role model does not happen on its own.

During a lively question and answer session provoked by their presentation, Schlumberger Foundation board member Ranaa Riyamy advised the fellows against the danger of getting trapped into a hermit-like lifestyle trying to finish a PhD or post-docorate. She said that being a true role model means “communicating to the outside and having an influence.”

At the end of the breakout sessions, moderator Dr. Willemsen wrapped up by pinpointing a Single Overriding Communication Objective. “One of the dangers is feeling like you need to be a super woman. My advice is do not be afraid to ask for help, and make sure you have a strong support system.”

## Profile LENA DZIFA MENSAH

GHANA

EXPERTISE: MECHANICAL ENGINEERING



“Right now in Ghana we have quite a bit of commodity processing. I think that we should move toward developing the technology.”

Lena Dzifa Mensah was born in Ghana as the second of four children. Now a mechanical engineer with a master’s degree in manufacturing, she was awarded a Faculty for the Future grant in 2006 and is currently working on her PhD in Engineering and Management of Manufacturing Systems at Cranfield University in the United Kingdom.

In her first research project, Mensah used Failure Modes and Effects Analysis (FMEA) methodology to investigate the risks associated with new product introductions. She is currently researching how to use product and process knowledge in food value chains to increase competitiveness. Her career is focused on helping Ghana become more self-sufficient.

“Manufacturers and industries are looking for ways to reduce costs, to achieve flexibility and to decrease their response time to customers,” she says. “Emerging economies such as India and China have taken advantage of these trends thanks to their cheap labor and their ability to learn quickly. I am looking forward to the time when Ghana can also take advantage of this trend to enhance competitiveness.”

With much of the focus of present-day manufacturing on the supply chain where there is fragmentation of production across countries, Mensah’s research into value chains is

intended to help increase profits by producers of raw materials as well as by companies further up the value chain. Her work will ultimately include other benefits to Ghana such as increased acquisition of technical skills, enhanced human capital and more competitiveness in the global marketplace.

“Right now in Ghana we have quite a bit of commodity processing. I think that we should move toward developing the technology,” she says. “If we do that we can acquire the knowledge that will allow us to industrialize.”

#### Future Plans

*Mensah plans to return to Ghana to teach in the Mechanical Engineering Department at Kwame Nkrumah University of Science and Technology.*

“

Women scientists have to know how to say, 'No, I'm not interested,' instead of, 'I don't have the time.' ”



## Session IV

# ROUNDTABLE DISCUSSION

## CHALLENGES FACED BY WOMEN ACADEMICS

**THURSDAY, OCTOBER 2.** The culmination of the week was a panel discussion featuring five women from different academic disciplines who shared their experiences and knowledge about the challenges faced by women in academic teaching and research.

Dr. Minella Alarcon was one of two women to become the first laser specialists in the Philippines. She is the former chairperson of the Department of Physics at Ateneo de Manila University. Currently a UNESCO senior program specialist in science and technology education and technical capacity-building, she emphasized the cultural roots of the challenges women face in the sciences. She said that while there were subtle obstacles during her studies in the Philippines in the 1980s, she encountered more serious gender-related issues while working in Japan.

Dr. Mary-Louise Kearney is director of the secretariat of the UNESCO Forum on Higher Education, Research and Knowledge in Paris, France. She discussed the changes in higher education over the years and noted with humor that although progress has been made, there is still a long way to go. Work/life balance meant that she completed her two PhDs, one in linguistics and the other in education and culture, later than normal. She stressed the importance of having a good career mentor, either a man or a woman.

Dr. Laure Meynadier, a geophysicist and professor at the Institut de Physique du Globe de Paris and Université Paris Diderot in France, says her parents, both PhDs, expected her to study for “at least five or 10 post-secondary years.” Her hardest-earned lesson was learning how to navigate academic responsibilities



*Dr. Minella Alarcon, UNESCO (second from right), and fellows*

and pressures. When colleagues hand out too much administrative work, women scientists have to know how to say, “No, I’m not interested,” instead of, “I don’t have the time,” she said. This reinforces the idea that a woman’s time is just as valuable as a man’s and that a female academic can choose her own path.

Medical physicist Dr. Anna Wysocka-Rabin “never considered not getting a degree,” though it took her decades to earn her PhD due to child care and senior care demands.

Now working at the Soltan Institute for Nuclear Studies in Poland and occasionally at the German Cancer Research Center in Germany, Dr. Wysocka-Rabin reported that the male physicists in her department simply wrote her off when she got pregnant, handing plum research assignments to male researchers who advisors thought would be more likely to finish the projects. Eventually, she struck out on her own, collaborating internationally and between disciplines, carving out her current niche.

Until her early retirement in 2005, the fifth panelist, Dr. Tineke Willemsen, was professor of work and organizational psychology at Tilburg University in The Netherlands. She has published papers on the effect of gender stereotypes on processes of evaluation, female managers, and the gendered division of paid and unpaid work. She is currently involved in research projects on women professors and on the effectiveness of policy measures in Dutch universities.

She noted that most women would at some point encounter people in a professional setting who would ignore or even co-opt their ideas without giving due credit. Faculty for the Future fellows will need to protect both their ideas and their careers, she said, adding that to avoid being overlooked women need to make an extra effort to “let the people around you know that you want to take the next career step.”

Moderator Dr. Kenneth Rabin wound down the session by leading a lively question and answer discussion between the fellows and panelists.

## Profile **ZOHRA MOKEDDEM**

**ALGERIA**  
*EXPERTISE: GEOLOGY*



“In sediment we can understand many things—environment evolution, climate changes, human evolution.”

Zohra Mokeddem’s heart may be in Algeria, where she was born and raised, but her eyes are firmly fixed on the fjords of Scotland.

When she was growing up on the family farm in Algeria her father and her mother, very modest but highly generous, always supported her aspirations for higher education. After graduating from university as a coastal engineer, she obtained a master’s degree in geomorphology at the University of Caen in France.

Awarded a Faculty for the Future grant in 2006, she is now at the University of Caen preparing for a doctoral degree in geology and sedimentology. Her research is attempting to reconstruct climatic conditions archived in sediment, and it is yielding a comprehensive survey of climate and environmental changes from the Last Glacial Maximum some 20,000 years ago to the present.

“In sediment we can understand many things—environment evolution, climate changes, human evolution,” says Mokeddem. “We can do that by understanding the evolution of flora and fauna, for example.”

The best sediment for this type of research is found below the surface of the water in the fjords of Scotland—a thick blanket of it, undisturbed since prehistoric times. Sifting through slices of this sediment using radiocarbon 14 dating and other methods, Moked-

dem is attempting to establish relationships between climatic events that occurred in the past and the evolution of flora and fauna preserved in the sediment. Centimeter by centimeter, she is uncovering the secrets of the past.

“The fjordic basins can accumulate very high sedimentary supply, and because it is an undisturbed, very stable sediment, we can study many thousands of years of evolution,” she says.

Her research is enabling her to estimate the degree of transformation through this time period, and to understand the transformation process that occurs under such variations. Ultimately, she hopes it will allow researchers to forecast climate variations in the future and to provide clues to our current climate crisis.

### **Future Plans**

*When she finishes her PhD, Mokeddem plans to teach at the University of Algiers in the National Marine Science and Coastal Management Institute.*



## Session V

# MENTORING AND NETWORKING

**THURSDAY, OCTOBER 2.** Dr. Tineke Willemsen led the closing workshop on mentorship and networking. She had advice for early-career fellows seeking out their own mentors, and for mid-career fellows who were in a position to serve as role models and mentors, and to foster networks for younger researchers.

