

## Smart materials for a better future

New smart materials can be produced to make energy storage and medical technologies more efficient.

Professor Mokhotjwa Dhlamini is a professor in physics at UNISA.

The world's drive for a transition to sustainable energy systems, effective medical treatment and other advanced technologies requires new smart materials with special properties.

Researchers are, for instance, searching for materials that make it easier and more efficient to harvest, transport and store energy and to convert it from renewable sources. In other fields, researchers are looking to find out more about the way that living systems function. When it comes to cancer treatment, better, more rapid pathological analysis and highly contrasted, real-time bioimages are a necessity.

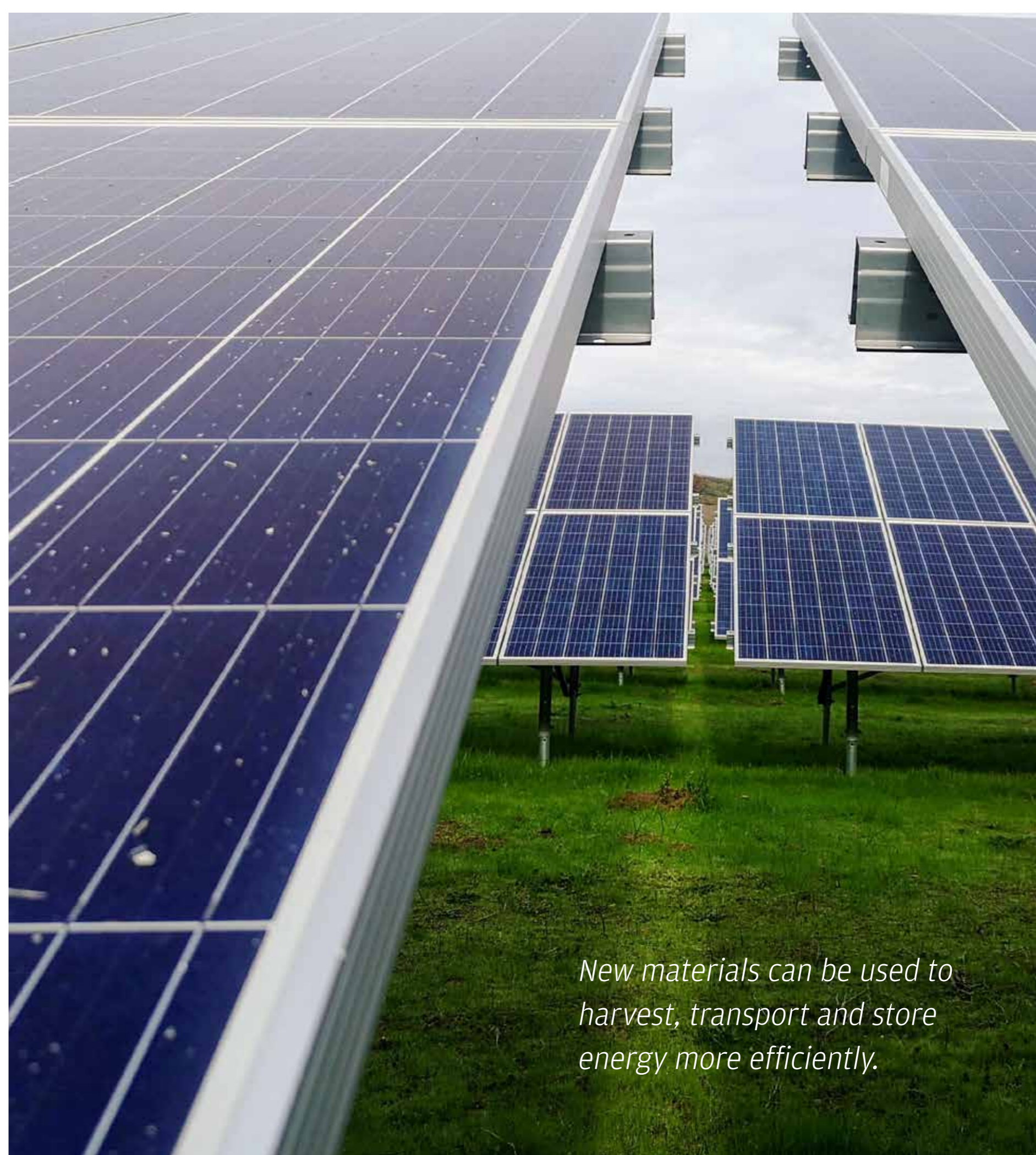
Researchers at UNISA are working towards finding new materials for these situations. These materials can be manipulated by external stimuli in a controlled manner.

"Recently, fluorescence microscopy has become increasingly popular, because it can distinguish small biological structures at the cellular, subcellular and molecular level," says Professor Mokhotjwa Dhlamini. "Furthermore, researchers at UNISA aim to fabricate LED devices for medical purposes by using thin-film optics technology. The devices would generate certain tunable wavelengths

that are needed to treat tumour cells during photodynamic therapy. The fabrication of devices using the materials that have been prepared in-house will put us in a better position to control device performance."

The main aim of the research

project is to provide solutions to challenges by providing the new, innovative materials that are required for sustainable energy and health systems. Ultimately, the research will result in the fabrication of devices from these materials.



*New materials can be used to harvest, transport and store energy more efficiently.*



# THE ART OF RESEARCH