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National Science and Technology Forum (NSTF)

media release

International Day of Women and Girls in Science, 11 February 2024

Are cultural norms the main reason for the underrepresentation of African women in science? The NSTF marks International Day of Women and Girls by considering how women are underrepresented in science and technology, wondering about the reasons for this, and celebrating three phenomenal women in science who are current NSTF-South32 Award winners.

International Day of Women and Girls in Science: In 2015, the United Nations General Assembly (UNGA) adopted a [resolution](#) recognising the critical role women and girls play in science and technology. The UNGA declared 11 February as the International Day of Women and Girls in Science to promote participation in science and equal access to it. It should help to dissipate the narrow and singular approach to science, technology and innovation as the preserves of men alone.

Gender equality and transformation are at the heart of the [National Science and Technology Forum \(NSTF\)](#). The NSTF's vision includes the ideal that professionals in science, engineering, technology (SET) and innovation should represent the demographics of the general population of South Africa (SA).

Gender disparities in STEM: breaking barriers and building equity: The [2021 United Nations Education Scientific and Cultural Organization \(UNESCO\) Report: Chapter 3: Women and the digital revolution](#) chapter, states that

- Women make up 33.3% of all researchers in 107 countries around the world in 2018.
- Women remain in the minority in certain fields: engineering, mathematics, physics and digital information technologies.
- They account for only 22% of researchers in artificial intelligence.
- Women are less likely to receive research funding and less likely to become promoted and hold leadership roles in research.

The [World Economic Forum](#) recently stated that in 2023:

- In technology globally, women comprise about 24% of leadership roles
- and less than 30% of science researchers worldwide are women.

The situation is unfortunately similar in sub-Saharan Africa, where female researchers only make up 30% of the total. Professors Ayotola Aremu and Adefunke Enike, authors of the book *Making the Future of African STEM female*, expressed how, for many African women the root cause of this underrepresentation of women in STEM is systemic gender bias. Boys and girls are generally raised differently in African households: boys are steered towards mechanics and engineering and the girls are pushed towards domestic activities. The girls are encouraged to conform to the traditional role of being mother and wife, perpetuating the misconception that 'science is a man's playground'.

Female role models can mend the leaky pipeline in STEM studies: Many girls choose to learn STEM subjects in school and later enrol in STEM fields at universities, but later become deterred along the way. The UNESCO Report says that women globally have reached parity at Master's degree level (representing 45-55% of the cohort) but that there is a bottleneck at that point in their careers.

Many women do not get as far as that. This is especially true in the case of young black women. Because there is too little representation at that level, young women and girls do not have enough role models who look like them and share their same experiences, to inspire and guide them. An important aspect for girls to gain opportunities and feel they can pursue further education and a career in science, is having female role models, who can share their successful experiences and endeavours. Having someone they can look up to can spark an interest and break down barriers for them.

The NSTF developed the Motivational Talks Programme where role models are invited to address the first-year students of the NSTF Brilliants Programme (for top achievers in physical science and mathematics), to inspire them and give them advice about careers, studies and personal development. Students often find it difficult to navigate through the transition from high school to tertiary level studies. On 11 September 2023, the NSTF hosted the annual [Motivational Talks](#) Programme online, this time with the [2023 NSTF-South32 Award](#) winners, to engage with the year's group of [Brilliant students](#). The talks featured no less than three esteemed women of colour, who had recently been crowned as NSTF-South32 Award winners, namely: Prof Salome Maswime (Clinician scientist - obstetrician and gynaecologist), Prof Usisipho Feleni (Electrochemist) and Prof Nosipho Mloti (Energy materials scientist and inorganic chemistry Research Professor).

The esteemed and inspirational female NSTF-South32 Award winners: These groundbreaking Professors come from humble beginnings and overcame all the odds that were stacked against them and persevered to attain success in their STEM careers. They continue to inspire young women, garnering more accolades to break the ceiling of gender disparity and discrimination in science.

Prof Usisipho Feleni, Associate Professor and thematic leader in the Applied Electrochemistry Institute for Nanotechnology and Water Sustainability; University of South Africa (UNISA) is a winner of the [2023 NSTF-South32 TW-Kambule Emerging Researcher Award](#). From humble beginnings in a small village in the Eastern Cape, she was driven by a need to help combat high numbers of deaths from HIV/AIDS. She ventured into the study of electrochemical biosensors that monitor the workings of Anti-Retro Viral (ARV) drugs, synthesisation of nanoscience and nanotechnology. She went on to pursue a postdoctoral fellowship and became an industry professional and mentor, enriching young minds as a full Professor at UNISA from 2018. Prof Feleni spoke to students about being proactive in research, and collaborating with others, as well as the importance of "raising your hands early" to make use of the available opportunities.