Dr. Willemsen defined mentoring as a voluntary relationship between a senior, experienced professional and a less-experienced colleague in which both parties feel free to contribute to the relationship or to withdraw from it without fear of negative consequences.

Good mentors act as sponsors, opening doors and making useful introductions. They offer tips and informal feedback. Mentors serve as advocates for mentees when senior colleagues are assigning positions of responsibility, or when office politics threaten the mentee. To improve the human connection, a mentor needs to demonstrate regard and acceptance of the mentee and listen to the mentee's dilemmas.

But what's in it for a mentor? In response to this question, Dr. Willemsen showed that mentees earn higher salaries and have better upward mobility and greater job satisfaction than un-mentored professionals. For mentors, the biggest benefit may be that discussions with a mentee can provide unexpected new directions for their own career. Additionally, mentors report recognition from their colleagues and superiors and higher job satisfaction. The organization is also likely to experience lower turnover, swifter integration of new employees and better transfer of its culture.

“

Mentoring and networking are both social activities, and you must give in order to get. ”



Networking is another way to keep women in the sciences. ”

So for fellows interested in promoting the presence of women in their academic environments, mentoring individual women is a good starting point.

“Many fellows mentioned that they are going to try to start networks of women scientists in their own countries when they go back after their stay in Europe,” Dr. Willemsen said. And networking is another way to keep women in the sciences, she added. She defined networking as growing one’s number of business and social contacts through face-to-face interactions followed by reciprocal, mutually beneficial relationships. Some networks are built around existing structures such as academic departments, university administrators, colleagues at other institutions or special interest groups such as women in science.

Dr. Willemsen told the fellows that many jobs, especially at the higher levels, are filled by informal recruiting through the networks of the hiring committee—even if they are publicly advertised. Rather than fighting this, women scientists should grow their networks so that they, too, are considered for insider positions. At least as important as carrying business cards is having a ready, memorable answer to the basic elevator question of “what do you do?” After making contacts, women scientists need to be proactive about following up by offering to help out to remind the new contact how the relationship could be mutually beneficial.

The main unifying element of mentoring and networking, said Dr. Willemsen, is that they are both “social activities and you must give in order to get.”

## Profile

YASAMAN SHADROKH

IRAN

EXPERTISE: ELECTRONICS  
AND ELECTRICAL ENGINEERING



“ I think nano is the future of all science—electronics, medical—everything. ”

To Yasaman Shadrokh small is not only beautiful, it is the future. Currently in the third year of studying for her doctoral degree in micro- and nanotechnology at Imperial College, London, Shadrokh says that while nanotechnology is still an emerging new field of study, interest in nano-sized devices has increased dramatically over the last decade and the field is rapidly being integrated into academia.

“I think nano is the future of all science—electronics, medical—everything,” she says.

Shadrokh was born and raised in Tehran, Iran, where her father is a university lecturer in civil engineering and her mother is an accountant. A demanding and challenging student who never let obstacles get in her way, Shadrokh obtained her undergraduate degree in electronic and electrical engineering at Tehran Azad University in 1988, and her master’s degree from Glasgow University in the United Kingdom in 2006, graduating with distinction for her final project.

Nanotechnology operates at the atomic and molecular scale, developing materials and devices that are 100 nanometers or smaller. Because the size of the control contact in these devices has now been reduced to sub-100 nm dimensions, some performance parameters are affected, requiring a search

for new materials and geometries. In her research Shadrokh uses different device simulators and analyzers along with three-dimensional software to study the robustness of device structures to downscaling within the field of digital applications.

Now in the final year of her doctoral program, Shadrokh would like to continue her research and hopes to stay as a post-doc at Imperial College, where she considers herself fortunate to be at the cutting edge of an emerging technology, working with people who are world-class and well-known.

### Future Plans

*Shadrokh eventually plans to return to Iran to teach at the Sharif University of Technology and at Tehran Azad University.*

# Appendix I

## POSTSCRIPT



By the end of the three-day conference, several themes had repeatedly emerged. First and foremost was the challenge of balancing personal and professional responsibilities. In addition to the work/life balance theme, the fellows solicited advice throughout the meeting on how to improve conditions for other scientifically inclined women in developing and emerging economies.

There was general agreement that the communication tools covered in the workshops would be crucial to building public awareness and reaching out to policymakers. Finally, the need to create a lasting network was not lost on the fellows, many of whom felt that a fledgling network was already forming during the conference.

Following the three-day gathering in Paris, participants were asked what standout themes and key messages had emerged for them during the sessions. The following is a sampling of responses.

“What I appreciated was the chance to talk about our research and to share our experiences as women and as scientists,” said Zohra Mokeddem. “Prior to the meeting we were asked to contribute ideas for topics of discussion, and those suggestions came to life. Thus the meeting themes are of great importance to us, both personally and professionally.”

“Possibly the first and foremost standout theme in my opinion is the challenge of balancing family and professional responsibilities,” said Ifeyinwa Eucharia Chika.

“I absolutely loved all the speakers,” enthused Lena Dzifa Mensah. “Some of the experiences and challenges they faced were quite outstanding and served to encourage me and assure me that there is light at the end of the tunnel.”



“

If you ever thought that you were alone, this meeting dispels that. You have fellow travelers. ”

For Maria Isabel Rocha Gaso, there were two highlights. The first was, “Honing our skills for communicating our research to non-specialists.” The second highlight for her was, “Learning the importance of role models and mentors and how this encourages younger women to pursue science and technology careers.”

“The working group sessions provided us with an opportunity to actively work together and produce an output. It’s truly a unique type of fellowship,” commented Isil Ayranci Kilingç. “It is not just about receiving funding for our studies. It’s about caring about the professional development of each fellow and taking action to build a strong community.”

“This meeting was extremely valuable in terms of networking, communication, getting to know other fellows working in similar fields, sharing ideas and concerns, problem solving and brainstorming,” said Yasaman Shadrokh. “More important, we were able to visualize a strong community of women that we can continue to build.”

Dr. Kenneth Rabin concluded: “If any of you ever thought that you were alone facing these situations and challenges, this meeting dispels that. This gathering confirms that you have fellow travelers.”



## Appendix II

# ROLE MODELS FOR THE NEXT GENERATION



Faculty for the Future is an educational capacity-building initiative to encourage women from emerging and developing economies in their pursuit of academic careers in science and technology.

Drawing on a worldwide network of university relationships, this program provides funding for advanced graduate study. The goal of the program is to support role models and facilitate gender balance at key universities in developing and emerging economies. Grant recipients are, therefore, expected to return to their home countries at the end of their studies to continue their academic careers. As teachers, they will contribute to the ultimate vision of the program, which is to attract more young women into the sciences.

Faculty for the Future grants are in the range of USD 25,000 to 50,000 per year, and may be renewed through to completion of studies subject to performance, self-evaluation and recommendations from supervisors. The amount of the grant depends on the actual costs of study and living in the chosen location.



*Fellows gathered at the third annual conference held in Boston in 2007.*

### ELIGIBILITY

*Faculty for the Future is designed for women who:*

- are preparing for PhD or post-doctoral study in the physical sciences and related disciplines;
- have a proven track record of teaching experience;
- can demonstrate active participation in faculty life and outreach to encourage young women into the sciences;
- hold an excellent academic record.

