No. 37

science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

SCIENCE SPAZA

www.sciencespaza.org

A BETTER WAY TO READ FINGERPRINTS

CSIR DEVELOPS NEW FINGERPRINT SCANNING METHOD

THE COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH (CSIR) HAS DEVELOPED A NEW METHOD OF ***READING FINGERPRINTS*** USING A TECHNIQUE CALLED OPTICAL COHERENCE TOMOGRAPHY (OCT)! THIS MEANS THAT THEY USE ***LIGHT FROM A LASER***, TO FIND EVEN THE SMALLEST DETAILS OF A FINGERPRINT.

Knowledge is Ncah!

ACTIVITY: DUSTING FOR FINGERPRINTS

YOU WILL NEED:

- A DRINKING GLASS
- DARK POWDER LIKE COCOA OR CHARCOAL POWDER
- SOFT PAINT BRUSH OR OLD MAKE-UP BRUSH
- TRANSPARENT STICKY TAPE
- SHEET OF BLANK WHITE PAPER

1. PRESS YOUR FINGERTIPS TO THE SIDE OF THE GLASS.

2. LIGHTLY SPRINKLE THE DARK POWDER OVER THE FINGERPRINTS TO COVER THEM.

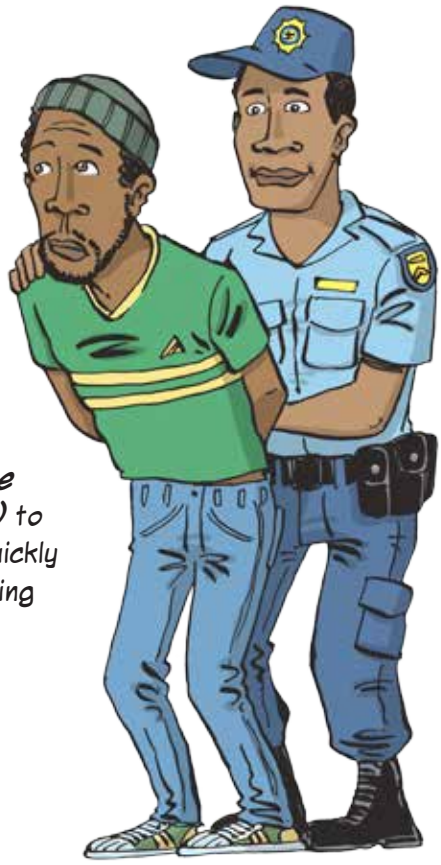
3. BRUSH GENTLY WITH THE BRUSH. THE FINGERPRINTS REMAIN.

4. PLACE THE STICKY SIDE OF THE TAPE ON THE DUSTED FINGERPRINT. PEEL OFF THE TAPE AND STICK IT ONTO WHITE PAPER.

WHAT'S HAPPENING HERE?

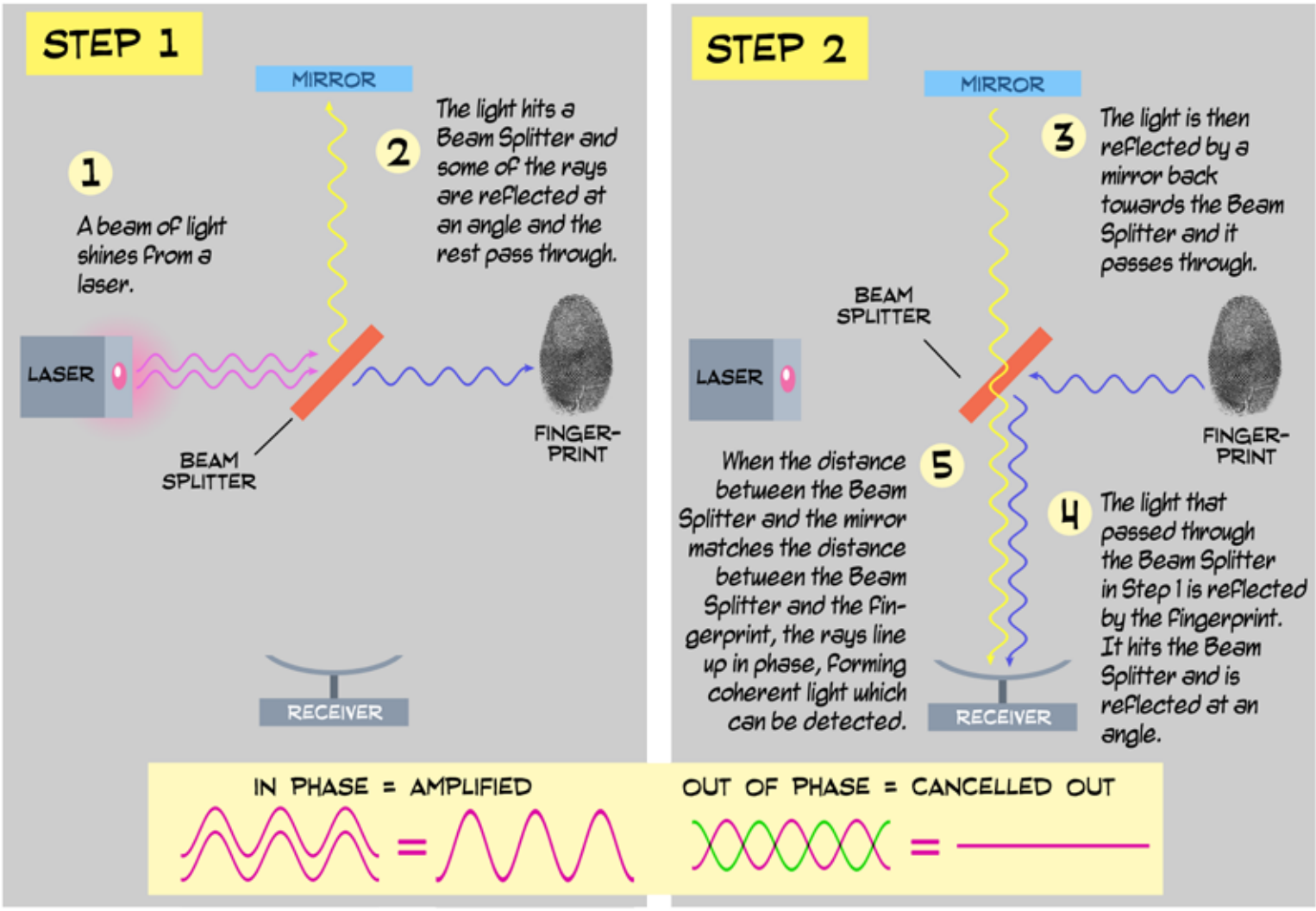
Each person has a unique fingerprint and can be identified by it. The activity you have just done is the current method used by police to catch criminals. However, it is a long, messy process and can destroy DNA evidence.

