



National Science and Technology Forum

S.E.T. for socio-economic growth

## NSTF Award Winners took up the challenge to inspire the youth

### NSTF Share 'n Dare Programme (August 2019)

The National Science and Technology Forum's (NSTF) [Share 'n Dare programme](#), sponsored by the [Carl & Emily Fuchs Foundation](#), afforded a number of winners of the [2018-2019 NSTF-South32 Awards](#) the opportunity to encourage and inspire young people to pursue [studies](#) and [careers](#) in science, engineering and technology (SET) and innovation in July and August 2019. These talks formed part of the [National Science Week](#) that are implemented by the South African Agency for Science and Technology Advancement (SAASTA) on behalf of the Department of Science and Technology. The [NSTF Awards](#) recognise excellence in SET and innovation in South Africa. The following winners took up the challenge:

**Ms Shirona Patel**, head of the Wits Communications Services team that won the [2019 NSTF-South32 Communication Award](#), addressed a group of 600 learners at the Johannesburg Zoo on 31 July 2019. Her talk focused on the Fourth Industrial Revolution (4IR). She informed the learners about job security and that, in future, many jobs will be taken over by robots. However, more jobs will be created for scientist to programme the robots. She encouraged the audience to start science projects and clubs at their schools and in their communities.



*Ms Shirona Patel (Wits University) talking at the Joburg City Parks event at the Johannesburg Zoo to learners about how robots (4IR) would need scientists.*

**Dr Happy Sithole**, director of the [Centre for High Performance Computing](#), who won the [2019 NSTF-South32 Management Award](#), addressed a group of 100 community members and 70 learners at Leratong Park in Soweto. He spoke about the fact that he grew up in Meadowlands and moved to Rustenburg as a child in the 1980s.

He emphasised that having a doctorate does not mean that he had an easy life. At one time he hated science because there was a stigma clinging to studying it. The school principal had to force him to attend the science class before he realised that he could do it. He encouraged the learners not to undermine themselves because they are studying at a village school. Their background must not be a limiting factor to achieving big things in life.

Dr Sithole explained what his job entails as a centre manager of national integrated cyber-infrastructure system. He further spoke about [climate change](#) and advised them to face the challenges in their community as opportunities to create solutions to those problems.



*Dr Happy Sithole (Council for Scientific and Industrial Research) challenged learners to be creative in finding solutions to the problems in their communities.*

**Mr Sydney Mahlangu** of the University of Johannesburg (UJ), who represented the [Process, Energy & Environmental Technology Station](#) (UJ-PEETS) gave a talk at the [ArcelorMittal Science Centre](#). UJ-PEETS won the [NSTF-Lewis Foundation Green Economy Award](#).

He explained the function of PEETS as a research station at UJ which promotes technological innovation in partnership with the Technology Innovation Agency (TIA). PEETS provides technical oriented enterprise development support in the water, energy and environment sector through appropriate technological innovations in order to develop sustainable socio-technical systems. He also mention that PEETS supports the green economy by providing engineering services to SMMEs (small business).

There are 150 SMMEs receiving technological support from PEETS, 14 SMMEs products/prototypes are being developed in partnership with PEETS and PEETS is involved in 74 renewable energy projects.



*Mr Sydney Mahlangu (UJ-PEETS) explained how engineering services as technological innovations contribute to small business development in the water, energy and environment sector.*

Prof Alexander Quandt, Acting Chair: Materials for Energy Research Group; Focus Area Co-ordinator: Centre of Excellence in Strong Materials, Wits and Ms Sanusha Govender of Hydrox Holdings (Pty) Ltd shared platforms at Necsa on 31 July and 01 August 2019. They presented four talks to groups of over 60 learners at a time.

**Professor Alex Quandt**, winner of the [2019 NSTF-South32 Special Annual Theme Award: Materials for inclusive economic development](#), showed the learners his [Award trophy](#). Telling the learners what

it involves to become a scientist, he stressed the importance to form collaborations along their career journeys. He then explained the history of the Periodic Table of Chemical Elements and its importance.

Prof Quandt elaborated on 2D material, computational materials science and the factors that drove this science. He also talked about solar cells, how they work, the characteristics of a solar cells and numerical simulations of solar cells. He encouraged the learners to start learning coding. He told them that, if they do not have computer facilities at school they can use applications on their cell phones to learn programming.

Prof Quandt wrapped up his presentation by quoting Nobel Prize Winner, Erwin Schrödinger: “The task is not to see what has never been seen before, but to think what has never been thought before about what you see every day”.



*Prof Alex Quandt sharing inspirational thoughts and quotes, as well as material science information to encourage learners to start learning coding.*

**Ms Sanusha Govender’s** presentation focused on hydrogen and the work they do at Hydrox Holdings, winner of the [2019 NSTF-South32 Innovation Award for a Small, Medium and Micro Enterprise \(SMME\)](#).

She explained the uses of hydrogen and the different ways of producing it; how water electrolysis works; and that only 5% of hydrogen is produced through the renewable, clean method by water electrolysis. However, water electrolysis processes currently being used are expensive to operate, hence increasing the price of hydrogen. She discussed the possible solution to this problem with the learners.

She also talked about fossil fuels and why they are rapidly becoming a scare resource globally. She said that fossil fuels are ultimately going to be depleted. Converting fossil fuels to useable energy results in emissions of harmful gases such as greenhouse gases which lead to climate change. Therefore, we need to find solutions to this issue without harming the environment.



*Ms Sanusha Govender discussed ways to produce hydrogen and finding replacements for fossil fuels that won't harm the environment.*