Candidates should be enrolled or applying to their selected graduate schools when submitting their Faculty for the Future grant request. The approved candidates will receive a grant subject to acceptance by an educational institution.

### SUBMISSION PROCESS

Instructions on how to apply can be found on the Schlumberger Foundation website at [www.foundation.slb.com/fftf](http://www.foundation.slb.com/fftf)

# Appendix III FAST FACTS

- Between 2004 when the program was launched and December 2008, a total of 93 women scientists from 33 countries received grants to pursue higher academic degrees at 66 universities in 16 countries around the world.

- During the first four years of the program, 15 Faculty for the Future fellows completed their studies and returned to their home countries to pursue academic careers and become role models to young women interested in the sciences. As of December 2008, 78 grantees from 32 countries were studying at 62 universities in 15 countries.

- Fellowships are renewed through completion of studies subject to certain conditions, and the average yearly grant is USD 35,000. Each year the Schlumberger Foundation allocates about USD 2 million to the program.

- In October 2008 in Paris, France, the fourth Faculty for the Future conference was attended by 23 participants from 14 countries representing 23 home and 22 host universities.

## 2008–2009

300 applications  
20 grants awarded  
~50 grants renewed

## 2007–2008

180 applications  
29 new grants awarded  
27 grants renewed

## 2006–2007

129 applications  
17 new grants awarded  
30 grants renewed

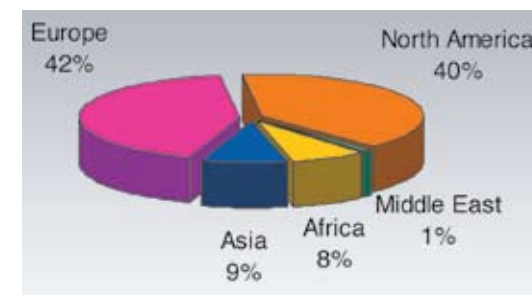
## 2005–2006

80 applications  
30 new grants awarded  
12 grants renewed

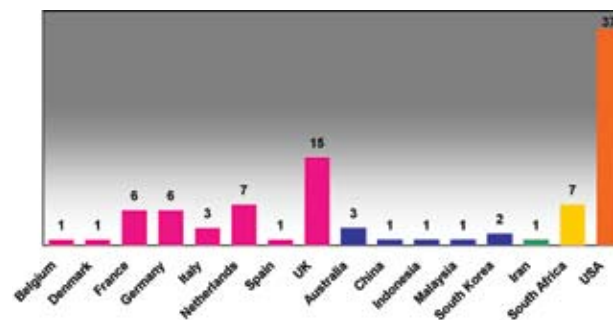
## 2004–2005

Program launched  
70 applications  
13 grants awarded

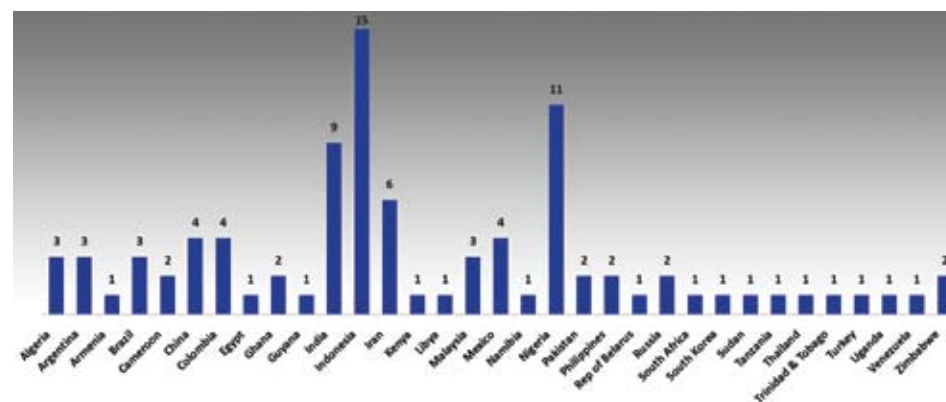
PERCENTAGE OF FELLOWS BY REGION OF STUDY



NUMBER OF FELLOWS BY COUNTRY OF STUDY



NUMBER OF FELLOWS BY COUNTRY OF CITIZENSHIP



## Appendix IV

# WOMEN AND SCIENCE

*This paper is a Vade Mecum, a quick reference guide produced by the Schlumberger Foundation for those who are interested in the topic of gender imbalance in science.*

The issue of gender in science is a relative newcomer on the international stage. However, it is becoming one of the most important and debated issues worldwide. Many major international initiatives have arisen, including the Beijing World Conference on Women in 1995. Gender equality is one of eight United Nations Millennium Development Goals set in 2000—clearly a major call to action.

The United Nations Gender Working Group points out that science and technology are gender-biased. The group says that many technological innovations and development programs, especially those directed at rural populations, have been primarily designed to improve the lives of men, not women.

As Baroness Susan Greenfield, professor of pharmacology at Oxford University and author of a report on women and science, says: “We have entered an era where science and technology are at the center of society and development. So the best people as scientists are needed. We cannot afford to do without half of the world’s population.”

Women represent two-thirds of the world’s illiterate population. They work two-thirds of the world’s working hours, yet they receive only about 10% of the world’s income. Although governments in developing and emerging countries have made substantial progress enrolling children in school since the 1990 World Conference on Education in Jomtien, Thailand, 100 million children around the world still do not attend school, and girls remain disadvantaged at all levels of education.

“

Women work two-thirds of the world’s working hours, yet receive only about 10% of the world’s income. ”  
(UNESCO)

Although female participation in higher education has increased globally over the last decade, it remains small in most advanced-degree programs, especially in science and engineering. Women comprise a minority of the world’s researchers, and not only in developing and emerging countries. Higher-income countries are also plagued by this issue.

It is estimated that women constitute only slightly more than one-quarter of the world’s researchers. Although there are many countries for which data are lacking, available figures are sometimes surprising:

- Latin America and the Caribbean: 46% of researchers are women, exceeding the world’s average
- South Asia: women constitute only 12% of researchers (10% in India)
- Southeast Asia: 42% of researchers are women, well above the global average (the world’s highest proportion of women researchers—85%—is in Myanmar!)
- Europe: 32% of researchers are women, with only five countries reaching gender parity, all in Eastern Europe
- Africa: an estimated 29% of researchers are women (in contrast, Lesotho has the second highest share of female researchers in the world, at 76%)

*Source: UNESCO Institute for Statistics*

In 2003, less than a third of all countries reported gender parity among university students enrolled in first-degree courses.

“

This is not only an issue in developing and emerging countries—in Norway, for example, only 9% of teachers of post-graduate studies are women.”

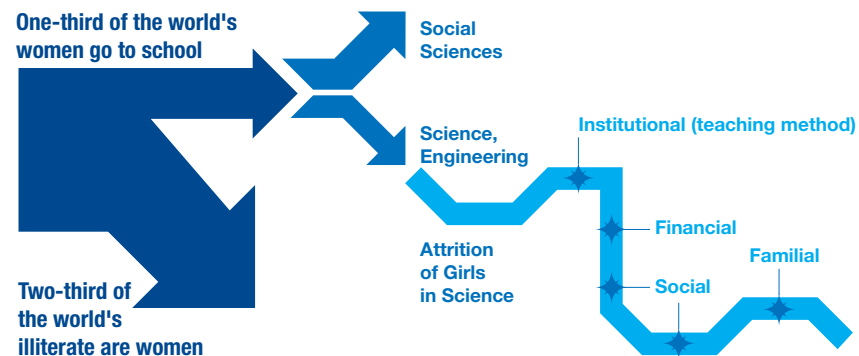
When it comes to science and engineering fields, only three out of 47 countries achieved gender parity. Data also revealed a strong male predominance at the level of PhDs or other advanced research degrees. The higher the education level, the wider the gap. In science and engineering, the gap remains broad at all education levels.

