

Traditional medicine and innovation to bring relief to COVID-19 patients

Message from the NSTF Executive Director, Ms Jansie Niehaus

There is no cure nor vaccine against COVID-19, but there is a plethora of traditional treatments for the flu. None of which will cure viral infections, but that may provide symptomatic relief. Scientific studies should be done and promising plants and their components should be explored for development into innovative products, symptomatic treatment and possibly essential life-saving drugs. Read the message.



NSTF News

25 years of serving the science, engineering, technology and innovation community in SA

The National Science and Technology Forum (NSTF) is celebrating 25 years of its existence this year. This stakeholder body draws together more than 110 organisations, councils and institutions involved in science, engineering, technology (SET) and innovation in South Africa. Its core vision is a transformed society where the demographic profile of SET professionals is reflective of that of SA's population, and where the education system functions properly, especially in SET subjects.

Young people are our future scientists, engineers and innovators

The NSTF promotes SET, including mathematics and innovation among the youth every year through recognition of top performers in matric science and maths, outreach by NSTF Award Winners and through the provision of bursary and career information. These programmes are currently being made possible for the fourth year by the <u>Carl and Emily Fuchs Foundation</u>.

Share 'n Dare programme

South Africa experiences a chronic skills shortage at the critical skills level. The basic education system is making slow progress, producing a number of excellent achievers but inadequate numbers of maths and physical science passes. All over the world high level

skills are in great demand, yet young people are reluctant to do maths and science.

Because of the history of injustices in the education system caused by apartheid, we wanted to recognise and publicise those people who have excelled against the odds. The NSTF-South32 Awards have for most of its history identified top achievements in science and technology from black professionals and women. The Share 'n Dare programme comes from the desire to introduce the winners of NSTF Awards as role models, especially for the youth, thus giving the youth exposure to achievers from historically disadvantaged communities (among others). Awards winners and their representatives have therefore been sharing science, engineering and technology information and inspiring youth and communities around the country with their life stories.

This programme has had good outcomes. Over a three-year period, more than 12 500 young people were reached in this way. More than double this number was reached through social media. Together with media interviews with the winners, we are convinced that more than 100 000 people were reached.

Brilliants programme

The <u>Brilliants programme</u> recognises, inspires and motivates the top 18 matriculants (one male and one female per province) in mathematics and physical science from the National Senior Certificate examinations of the immediate past year. The programme demonstrates to the broader public and the government that there are brilliant learners in our public education system despite the often debilitating flaws in the system; and that there are (many) top learners in maths and science who choose to study in science-related courses and pursue science-related careers.

The programme also ensures that some of the top performers are recognised who would otherwise be invisible. Although some of the Brilliants have received much recognition, bursaries, awards, etc before being selected for our programme, there are about a third of the students every year that have not been recognised, and have not received full bursaries. We believe a bursary is important as an incentive to learners and students to strive for excellence in maths and science. The Department of Science and Innovation provides funding for NSTF to allocate bursaries/scholarships to those Brilliants students who do not have full bursaries from elsewhere.

Over the past few years, all the selected students had an average for matric maths and science of 90% and above. During the past three years, the Brilliants students were taken on a week long-astronomy tour annually, courtesy of SKA (or SARAO). Unfortunately this year they will not be able to enjoy this privilege.

Scholarship Fund

Because there are many more such top matrics from which the Brilliants are selected (as the best of the best), the NSTF is growing a Scholarship Fund to assist such talented students in science and engineering studies with once-off scholarships to complement the bursaries and merit funds they may have been awarded from elsewhere. Donations to the fund are welcome and will be publicised. Contact the Executive Director, Ms Jansie Niehaus at enguiries@nstf.org.za to discuss partnerships.