Prof Salome Maswime is an obstetrician and gynaecologist (OB/GYN), a member of the Academy of Science of South Africa (ASSAf) and head of the Global Surgery Division: Wits University. She won the first [NSTF-SAMRC Clinician-Scientist Award](#) in 2023. From humble beginnings in Polokwane, Limpopo, she went on to do her post graduate studies in gynaecology at Wits and then continued to PhD studies through the clinician scientist programme sponsored by the Carnegie Corporation of New York. She also got an opportunity to do her postdoctoral studies at Harvard University and was able to directly collaborate as a sitting member of the World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF). She is now a Professor at the University of Cape Town (UCT), a position she attained at the age of 39. She advised the Brilliants students to try to overcome the loneliness of success and the imposter syndrome. She urged them to remain grounded saying, "You need to be real, you need to be you, you need to be authentic." She concluded by emphasising that a successful career is a complex interplay of personality, character, excellence, serendipity, relationships, resilience, and reputation.



Prof Nosipho Mloti from Kwa-Mashu township in Durban is a Professor of Inorganic Chemistry at Wits, where she holds the NEDBANK-DSI SARCHI Chair in Energy Materials and she is a [2023 Engineering Research Capacity Development Award](#) winner. She tells the story of how she had to overcome culture shock and imposter syndrome when she went to study at the University of Zululand. There she later learned to appreciate difference and diversity, and how to believe in herself. She was introduced to nanoscience at this point and later got an opportunity to study at the University of Manchester. She was able to publish four papers while doing her Master's degree and she got to work with the Centre for Nanotechnology Materials at the CSIR (South Africa). She also got to do her postdoctoral studies at the Massachusetts Institute of Technology (MIT). She urged the Brilliants students to put themselves out there, saying: "If you strive for success, you attract success." It is important for young women to have role models they can relate to, to help them realise their capabilities and believe in themselves.



In the current era, often called the 'Fourth Industrial Revolution (4IR)', it is more important than ever that girls and women should not be excluded. The World Economic Forum's 2022 Job Report projected that there will be a loss of 4.7 million white collar jobs such as clerical duties and administrative work, which are predominantly held by women. Increased women's participation in STEM studies and careers is essential. Making a concerted effort to include girls in the STEM subjects, as well as creating role model programmes and mentorship would help to achieve this necessary goal.

About the 4IR: The 4IR is the NSTF's theme for the year 2024, chosen in response to new developments in technology and its uses throughout the world and in SA, affecting people's lives and opportunities. The theme will be recognised in the NSTF-South32 Awards this year through a [Special Annual Theme Award](#), as well as [NSTF Discussion Forum](#) planned for October 2024.

About the NSTF: NSTF is an independent non-profit stakeholder body and network – a civil-society forum of [organisations involved in science, engineering, technology \(SET\) and innovation in SA](#).

Join the NSTF's conversations on social media:

- Facebook: [@NSTFSA](#)
- X: [@NSTF_SA](#)
- Instagram: [@nstf_sa](#)
- LinkedIn: [National Science and Technology Forum \(NSTF\)](#)
- YouTube: [National Science and Technology Forum \(NSTF\)](#)
- TikTok: [nstf_sa](#)

The NSTF provides neutral collaborative platforms where issues and sectors meet

- One of the National Science and Technology Forum (NSTF) functions is to hold [discussion forums](#), bringing the private and public sectors together to address important issues and engage with government policy.
- Feedback from these [discussion forums](#) is disseminated to role players and stakeholders.
- The NSTF represents about [130 member organisations](#) participating as key stakeholders of the SET and innovation community.

References/Sources:

- <https://www.internationaldays.org/february/internationaldayofwomenandgirlscience>
- [Black women in science: South African women kept out by culture, tradition \(qz.com\)](#)
- [The International Day of Women and Girls in Science calls for Africa to address the gender gap in STEM fields | Our Africa, Our Thoughts \(afdb.org\)](#)
- [Women in STEM in Africa: a shift in the social paradigm - Global Voice Group](#)
- [Moves are afoot in Africa to keep more women in science careers \(theconversation.com\)](#)

About the NSTF

The National Science and Technology Forum (NSTF), established in 1995:

- is a broadly-representative stakeholder body for all science, engineering and technology (SET) and innovation organisations in South Africa
- gathers stakeholders around burning issues of national and global interest, across the public and private sectors, including matters of public policy
- includes a network of professional societies in SET and STEM education (STEM = science, technology engineering and mathematics) - the NSTF proSET membership sector.
- recognises, awards and profiles the outstanding contributions of individuals and groups to SET and innovation through the prestigious NSTF Awards
- runs and supports collaborative projects and youth outreach, including recognition of top performance in mathematics and science, role modelling, bursary and STEM career information
- runs and supports the STEMulator.org which attracts youth and educators to Explore>Discover>Learn the world of STEM including careers. (Established by NSTF proSET)

For more information
www.nstf.org.za
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