Studies have revealed that women are less likely than men to be employed in the private sector of R&D than in the public sector, and in the public sector women are more likely to be teachers in the lower educational levels. There is a significant deficit of women at top-level management and professorship positions. This is not only an issue in developing and emerging countries—in Norway, for example, only 9% of teachers of post-graduate studies are women. This lack of women in top-level positions in educational systems is significant, as it tends to exclude women from the decision making process.

Studies undertaken by the Board on Science and Technology for International Development (BOSTID) indicate a gender gap in salaries between men and women in many countries. In all countries of the world, women are generally the last hired and the first fired.

The gender issue in science not only refers to the lack of female students in science, but also to a wider discrimination problem—a “chilly climate” that tends to discourage women from participation in science. Some authors refer to micro-inequities, a series of invisible barriers to women’s equal entry and participation in science and technology.

## The Leaky Pipeline



These micro-inequalities can include the attitudes of male interviewers, which can affect the impartiality of the hiring process. As well, women tend to possess fewer budgetary resources and be assigned to less-powerful committees and less-centrally-located offices. They do not have access to old-boy networks and they often do not have an equivalent pool of mentors or role models. Finally, women and men exhibit different communication and working styles, with women generally operating in a more cooperative and personal mode while men tend to be more assertive and impersonal.

The “leaky pipeline” is a concept referring to the steady attrition of girls and women throughout the formal science and technology system, from primary education to decision-making.

Major barriers for participation by girls and women in science and technology include a number of economic factors—in low-resource countries where parents often have to choose who should receive an education, the preference frequently is to train boys. Girls assume family and household responsibilities early in their lives, and childhood marriage restricts education opportunities for girls. Another barrier is due to socio-cultural attitudes and socially constructed roles of each gender. Negative stereotyping exerts pressure against excellence in science because it is considered unfeminine, incompatible with a woman’s life, or too difficult for girls. These attitudes diminish the self-esteem of girls and discourage them from aspiring to a career in science.



There is also an institutional bias—girls and boys are not treated equally in the classroom. Observations reveal that science teachers unconsciously interact far more with boys, giving them greater encouragement. Even when taught the same curriculum, boys and girls do not receive the same education. Textbooks

contribute to reinforcing sexist stereotypes, and educational practices do not articulate scientific and technological discoveries in terms of daily life and community issues, even though studies reveal that girls are more sensitized to life-related practices.

Research shows that girls perform better in sciences in single-sex schools, because in the presence of boys in fields deemed masculine, girls tend to underestimate themselves. There is also the problem of a lack of women teachers as role models. Studies show a link between girls who have one or more female science teachers choosing a career in the sciences.

Discrimination in evaluation is part of the equation, as well. An investigation into the Swedish Medical Research Council found that to receive a grant, on average women researchers needed to be 2.5 times more productive than male counterparts.

Among those women who dare to pursue the scientific adventure, many decide to change direction after several years of study or professional practice. The main reasons are unequal opportunities in studies and career between men and women; an insufficient number of female role models to encourage female students; lack of financial backing necessary to continuing specialized studies or research work; and an absence of media projection of the role women scientists and engineers could play.

When pursuing PhD and post-graduate studies, most women are at the traditional age of marriage. Women then face the difficulty of reconciling family demands and those of an education or career. One survey shows that 32% of women have taken academic career breaks, compared to just 4% of men. For many women, a scientific

“

Women researchers needed to be 2.5 times more productive than male counterparts. ”

career has meant a choice between marriage, motherhood and science. Should women have to face this choice?

Recommendations to confront this problem include informing decision-makers and civil society of the logic of including women in the sciences, and putting in place adequate support systems and networks to overcome the isolation of women in science. To give women more opportunities to enter scientific careers, it will be important to develop women-friendly teaching methods and educational content, and to establish gender balance at all levels of teaching. School counseling and mentoring programs must be established with presentations by female scientists as role models. As well, measures must be provided to reduce gender inequity due to women's family burdens, including more flexible requirements for the completion of PhD dissertations, measures to foment greater gender equity in the distribution of care provision in the family, and better child care provisions along with care for the elderly.

The United Nations Development Program 2001 Human Development Report emphasized that a brain drain from developing and emerging countries was costing them billions of dollars. In addition, a 2007 OECD report said that because of their key social and economic contributions, when tertiary-educated women emigrate it has a much more significant negative impact on the country than when tertiary-educated men emigrate. This is not the case at lower educational levels, where no significant impact or gender differences were identified.

The OECD report explains that the gender dimension of international migration has been neglected. It reveals that the number of highly skilled immigrant women is about to rise above that of their male counterparts. For African countries, the average emigration rate of tertiary-educated women is 27.7%,



almost 11 percentage points higher than for tertiary-educated men. This gender bias is also found for Latin America, Oceania and, to a lesser extent, for Asia.

The report states that most of these highly skilled immigrant women accept low-qualified positions, especially in the domestic and caring sectors, in their new countries of residence. The Schlumberger Foundation Faculty for the Future program provides relevant answers to several of the above issues:

- By supplying financial assistance, the program overcomes one of the biggest reasons why women drop out of science and technology
- By creating a community web forum, the program is developing an informal and supportive network based on strong and close relationships
- By expecting the grantees to return to their home countries with established external, international networks, the program encourages brain circulation, not brain drain
- By expecting and encouraging the grantees to become teachers, the program fights against discrimination in higher education and increases the number of role models to inspire and lead more women into careers in science
- By sending scientist women from developing and emerging countries to top universities abroad, the program makes the most of globalization and helps challenge mindsets in developed and developing and emerging countries

Immense gender inequalities persist worldwide. While progress is being achieved in training women in the sciences, much more remains to be done. Through its Faculty for the Future program, the Schlumberger Foundation has demonstrated its commitment to gender equity. Faculty for the Future is a concrete answer to a very specific problem. Although it is a young program, it has already accomplished a great deal, and it has tremendous potential for further development.

“

Faculty for the Future is about brain circulation, not brain drain. ”

## BIBLIOGRAPHY AND SOURCES

### THE COMMONWEALTH [www.thecommonwealth.org](http://www.thecommonwealth.org)

*Eliminating gender disparities in higher education*; Council for Education in the Commonwealth

*Gender Mainstreaming in Education: A Reference Manual for Governments and Other Stakeholders*  
Elsa Leo-Rhynie and the Institute of Development and Labour Law, South Africa

*Gender Mainstreaming in Science and Technology: A Reference Manual for Governments and Other Stakeholders*; Elizabeth McGregor and Fabiola Bazi

### UNESCO (United Nations Educational, Scientific and Cultural Organization) [www.unesco.org](http://www.unesco.org)

*Girls and Science: a training module on motivating girls to embark on science and technology careers*  
Andrew Clegg, UNESCO, 2006

*La place des femmes dans la science et la technologie: extrait du Rapport Mondial de l'UNESCO sur la Science, 1996*; Sandra Harding et Elizabeth McGregor

*Women in Science: Under-represented and under-measured*,  
UIS Bulletin on Science and Technology Statistics, November 2006