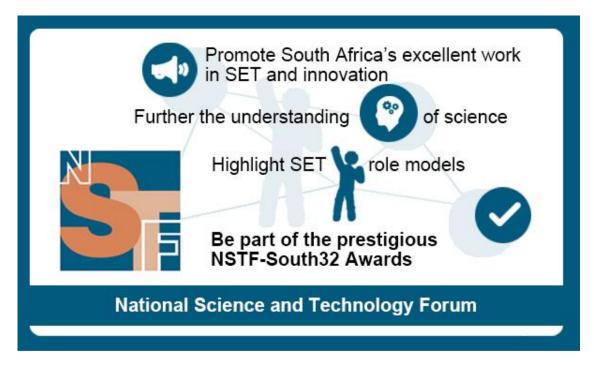
Bursary directory and career advice

The online <u>bursary directory</u> provides information on currently available bursaries for SET-related studies from a variety of sources. The Directory is updated weekly. There is also a list of bursary providers so that students can visit their websites and see other possible bursary opportunities.

The <u>role models</u> (NSTF Award Winners) and the <u>Brilliants students</u> are profiled on the bursary pages of the website, thus enhancing these programmes and reaching a wider

audience. Information on more than 100 <u>SET career fields</u> that can be pursued are listed in detail.

S.E.T. for socio-economic growth



2019/2020 NSTF-South32 Awards Gala Event – Thursday 30 July

Awards Gala Event

The event to honour the finalists and announce the 22nd group of winners of the prestigious NSTF-South32 Awards is going virtual by means of a live broadcast on the evening of 30 July 2020. It will take place from 19:00 – 20:30. Diarise this date and join NSTF and co-branding sponsor, South32 in celebrating the achievements of science, engineering, technology (SET) and innovation in South Africa.The list of 2019/2020 finalists is available online.

There are no costs involved to take part in this celebration. The NSTF will, however, welcome any donations made towards the NSTF non-profit company and activities, since no funds can be raised through the sales of tickets for tables at the event this year. We appeal to you to assist us in this way to carry on with our work as a non-governmental consultative forum promoting SET and innovation in South Africa.

NSTF Award winners reaching out to the youth – despite COVID-19

With the current lockdown regulations in place to curb the spread of Covid-19, the NSTF is not able to continue as normal with its Share 'n Dare youth outreach programme (see above). But we are still reaching out to the youth with audio and TV interviews, community radio interviews and by means of videos of talks by role models, all available on our website.

There you will find a wealth of information and inspiration to assist young people to study and follow careers in science, engineering, technology (SET) and innovation. Please help us to make this known among the youth and educators.

See for example the following recent additions:

- Parthy Chetty of Eskom Expo on '<u>What</u> can we learn from trees?'
- Prof Thandi Matsha on '<u>The element of</u> surprise'.

Or listen to:

2020 Theme

The 2020 Special Annual Theme Award will be made for research and development (R&D) and innovation in Plant Health. This is in recognition of the United Nations celebration of the '2020 International Year of Plant Health'.

Today's research ... tomorrow's innovation

Bursaries available

A number of bursaries have recently been added to the list. Find the latest news on bursaries in science, engineering and technology (SET) in the NSTF <u>Bursary</u> <u>Directory</u> Currently available are:

- Jones & Wagener (Deadline: 31 July 2020)
- South African Radio Astronomy
 Observatory Bursaries (Deadline: 31 August 2020)
- <u>Investec CSI Bursary</u> (Deadline: 30 September 2020)
- <u>Takealot.com Bursary Programme</u> (Deadline: 30 September 2020)
- Hulamin (Deadline: 30 October 2020)
- FMCSA Ford Bursary (Open)

Visit the directory for information on bursaries, SET <u>career</u> guidance and inspirational <u>role models</u> in SET.

If your company/institution provides bursaries to undergraduate students in SET-related courses, please send us information on these bursaries to enquiries@nstf.org.za attention Ms Mosima Mabitsela, for inclusion in the directory.

The Bursary Directory is sponsored by the Carl and Emily Fuchs Foundation.

- Prof Refilwe Nancy Phaswana-Mafuya's interview on Thobela FM's education programme and another interview on the same station, as well as an interview on Ikwekwezi FM.
- Prof Anne Grobler's <u>interview</u> on Kingfisher FM, as well as her interviews on <u>Smile FM</u> and OFM.
- Prof Stephen Tollman's <u>interview</u> on TruFM.

This community outreach service is currently sponsored by the <u>Fuchs</u> Foundation.