*Investigators will now be able to use **Optical Coherence Tomography (OCT)** to scan fingerprints quickly and without destroying DNA evidence.*



OPTICAL COHERENCE TOMOGRAPHY

OCT scanning uses light to scan fingerprints, and gives a much more detailed result. Here's how it works:



CAREERS:

Forensic Science Technicians

collect and examine evidence at a crime scene such as fingerprints, hairs and clothing fibres. The evidence is then analysed at a crime lab.

Dermatologists

are doctors who treat skin, hair, nails and mucous membranes (the lining in the eyelids, mouth and nose). They often use lasers in their treatments. The OCT technology will also benefit dermatologists in the future.

Sisanda Makinana is from the Eastern Cape. She has an Honours degree in Applied Statistics and a Master's degree. She is a Biometric Researcher at the Council for Scientific and Industrial Research (CSIR). She is part of the team that developed the technology for a new generation of fingerprint sensing.

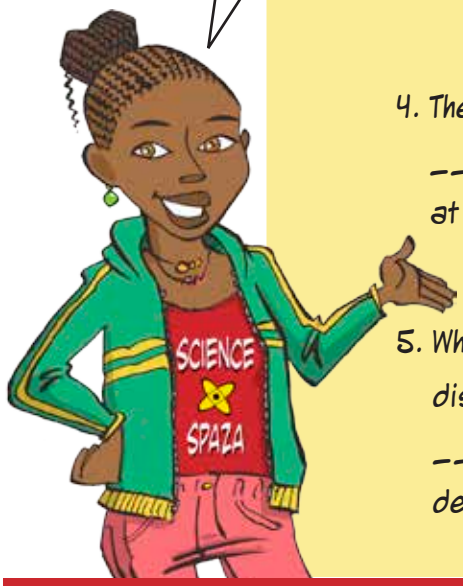
CURRICULUM LINKS

- **GRADE 11 - 12:** Physical Science – Waves, Sound & Light
- **GRADE 12:** Life Sciences – DNA

PUZZLE YOUR MIND!!!

FILL IN THE BLANKS USING THIS LIST OF WORDS:

- REFLECTED
- BEAM SPLITTER
- FINGERPRINT
- IN PHASE
- LASER
- COHERENT



1. A beam of light shines from a _____

2. The light hits a _____ and some of the rays are reflected at an angle and the rest pass through.

3. The light is then _____ by a mirror back towards the Beam Splitter and it passes through.

4. The light that passed through the Beam Splitter in 2. is reflected by the _____. It hits the Beam Splitter and is reflected at an angle.

5. When the distance between the Beam Splitter and the mirror matches the distance between the Beam Splitter and the Fingerprint, the rays line up _____, forming _____ light which can be detected.

START YOUR OWN SCIENCE SPAZA

Do you want to start a science club at your school? Send us the following information and Science Spaza will contact you.

School: _____ Name: _____

Telephone number: _____ Email address: _____

Postal address: _____

_____

Visit www.sciencespaza.org, email info@sciencespaza.org, sms or WhatsApp us on 076 173 7130 or write to us at PO Box 22106, Mayor's Walk, 3208

science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

The Department of Science and Technology contributes to increased well-being and prosperity through science, technology and innovation. For more information visit: www.dst.gov.za

The Council for Scientific and Industrial Research undertakes directed and multidisciplinary research and technological innovation as well as encouraging industrial and scientific development in South Africa.

CSIR

YAZI CENTRE FOR SCIENCE & SOCIETY IN AFRICA

Science Spaza is managed under the auspices of the YAZI Centre for Science and Society in Africa (NPC-K2015047709, Non-profit Organisation 151-830 NPO). www.yazi.org.za

SCIENCE SPAZA