*Women, science and technology: towards a new development?* UNESCO, 1999

*Science education for development: case study of Project 2000+*,  
World Conference on Science 2000, ELSSA, Sam Tunde Bajah, Colin N. Power, Wei Yu, Leon M. Lederman

### OECD (Organization for Economic Co-operation and Development) [www.oecd.org/oecdworldforum/Istanbul](http://www.oecd.org/oecdworldforum/Istanbul)

*Women on the move: the neglected gender dimension of the brain drain*, 2007.  
Jean-Christophe Dumont, John P. Martin and Gilles Spielvogel;  
OECD World Forum on Measuring and Fostering the Progress of Societies



## Appendix V

# THE 2008 ATTENDEES



**Zakia  
ABIDI**

**Home Country**  
Algeria

**Degree**  
PhD in Magnetic  
Resonance  
Imaging

**Expertise**  
Bioengineering

**Research Focus**  
Development  
of Antennas  
in Magnetic  
Resonance  
Imaging

**Host University**  
University  
of Paris Sud II,  
France

**Fellowship  
Awarded**  
2006



**Jeanne  
Therese Hilario  
ANDRES**

**Home Country**  
Philippines

**Degree**  
PhD in Chemical  
Engineering

**Expertise**  
Chemical  
Engineering

**Research Focus**  
Carbon Dioxide  
Storage

**Host University**  
University  
of Cambridge,  
United Kingdom

**Fellowship  
Awarded**  
2008



**Ifeyinwa  
Eucharia  
CHIKA**

**Home Country**  
Nigeria

**Degree**  
PhD in  
Electronic  
and Computer  
Engineering

**Expertise**  
Computer  
Engineering

**Research Focus**  
Development  
of a Virtual  
Instrumentation  
Workbench  
for Teaching

**Host University**  
University  
of Portsmouth,  
United Kingdom

**Fellowship  
Awarded**  
2007



**Dyah Ekashanti  
Octorina DEWI**

**Home Country**  
Indonesia

**Degree**  
PhD in  
Biomedical  
Engineering

**Expertise**  
Image  
Processing  
and Analysis

**Research Focus**  
3D Ultrasound  
Imaging of the  
Spine

**Host University**  
University  
of Groningen,  
The Netherlands

**Fellowship  
Awarded**  
2006



**Zoila Luz  
EPOSSI NTAH**

**Home Country**  
Cameroon

**Degree**  
PhD in  
Archaeometry

**Expertise**  
Chemistry

**Research Focus**  
Production  
Techniques  
of Neolithic  
Ceramics  
in Cameroon

**Host University**  
University  
of Leipzig,  
Germany

**Fellowship  
Awarded**  
2008



**Mayrina FIRDAYATI**

**Home Country**  
Indonesia

**Degree**  
PhD in Civil and Environmental Engineering

**Expertise**  
Wastewater Treatment Systems

**Research Focus**  
Reuse of Greywater for Urban Agriculture

**Host University**  
Technical University of Hamburg-Harburg, Germany

**Fellowship Awarded**  
2007



**Nur HIDAYATI**

**Home Country**  
Indonesia

**Degree**  
PhD in Chemical Engineering

**Expertise**  
Chemical Engineering

**Research Focus**  
Fuel Cell Science

**Host University**  
Newcastle University, United Kingdom

**Fellowship Awarded**  
2006



**Isil AYRANCI KILINÇ**

**Home Country**  
Turkey

**Degree**  
Post-Doctorate in Combustion Diagnostics

**Expertise**  
Chemical Engineering

**Research Focus**  
Combustion Characteristics of Liquid Fuel Injectors

**Host University**  
University of Cambridge, Department of Engineering, United Kingdom

**Fellowship Awarded**  
2008



**Emily Benice Ngubia KURIA**

**Home Country**  
Kenya

**Degree**  
PhD in Neuroscience

**Expertise**  
Neuroscience

**Research Focus**  
Gender Influences on Body Language

**Host University**  
Humboldt University of Berlin, Germany

**Fellowship Awarded**  
2008



**Lena Dzifa MENSAH**

**Home Country**  
Ghana

**Degree**  
PhD in Engineering and Management of Manufacturing Systems

**Expertise**  
Mechanical Engineering

**Research Focus**  
Moving Up the Value Chain in Ghana

**Host University**  
Cranfield University, United Kingdom

**Fellowship Awarded**  
2006



**Zohra MOKEDDEM**

**Home Country**  
Algeria

**Degree**  
PhD in Geology and Sedimentology

**Expertise**  
Geology

**Research Focus**  
Regional Climate Change Using Specific Fjord Environments

**Host University**  
Caen University, France

**Fellowship Awarded**  
2006



**Patricia MUNOZ-ESCALONA**

**Home Country**  
Venezuela

**Degree**  
PhD in Manufacturing Engineering

**Expertise**  
Mechanical Engineering

**Research Focus**  
Tool Wear and Work Piece Surface Roughness

**Host University**  
University of Bath, United Kingdom

**Fellowship Awarded**  
2006



**Happy Primita NOVANDA**

**Home Country**  
Indonesia

**Degree**  
PhD in Electrical and Electronic Engineering

**Expertise**  
Electronics and Electrical Engineering

**Research Focus**  
Optimizing Quality in Power Distribution Networks

**Host University**  
University of Manchester, United Kingdom

**Fellowship Awarded**  
2008



**Maryia NUDNOVA**

**Home Country**  
Republic of Belarus

**Degree**  
PhD in Plasma Physics

**Expertise**  
Physics

**Research Focus**  
3D Investigations of Pulsed Discharge for Ultra-Fast Plasma Control

**Host University**  
The Ohio State University, United States

**Fellowship Awarded**  
2007



**Dyah Ayu Mira OKTARINA**

**Home Country**  
Indonesia

**Degree**  
PhD in Dermatology

**Expertise**  
Medicine

**Research Focus**  
Immuno-fluorescence and Ultra-structural Study of Pemphigus

**Host University**  
University of Groningen, The Netherlands

**Fellowship Awarded**  
2008



**Folasade Mayowa OLAJUIGBE**

**Home Country**  
Nigeria

**Degree**  
PhD in Applied Biochemistry

**Expertise**  
Biocrystallography

**Research Focus**  
Biocrystallographic Studies of Drug-Resistant Mutants of HIV Protease

**Host University**  
University of Trieste, Italy

**Fellowship Awarded**  
2006



**Hauwa Onize RAJI**

**Home Country**  
Nigeria

**Degree**  
PhD in Offshore Engineering

**Expertise**  
Petroleum Engineering

**Research Focus**  
Strength and Fatigue Analysis of Deep Water Offshore Platforms

**Host University**  
University of Strathclyde, United Kingdom

**Fellowship Awarded**  
2006



**Maria Isabel ROCHA GASO**

**Home Country**  
Mexico

**Degree**  
PhD in Bioelectronics Engineering

**Expertise**  
Electronics and Electrical Engineering

**Research Focus**  
Surface Acoustic Wave Microsensors for Biosensing

**Host University**  
Polytechnic University of Valencia, Spain

**Fellowship Awarded**  
2007



**Dupe Nihinlola SAKA**

**Home Country**  
Nigeria

**Degree**  
PhD in Environmental Science

**Expertise**  
Flood Modeling, Remote Sensing and Fluid Dynamics

**Research Focus**  
Flood Modeling in the Niger Delta

**Host University**  
Lancaster University, United Kingdom

**Fellowship Awarded**  
2005



**Yasaman SHADROKH**

**Home Country**  
Iran

**Degree**  
PhD in Electrical and Electrical Engineering

**Expertise**  
Electronics and Electrical Engineering

**Research Focus**  
Computer-Based Simulations in Nanotechnology

**Host University**  
Imperial College, London, United Kingdom

**Fellowship Awarded**  
2008



**Arul MANI SHANTHI**

**Home Country**  
Malaysia

**Degree**  
PhD in Engineering Seismology and Earthquake Engineering