The STEMulator.org

A new concept to teach learners online about science and technology and provide career information

The <u>STEMulator</u> is registered as a non-profit company, established under the auspices of the NSTF pro*SET* committee (Professionals in science, engineering and technology.) pro*SET* is a sector of the NSTF representing professional and learned societies.

Please visit the website and have a look at the model that has been developed to teach children what science, engineering and technology (SET) is all about. The following links are now live:

- <u>car</u> (engine, brakes, exhaust, etc.)
- human (skeleton, muscles, heart, etc.)
- agriculture (soils, insects, crops, etc.)
- <u>aeroplane</u> (wings, cockpit, fuselage, etc.)

This is the ideal opportunity for you to get involved in the development of this programme and include your virtual demonstrations and material. The main picture can be extended to include various industries, sectors and disciplines.

The coordinator and driver of the project is Richard Gundersen of the NSTF proSET committee. Get in touch with us at enquiries@nstf.org.za to discuss your ideas with Richard or contribute material. We would also appreciate it if you could spread the news to your colleagues and contacts, and show the STEMulator to any children you know. Feedback is welcome!

www.stemulator.org.



pro SET (Professionals in science, engineering and technology) is a sector of the NSTF representing about 40 professional and learned societies. This section shares news about members of the <u>pro SET sector</u>.

Zoological Society of Southern Africa (ZSSA)

The <u>Zoological Society of Southern Africa</u> (ZSSA) represents all researchers, practitioners and enthusiasts in the field of Zoology. A student council member, Tshepiso Majelantle, recently created an <u>Instagram page</u> for the society. To celebrate the launch of the Instagram page ZSSA held a wildlife photography competition. See the winning photos here.

South African Mathematics Foundation (SAMF)

There will be no Final Round of the <u>SAMF</u>'s Mathematics Challenge this year due to COVID-19. For the new Second Round dates, click <u>here</u>. The Mathematics Challenge is a national competition for Grades 4 to 7 learners, endorsed by the Department of Basic Education.

• South African Council for Natural Scientific Professions (SACNASP)

SACNASP has a new online CPD (Continued Professional Development) website for category 1 courses, many of which are free of charge. SACNASP is encouraging all fields of practice to support this initiative and provide courses and activities. CPD online commenced in April 2020 and they are anticipating the success of this venture, especially in the current climate. The contributions or articles are not limited to SACNASP's Voluntary Associations' authors - specialists or experts are more than welcome to also contribute to the website. Contact SACNASP at sacnasp@sacnasp.org.za for further information.

Grassland Society of Southern Africa (GSSA)

Read about a variety of topics, from climate change, locust outbreaks and increasing black rhino numbers, to fire regimes, the impact of drought on biodiversity and cattle farming in the latest issue of *Grassroots*, the newsletter of the GSSA.



SET-related policies currently open for public comment

Policies open for comment allow the science, engineering and technology (SET) community to keep track of the changing regulation environment.

- Marketing of Agricultural Products Act: Request for a per hectare statutory levy to fund the area wide Mediterranean Fruit Fly Control (Medfly) programme (Comment by 10 July 2020)
- Veterinary and Para-Veterinary Professions Act: South African Veterinary Council (Nominations invited by 24 July 2020)
- National Environmental Management: Waste Act: Extended Producer Responsibility
 Scheme for the Lighting Sector (Comment by 26 July 2020)
- National Environmental Management: Waste Act: Regulations: Extended Producer Responsibility (Comment by 26 July 2020)
- National Environmental Management: Waste Act: Extended Producer Responsibility Scheme for Paper, Packaging and Some Single Use Products: Comments invited (Comment by 26 July 2020)
- National Environmental Management: Waste Act: Extended Producer Responsibility
 Scheme for the Electrical and Electronic Equipment Sector (Comment by 26 July
- National Environmental Management: Air Quality Act: Second Generation Air Quality <u>Management Plan for Vaal Triangle Airshed Priority Area</u> (Comment by 11 August 2020)
- <u>National Nuclear Regulator Act: Draft Regulations on Long Term Operation of Nuclear</u> Installations (Comment by 18 August 2020)
- Pharmacy Act: Regulations: Pharmacy Education and Training: Amendment (Comment by 12 September 2020)

SET-related policy news

Some articles included in the section below are opinion pieces. The opinions expressed in these articles do not necessarily reflect the views of the NSTF Executive Committee, Directors, Secretariat or Members.