**Expertise**  
Geology

**Research Focus**  
Subduction Zone Earthquake-Triggered Tremors

**Host University**  
Imperial College, London, United Kingdom

**Fellowship Awarded**  
2008



**Margarita VARON**

**Home Country**  
Colombia

**Degree**  
PhD in Microwave and Photo-electronics

**Expertise**  
Electronics and Electrical Engineering

**Research Focus**  
Hyper-Frequency Signal Generation

**Host University**  
SUPAERO Institute of Aeronautics and Space Technology, Toulouse, France

**Fellowship Awarded**  
2005



**Parinda VASA**

**Home Country**  
India

**Degree**  
Post-Doctorate in Ultrafast Nano-Optics and Physics

**Expertise**  
Physics

**Research Focus**  
Nano-Optics and Exciton-Plasmon Interactions in Metal Hybrid Structures

**Host University**  
Institute of Physics, Carl von Ossietzky University, Oldenburg, Germany

**Fellowship Awarded**  
2006

# Appendix VI

## FACULTY FOR THE FUTURE

## COMMUNITY 2005-2008 FELLOWS

NAME	HOME COUNTRY	DEGREE	EXPERTISE	RESEARCH FOCUS	HOST UNIVERSITY	FELLOWSHIP AWARDED
ABIDI, Zakia	Algeria	PhD in Magnetic Resonance Imaging	Bioengineering	Development of Antennas in Magnetic Resonance Imaging	University of Paris Sud II, France	2006
ADINDLA, Suma	India	PhD in Computer Science	Computer Engineering	Information Retrieval in Natural Language Processing	University of Essex, United Kingdom	2008
ADINDLA, Swathi	India	PhD in Biopolymer Networks	Bioengineering	Design of Efficient Enzymes with Novel Functions	California Institute of Technology, United States	2007
ALVAREZ-ELIZONDO, Martha Beatriz	Mexico	PhD in Information Technology	Optics	Use of Optical Tweezers to Measure Cell Viscoelasticity	University of Queensland, School of Physical Sciences, Australia	2008
AMUTA, Ruth	Nigeria	PhD in Agricultural Economics	Agriculture	Computable General Equilibrium Analysis on West African Agricultural Trade and Competitiveness	Texas A&M University, United States	2008
ANDRES, Hilario Jeanne Therese	Philippines	PhD in Chemical Engineering	Chemical Engineering	Carbon Dioxide Storage	University of Cambridge, Department of Engineering, United Kingdom	2008
AYRANCI KILINÇ, Isil	Turkey	Post-Doctorate in Combustion Diagnostics	Chemical Engineering	Combustion Characteristics of Liquid Fuel Injectors	University of Cambridge, Department of Engineering, United Kingdom	2008
BHANDARKAR, Sumitha	India	PhD in Computer Engineering	Network Protocols	Improving Performance of Transmission Control Protocol in Emerging Networks	Texas A&M University, United States	2005
BRAGATO, Marcia	Brazil	Post-Doctorate in Metallurgical and Materials Engineering	Materials Engineering	Hazardous Waste Treatment and Management	Northeastern University, Massachusetts, United States	2006
BROWNE, Nana Ama Kum	Ghana	PhD in Environmental and Geographical Science	Physics	Climate Prediction Systems	University of Cape Town, South Africa	2008
CANDRA DEWI, Ova	Indonesia	MSc in Civil and Environmental Engineering	Waste Management Issues	Waste Management and Climate Change Mitigation	Technical University of Berlin, Germany	2006
CARDOSO, Camila Ribeiro	Brazil	PhD in Mechanical Engineering	Mechanical Engineering	Heat Transfer Reformers for Micro Fuel Cells Using Carbon Nanotubes	Rice University, Texas, United States	2005
CEMPAKA WANGI, Novi Ineke	Indonesia	PhD in Electrical Engineering	Electronics and Electrical Engineering	Wireless Telecommunication Networking	Delft University of Technology, The Netherlands	2005
CHIKA, Ifeyinwa Eucharia	Nigeria	PhD in Electronic and Computer Engineering	Computer Engineering	Development of a Virtual Instrumentation Workbench for Teaching	University of Portsmouth, United Kingdom	2007

NAME	HOME COUNTRY	DEGREE	EXPERTISE	RESEARCH FOCUS	HOST UNIVERSITY	FELLOWSHIP AWARDED
CHO, So-Hye	Republic of Korea (South Korea)	Post-Doctorate in Inorganic Chemistry	Chemistry	Development of Novel Heavy-Metal Labels for Structural Elucidation of Proteins by Electron Microscopy	The Scripps Research Institute, California, United States	2007
COLOMBI, Carina Ester	Argentina	Post-Doctorate in Geology and Paleontology	Geology	Past Climate Change in Continental Basins	University of California, Davis, United States	2006
DAHUNSI, Folasade	Nigeria	PhD in Electrical Engineering	Electrical Engineering	Analysis and Determination of the Accuracy of Location Services	University of the Witwatersrand, Johannesburg, South Africa	2008
DAMAYANTI, Alia	Indonesia	PhD in Environmental Engineering	Environmental Engineering	Wastewater Treatment	Technological University of Malaysia	2007
D'ANGELO, Maria Veronica	Argentina	Post-Doctorate in Transport of Particles and Fibers in Porous Media	Physics	Transport of Particles and Fibers in Porous and Fractured Media	University of Paris Sud II, France	2006
DEWI, Dyah Ekashanti Octorina	Indonesia	PhD in Biomedical Engineering	Image Processing and Analysis	3D Ultrasound Imaging of the Spine	University of Groningen, The Netherlands	2006
EIDINI-NEZHAD, Maryam	Iran	PhD in Civil Engineering	Structural Engineering	Collapse Analysis of Structures	University of Illinois at Urbana-Champaign, United States	2008
EL MONIER, Ilham	Egypt	PhD in Petroleum Engineering	Petroleum Engineering	Multi-stage Hydraulically Fractured Horizontal Gas Wells	Texas A&M University, United States	2007
EPOSSI NTAH, Zoila Luz	Cameroon	PhD in Archaeometry	Chemistry	Production Techniques of Neolithic Ceramics in Cameroon	University of Leipzig, Germany	2008
FIGUEROA, Maria	Colombia	PhD in Science Education	Science Assessment	Science Assessment of Students' Learning	Stanford University, California, United States	2006
FIRDAYATI, Mayrina	Indonesia	PhD in Civil and Environmental Engineering	Wastewater Treatment Systems	Reuse of Greywater for Urban Agriculture	Technical University of Hamburg-Harburg, Germany	2007
FOX, Dawn	Guyana	PhD in Chemical Engineering	Chemical Engineering	Arsenic Contamination of Groundwater	University of South Florida, United States	2008
FUWAPE, Ibiyinka	Nigeria	Post-Doctorate in Physics	Physics	Mechanisms of Information Encoding in Oscillatory Sensory Cells	Ohio University, United States	2006
GADZIKWA, Tendai	Zimbabwe	Post-Doctorate in Chemistry	Chemistry	Design and Synthesis of Metal-Organic Frameworks	University of Amsterdam, The Netherlands	2008
GOLABCHI, Maryam	Iran	PhD in Materials Science	Chemical Engineering	Carbon Nanotubes and Aluminum-Carbon Composites	Colorado School of Mines, United States	2005
GORE, Jane	Zimbabwe	Post-Doctorate in Seismology	Geophysics	3D Mapping of Crustal Discontinuities under the Zimbabwe Craton	University of the Witwatersrand, Johannesburg, South Africa	2006
HANDAYANI, Ismudiati Puri	Indonesia	PhD in Optical Condensed Matter Physics	Physics	Spin and Polarization Dynamics in Multiferroics and Frustrated Systems	University of Groningen, The Netherlands	2006
HASHMI, Nada	Pakistan	PhD in Technology, Innovation and Entrepreneurship	Healthcare Information and Communication Technologies	Technologies for Remote Health Care	Massachusetts Institute of Technology, United States	2008

NAME	HOME COUNTRY	DEGREE	EXPERTISE	RESEARCH FOCUS	HOST UNIVERSITY	FELLOWSHIP AWARDED
HASHMI, Saira	Pakistan	PhD in Environmental Engineering	Water Resources	Water Policy Resource Management Issues in United Arab Emirates	Harvard University, Massachusetts, United States	2008
HIDAYATI, Nur	Indonesia	PhD in Chemical Engineering	Chemical Engineering	Fuel Cell Science	Newcastle University, United Kingdom	2006
HO, Jenny	Malaysia	Post-Doctorate in Bioengineering	Chemical Engineering and Bioengineering	Genetic Therapeutics	Monash University, Australia	2008
HUNKY, Rabia	Libya	PhD in Petroleum Engineering	Petroleum Engineering	Enhanced Heavy Oil Recovery	Missouri University of Science and Technology, United States	2007
IBENECHÉ, Chieze	Nigeria	PhD in Physics	Biophysics	Organization of Cytoplasm in Cells	The University of Texas at Austin, United States	2006
IJAGBEMI, Christianah Olakitan	Nigeria	PhD in Environmental Science and Engineering	Civil and Environmental Engineering	Eco-Efficient Technology for Soil and Water Treatment	Ewha Womans University, Seoul, Republic of Korea (South Korea)	2007
INAM, Edu	Nigeria	Post-Doctorate in Chemistry	Groundwater Monitoring	Arsenic and Heavy Metals Contamination	Gwangju Institute of Science and Technology, Republic of Korea (South Korea)	2008
ISMAIL, Hilda	Indonesia	PhD in Pharmacology	Chemistry	Enzymatic Resolution of Chiral Amines	Delft University of Technology, The Netherlands	2006
JOSEPH, Laveeta	India	PhD in Bioengineering	Neuroengineering	Neural Electrophysiology	Georgia Institute of Technology, United States	2007
KORBER GONCALVES, Cecilia	Brazil	MSc in Chemical Engineering	Chemical Engineering	Pollutant Emissions of Plastics Combustion	Northeastern University, Massachusetts, United States	2005
KULWA, Kissa	Tanzania	PhD in Applied Biological Sciences	Consumer Sciences and Human Nutrition	Child Growth and Micronutrient Intake	Ghent University, Belgium	2008
KURIA, Emily Benice Ngubia	Kenya	PhD in Neuroscience	Neuroscience	Gender Influences on Body Language	Humboldt University of Berlin, Germany	2008
LINZER, Lindsay	South Africa	Post-Doctorate in Geophysics	Geophysics	How Rock Fractures around Underground Excavations	University of the Witwatersrand, Johannesburg, South Africa	2006
MACABEBE, Queen Erees	Philippines	PhD in Physics	Photovoltaics	Solar Cells and Photovoltaic Modules	Nelson Mandela Metropolitan University, Port Elizabeth, South Africa	2006
MADHAVAN, Radhika	India	PhD in Bioengineering	Bioengineering	Investigation on Rules Governing Long-Term Learning in Complex Networks of Neurons	Georgia Institute of Technology, United States	2006
MAIRIZA, Dewi	Indonesia	PhD in Computer Science	Software Engineering	Managing Conflict among Non-Functional Requirements	University of Technology, Sydney, Australia	2006
MAKAM KOM, Olive Modestine	Cameroon	PhD in Medical Physics	Medical Physics in Radiation Therapy	Radiotherapy and Treatment Planning Systems	Saarland University, Germany	2006
MANI SHANTHI, Arul	Malaysia	PhD in Engineering Seismology and Earthquake Engineering	Geology	Subduction Zone Earthquake-Triggered Tremors	Imperial College, London, United Kingdom	2008

NAME	HOME COUNTRY	DEGREE	EXPERTISE	RESEARCH FOCUS	HOST UNIVERSITY	FELLOWSHIP AWARDED
MARTÍNEZ GÓMEZ, Elizabeth	Mexico	Post-Doctorate in Astrostatistics	Astronomy	Planetary Sciences and Parameter Estimation in Astrophysical Models	The Pennsylvania State University, Center of Astrostatistics, United States	2008
MAULIDEVI, Nur Ulfa	Indonesia	PhD in Electrical Engineering	Artificial Intelligence as an Imitation of Human Cognition Systems	Multi-Agents in Collaborative Knowledge Building	Institute of Technology Bandung, School of Electrical Engineering and Informatics, Indonesia	2006
MEGAWATI, M.	Indonesia	MSc in Electrical Engineering	Electronics and Electrical Engineering	Research on Groundwater Flow and Petrophysical Analysis by Using Back-Propagation Network	Technical University of Denmark	2005
MEJIA VELASQUEZ, Paula	Colombia	PhD in Botany and Geology	Botany	Diversification and Radiation of Flowering Plants in Lower Cretaceous Period	University of Florida, Gainesville, United States	2008
MENSAH, Dzifa Lena	Ghana	PhD in Engineering and Management of Manufacturing Systems	Mechanical Engineering	Moving Up the Value Chain in Ghana	Cranfield University, United Kingdom	2006
MOHAMMED KHAIR, Elham	Sudan	PhD in Petroleum Engineering	Petroleum Engineering	Hydraulic Fracturing to Control Sand Production	China University of Petroleum, Beijing	2007
MOKEDDEM, Zohra	Algeria	PhD in Geology and Sedimentology	Geology	Regional Climate Change Using Specific Fjord Environments	Caen University, France	2006
MOUSSAOUI, Aicha	Algeria	PhD in Electronics and Magnetic Resonance Imaging	Bioengineering	Medical Image Processing	Centrale Graduate School, Marseille, France	2006
MUNOZ-ESCALONA, Patricia	Venezuela	PhD in Manufacturing Engineering	Mechanical Engineering	Tool Wear and Work Piece Surface Roughness	University of Bath, United Kingdom	2006
MURADYAN, Paytsar	Armenia	PhD in Atmospheric Sciences	Physics	Profiling the Atmosphere with Airborne Radio Occultation Technique	Purdue University, Indiana, United States	2007
MUSTAFFA, Zahiraniza	Malaysia	PhD in Civil Engineering	Petroleum Engineering	Probabilistic Design and Offshore Structures	Delft University of Technology, The Netherlands	2008
NAKATUDE, Rebecca	Uganda	MSc in Medical Physics	Physics	3D Manual Missing Tissue Compensator Cutter	University of the Witwatersrand, Johannesburg, South Africa	2007
NOVANDA, Happy Primita	Indonesia	PhD in Electrical and Electronic Engineering	Electronics and Electrical Engineering	Optimizing Quality in Power Distribution Networks	University of Manchester, United Kingdom	2008
NUDNOVA, Maryia	Republic of Belarus	PhD in Plasma Physics	Physics	3D Investigations of Pulsed Discharge for Ultra-Fast Plasma Control	The Ohio State University, United States	2007
NUNES, Janine	Trinidad and Tobago	PhD in Chemistry	Chemistry	Investigation on the Particle Replication in Non-Wetting Templates Method	University of North Carolina, Chapel Hill, United States	2005
NURJANA, Dade	Indonesia	PhD in Computer Science	Computer Engineering	Adaptive Personalized Learning Systems	University of Southampton, School of Electronics and Computer Science, United Kingdom	2008