Funding

South Africa slashes science budget, funds for giant radio telescope (sciencemag.org)

Water use

- <u>DWS committed to fast track Water Use Licensing Processes within 90 days</u> (infrastructurenews.co.za)
- Water-use licencing, a catalyst for growth and development (infrastructurenews.co.za)

Mathematics

Mathematicians urge colleagues to boycott police work in wake of killings (nature.com)

Energy

- Sustainable Recovery World Energy Outlook Special Report (iea.org)
- <u>Load-shedding imminent: Why the delay in implementation of the IRP?</u> (energize.co.za)
- South Africa continues to bankroll billions in fossil fuels (energize.co.za)
- Request for information issued for 2500 MW nuclear power (energize.co.za)
- Eskom says there is progress in the five key elements of its turnaround plan (agbiz.co.za)
- Nuclear power solutions for Sub-Saharan Africa (infrastructurenews.co.za)

Environment

- Hazardous Substances Act: Group III Hazardous Substances: Exemption (gov.za)
- South African proposal to breed wildlife for slaughter courts disaster (theconversation.com)
- The 2020 Special Issue of the <u>Southern African Journal of Environmental Education</u> (SAJEE) is available.

Wind and hydrogen offer potential to drive exports market (energize.co.za)

Agriculture

- How the Covid-19 lockdown impacted agricultural ecosystems in Africa (cnbcafrica.com)
- SA is bleeding jobs, but agriculture may just surprise us (news24.com)
- Efforts to irradiate locust swarms and save harvests continue despite the pandemic (bbc.co.uk)

4th Industrial Revolution and technology

- <u>4 Ways Digitisation Can Unlock Africa's Recovery from COVID-19</u> (itnewsafrica.com)
- Technology, COVID-19 and How the World Will Change (logista.co.za)
- Impact of fake news and cybercrime in South Africa (iafrikan.com)
- Africa needs accelerated ICT, renewable energy investment (itweb.africa)

Education

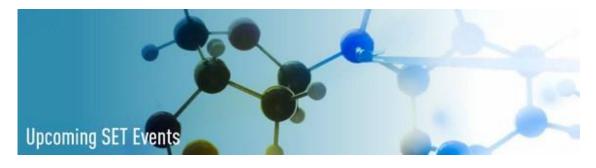
- National Education Policy Act: Amended 2020 School Calendar for Public Schools (gov.za)
- Rand Water CEO on the water provision at schools (SABC News)
- Opportunities are in digital space, SA youths advised (itweb.co.za)
- Vodacom, Microsoft announce game-changer for SA education (itweb.africa)
- South African youth hit hard by COVID-19 (uct.ac.za)
- Maths teachers in South Africa: case study shows what's missing (theconversation.com)

Infrastructure

- R62bn secured in govt's latest infrastructure funding drive (eNCA.com)
- Infrastructure investment key to unlocking growth in SA agriculture (agbiz.co.za)
- The urban poor have been hit hard by coronavirus. We must ask who cities are designed to serve (bizcommunity.com)
- Further developments to the carbon tax framework: Regulations regarding allowances and RE premiums (energize.co.za)

Medicine and Health

- COVID-19 Across Africa: Epidemiologic Heterogeneity and Necessity of Contextually Relevant Transmission Models and Intervention Strategies (acpjournals.org)
- <u>Building capacity for evidence-based healthcare and public health in sub-Saharan</u> Africa (sun.ac.za)
- Water must get back on the health agenda (infrastructurenews.co.za)
- SA needs to block transmission routes to get Covid-19 under control (wits.ac.za)
- There are likely a million cases of Covid-19 in SA right now: Prof Madhi (timeslive.co.za)
- How to Fight COVID-19 in Africa's Informal Settlements (itnewsafrica.com)



The events posted below are correct as far as we could establish at the time of preparing this newsletter. Please check the relative websites for changes to dates and venues.