NAME	HOME COUNTRY	DEGREE	EXPERTISE	RESEARCH FOCUS	HOST UNIVERSITY	FELLOWSHIP AWARDED
NWANKWO BROWN, Princess	Nigeria	PhD in Petroleum Engineering	Petroleum Engineering	Condensate Reservoir Studies	The Pennsylvania State University, United States	2005
OKTARINA, Dyah Ayu Mira	Indonesia	PhD in Dermatology	Medicine	Immunofluorescence and Ultrastructural Study of Pemphigus	University of Groningen, The Netherlands	2008
OLAJUYIGBE, Folasade Mayowa	Nigeria	PhD in Applied Biochemistry	Biocrystallography	Biocrystallographic Studies of Drug-Resistant Mutants of HIV Protease	University of Trieste, Italy	2006
PEDANO, Maria Laura	Argentina	Post-Doctorate in Interdisciplinary Chemical Sciences	Bioengineering	Development of New DNA-Based Hybridization Biosensors on Early Detection of Cancerous or Inherited Endemic Diseases	Northwestern University, Illinois, United States	2007
QI, Ran	China	PhD in Petroleum Engineering	Petroleum Engineering	Modeling and Designing of Carbon Dioxide Storage in Aquifers	Imperial College, London, United Kingdom	2006
RAJI, Hauwa Onize	Nigeria	PhD in Offshore Engineering	Petroleum Engineering	Strength and Fatigue Analysis of Deep Water Offshore Platforms	University of Strathclyde, Glasgow, Scotland, United Kingdom	2006
RAY, Sujata	India	Post-Doctorate in Earth Sciences	Civil and Environmental Engineering	Carbon Dioxide Storage in Deep Saline Aquifers	University of Cambridge, BP Institute, United Kingdom	2007
ROCHA GASO, Maria Isabel	Mexico	PhD in Bioelectronics Engineering	Electronics and Electrical Engineering	Surface Acoustic Wave Microsensors for Biosensing	Polytechnic University of Valencia, Spain	2007
SAKA, Dupe Nihinlola	Nigeria	PhD in Environmental Science	Flood Modeling, Remote Sensing and Fluid Dynamics	Flood Modeling in the Niger Delta	Lancaster University, United Kingdom	2005
SANCHEZ CHAVEZ, Irma Yolanda	Mexico	PhD in Engineering Sciences	Chemical Engineering	Systems to Deliver Insulin to Diabetic Patients	The University of Texas at Austin, United States	2006
SANMATHI, Chavalmane Subbenaik	India	Post-Doctorate in Polymer Chemistry	Chemistry	Ceramic Dense Nano-Powders of Thermoelectric Oxides	National Graduate School of Engineering and Research Center (ENSICAEN), Crystallography and Materials Sciences Laboratory (CRISMAT), Caen, France	2006
SEMIENOVA, Anna	Russia	Post-Doctorate in Petroleum Engineering	Petroleum Engineering	Mathematical Model of Compositional Multi-Segment Wells	Stanford University, California, United States	2007
SHADROKH, Yasaman	Iran	PhD in Electronic and Electrical Engineering	Electronics and Electrical Engineering	Computer-Based Simulations in Nanotechnology	Imperial College, London, United Kingdom	2008
SHAMARDINA ERMAK, Olga	Russia	PhD in Polymer Physics	Computer Engineering	Computer Models for High-Temperature Proton-Exchange Membrane Fuel Cells	Centre for Solar Energy and Hydrogen Research Baden-Württemberg (ZSW), Ulm, Germany	2007
SHARIFI KHOBDEH, Shirin	Iran	PhD in Chemical Engineering	Chemical Engineering	Drop Deformation and Breakup in Two-Phase Systems	The Pennsylvania State University, United States	2006
SI, Xiuhua	China	PhD in Aerospace Engineering	Continuum Mechanics, Materials Science and Thermodynamics	Interface of Crystallines; Mechanical Behavior of Ferromagnetic Materials; and Single-Walled Carbon Nanotube	Texas A&M University, United States	2005

NAME	HOME COUNTRY	DEGREE	EXPERTISE	RESEARCH FOCUS	HOST UNIVERSITY	FELLOWSHIP AWARDED
SOTO, Carolina	Colombia	PhD in Electrical Engineering	Electrical Engineering and Signal Processing	Hyper-Spectral Images	University of California, Irvine, United States	2005
SUPCHAROEN, Ratsirin	Thailand	PhD in Chemical Oceanography	Chemistry	Applications of Radioisotopes as Tracers of Oceanographic Processes	Massachusetts Institute of Technology, United States	2008
SURESH, Sindhu	India	PhD in Electrical Engineering	Electrical and Electronics Engineering	Radio Frequency Power Amplifiers	Polytechnic University, Brooklyn, New York, United States	2008
UUSIKU, Nangula Paulina	Namibia	PhD in Nutrition	Molecular Nutrition	Antioxidant Properties of African Leafy Vegetables	Centre for Nutrition, University of Pretoria, South Africa	2008
VARON, Margarita	Colombia	PhD in Microwave and Photoelectronics	Electronics and Electrical Engineering	Hyper-Frequency Signal Generation	SUPAERO Institute of Aeronautics and Space Technology, Toulouse, France	2005
VASA, Parinda	India	Post-Doctorate in Ultrafast Nano-Optics and Physics	Physics	Nano-Optics and Exciton-Plasmon Interactions in Metal Hybrid Structures	Institute of Physics, Carl von Ossietzky University, Oldenburg, Germany	2006
Wu, Pinyu	China	PhD in Physics	Biopolymer Networks	3D Thermal Noise Imaging	The University of Texas at Austin, United States	2006
YU, Min	China	PhD in Computational Condensed Matter Physics	Physics	Density Functional Theory	University of Illinois at Urbana-Champaign, United States	2006
ZAHRAIE, Banafsheh	Iran	Post-Doctorate in Operation Optimization of Multi-Reservoir Systems	Water Resources Engineering and Management	Evolutionary Computing in Water Engineering	University of Tehran, School of Electrical and Computer Engineering, Iran	2007
ZAKERI, Mahnaz	Iran	PhD in Mechanical Engineering	Mechanical Engineering	Presence and Propagation of Cracks in Structures	Polytechnic University of Milan, Italy	2006



## BOARD OF DIRECTORS

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**Hatem Soliman** Vice-President (President, Schlumberger Testing Services)

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**Art Alexander** Executive Secretary

**Eileen Hardell** Executive Secretary

**Bram Verburg** Controller

## FACULTY FOR THE FUTURE PROGRAM STAFF

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**Catherine Castetbon** Executive Assistant

**Monica Messina** Program Administrator

**Mary Louise Stott** Communications Manager

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