- HSRC webinar: The role of science, technology and innovation in sustainable and inclusive social, economic and environmental development: Livestream via Zoom on 7 July 2020, 10:30-12:00
- 2020 SMR & Advanced Reactor Summit Virtual, 13 and 14 July 2020
- Working World Exhibition 2020: Port Elizabeth, virtual exhibition, 14-16 July 2020
- The Water Show Africa: Johannesburg, 20-21 August 2020
- Bio Africa Convention: Durban, 24-26 August
- 3rd African Symposium on Mycotoxicology: Stellenbosch, 6-9 September 2020
- SA Innovation Summit: This will be a virtual edition, 30 September 1 October 2020
- <u>25th WasteCon 2020</u>: Johannesburg, 6-8 October 2020
- 14th International Conference on CFD In the Oil & Gas, Metallurgical and Process Industries: Trondheim, Norway 12-14 October 2020
- SAAO Virtual Symposium: Beyond 200 Years of Astronomy: 20-22 October 2020
- HSRC Social Sciences Research Conference 2020: Kimberley, 26-28 October 2020
- IMESA Conference: Cape Town, 28-30 October 2020
- World Engineering Education Forum Global Engineering Deans Council Conference (WEEF-GEDC): Engineering for the Sustainable Development Goals, Cape Town, 15-20 November 2020
- Water Institute of South Africa 2020 Conference: Johannesburg, 5-9 December 2020
- Manufacturing Indaba: Midrand, 9-10 December 2020
- WasteCon2020: Johannesburg, 9-11 February 2021
- <u>Inaugural South African Clinician Scientists Conference</u>: Cape Town, 25-26 February 2021
- Agbiz Congress 2020: Building resilient and sustainable agri-food ecosystems: Sun City, 7-9 April 2021
- <u>Second International Congress of Biological Control</u> (ICBC2): Davos, Switzerland, 26-30 April 2021
- 16th International Conference on Space Operations: Cape Town 3-7 May 2021
- The 7th World Conference of Research Integrity is to be hosted by UCT in 2021
- 23rd International Congress of Zoology: Cape Town, 21-25 November 2021



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Universities and higher education

<u>Top nuclear physicist to lead Wits</u> (wits.ac.za)

Science Councils and Statutory Organisations

 WRC kicks off wastewater surveillance programme for Covid-19 spread (engineeringnews.co.za)

- The Water Research Commission is to monitor waste water, to track the prevalence of the coronavirus (eNCA.com)
- Commentary: Why are black South African students less likely to consider studying biological sciences? (assaf.org.za)

Palaeontology, Archaeology and Anthropology

- Explorers in Antarctica found the largest soft-shelled egg ever seen (businessinsider.co.za)
- <u>UP's own 'Bones' and MakerSpace hopes to print replicas of human bones in 3D</u> (up.ac.za)
- Gigantic wolverines, otters the size of wolves: fossils offer fresh insights into the past (theconversation.com)

Space Science and Astronomy

- South African Astronomical Observatory: Going Beyond the Traditional Symposium to Celebrate Beyond 200 Years of Astronomy
- Space as a Service weather monitoring (engineerit.co.za)
- South Africa Ratifies SKA Observatory Convention (skatelescope.org)
- Accreting pulsar caught in the act of 'powering up' (saao.ac.za)
- Out of nowhere, a Global Magnetic Anomaly (engineerit.co.za)

Medicine and health

- The first Covid-19 vaccine trial in South Africa begins (wits.ac.za)
- Potential effects of disruption to HIV programmes in sub-Saharan Africa caused by COVID-19: results from multiple mathematical models (figshare.com)
- The Coronavirus Pandemic: Delivering Science in a Crisis (issues.com)
- Breakthrough: microbe found to block the transmission of malaria (theconversation)
- The Search for a COVID-19 Vaccine 'There's No One Winner' (nationalacademies.org)
- The dubious value of fever screening: Why measuring for surface temperature won't help curb the spread of COVID-19 (bhekisisa.org)
- How 'Superspreading' Events Drive Most COVID-19 Spread (scientificamerican.com)
- Think vitamin D deficiency is not common in Africa? Think again (theconversation.com)
- More data needed on COVID-19 infections among healthcare workers (sun.ac.za)
- Balancing privacy with public health: how well is South Africa doing? (theconversation.com)
- A new swine flu strain with 'pandemic potential' was just found circulating in Chinese pigs (businessinsider.co.za)
- How researchers found that a cheap steroid can reduce COVID-19 death rates (bhekisisa.org)
- Household characteristics in relation to COVID-19 risks in Gauteng (gcro.ac.za)
- Income vulnerability in Gauteng (gcro.ac.za)
- Gauteng's elderly in the context of COVID-19 (gcro.ac.za)

Environment, climate change and energy

Environment

- Plastic pollution puts ocean's resources at risk (SABC News)
- PETCO announces positive PET recycling rate (infrastructurenews.co.za)
- Big green recovery (polity.org.za)
- COVID-19 Is a Symptom of a Bigger Problem: Our Planet's Ailing Health (time.com)
- We looked for South Africa's 'missing' plastic litter. This is what we found (theconversation)
- Scientists warn of increasing threats posed by invasive alien species (sun.ac.za)

 Marion Island's last ice age happened earlier than we thought. Why it matters (theconversation)

Climate change

- Commonwealth academies statement on climate change, biodiversity and sustainable energy (assaf.org.za)
- Climate change, biodiversity loss and other global ills share root causes (theconversation.com)
- Scientists say NOW is the time for green recovery (engineerit.co.za)
- Agriculture and climate change Reducing emissions through improved farming practices (agbiz.co.za)
- Adapting asphalt pavings for a changing climate (csir.co.za)

Energy

- Partnership leads waste to energy drive (energize.co.za)
- Energy storage: Providing energy when it is needed (energize.co.za)
- <u>Boiler ash a wasted resource</u> (ReSource Magazine)
- <u>Partnership leads waste to energy drive</u> (energize.co.za)
- Why would one consider solar power? (energize.co.za)

Zoology

- Pangolins return to a region where they were once extinct (news.mongabay.com)
- Honours Student's Turtle Research Experiences Published by News Organisations (ukzn.ac.za)
- Recent study on small mammal groups to aid conservation in Karoo (dfa.co.za)

Agriculture

• SA and Zambia able to replace global producers' maize exports to neighbours (businesslive.co.za)

Technology and the 4th Industrial Revolution

- NWU engineers walk away with international award for tackling Covid-19 (nwu.ac.za)
- SA Inc must act now to take ownership of battery metals value chain Bushveld (polity.org.za)
- SA hit as hackers target hospitals during Covid-19 crisis (ngopulse.org)
- Tech to direct resources where they are needed the most (social-tv.co.za)
- Young CSIR researchers briefed the media on the impact of cybercrimes and misinformation during Covid-19 pandemic (csir.co.za)

Infrastructure

- Building confidence at all-time low (infrastructurenews.co.za)
- Architectural firms hit by severe hardship due to lockdown- survey (infrastructurenews.co.za)

Science awareness

 Working Scientist podcast: How to sell your public outreach ideas to funders (nature.com)

Opportunities

- Applications Open Fulbright South African Research Scholar Program (nrf.ac.za)
- Last <u>Horizon 2020 call for proposals</u> from the EIC Pathfinder Future and Emerging Technologies Innovation LaunchPad. Beneficiaries will declare costs based on lump

sums of up to EUR 0.1 million for each grant. Do not miss the chance and apply before 14 October 2020!



- NRF intern, Kekeletso Makau, awarded IIASA's External Relations Fellowship (nrf.ac.za)
- NWU alumnus is one of winners the Africa-France 1 000 Entrepreneurs Challenge (nwu.ac.za)

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, which seeks to influence policy formulation and delivery.

The NSTF Awards are unique in SA, recognising the outstanding contributions of individuals and groups to SET and innovation.

The science <u>bursaries</u> page provides information on bursaries and bursary providers for science, engineering and related studies.

Disclaimer The NSTF has taken all practical measures to ensure that the material contained in this newsletter is correct. The NSTF reserves the right to make changes as it deems necessary.

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