



Lighting up the dark

Glowing nanomaterials could guide surgeons to cancer cells during operations.

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Mathevula, L.E., Mothudi, B.M. and Dhlamini, M.S.. "Effect of Er3p on structural and optical properties of microwave synthesized D-Fe2O3 nanoparticles", Physica B 578 (2020) 411698.

<https://doi.org/10.1016/j.physb.2019.411698>.

Doctors operating on cancer patients often struggle to isolate the specific cells to target or cut out during medical procedures. A guiding light would be extremely useful in situations like these, assisting doctors with where to cut.

A nanomaterial designed from a combination of iron oxide, which is not harmful to humans, and an element called erbium is a possible solution to this problem. The combination of these materials creates a nanomaterial that glows when it is activated by a light source.

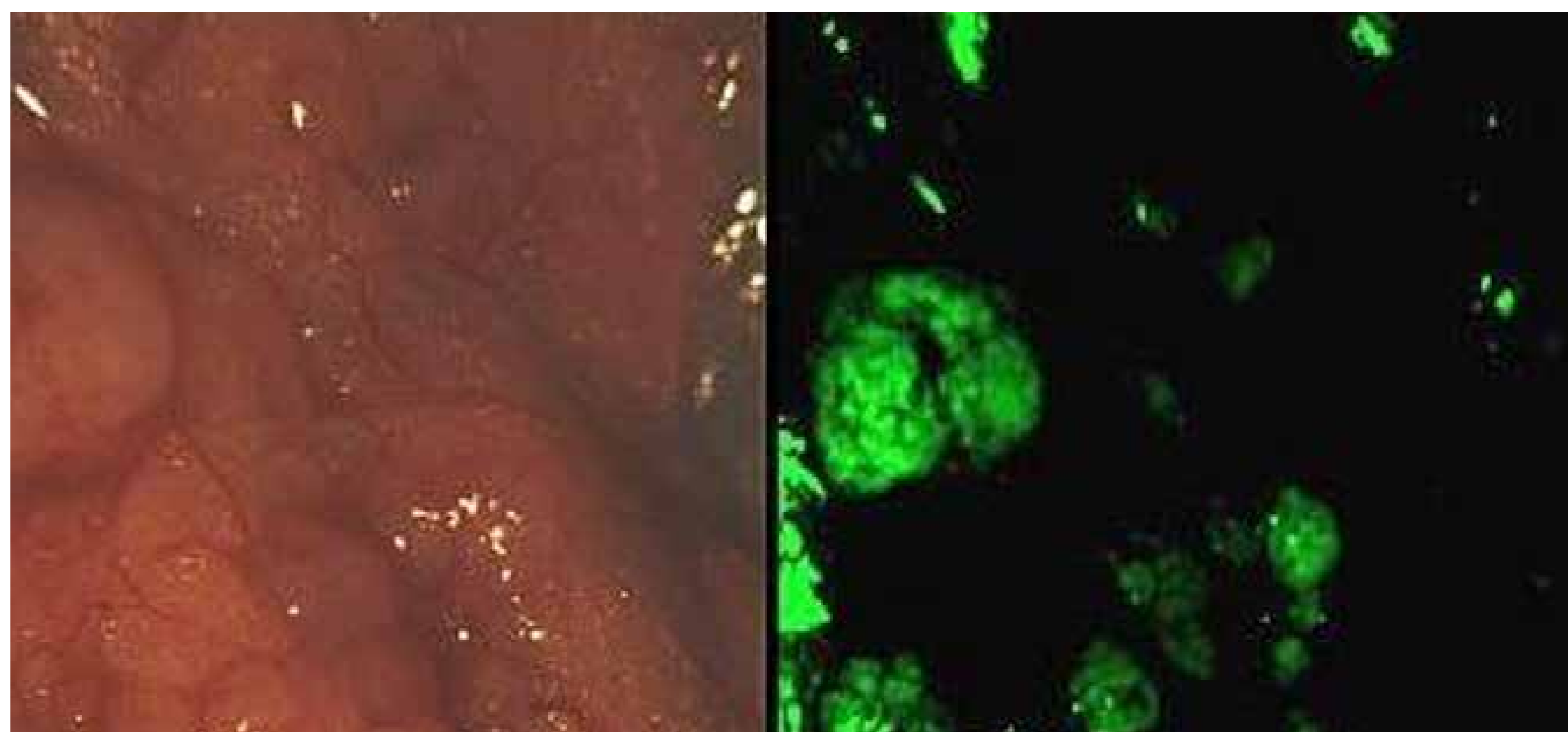
"These glowing chemicals are called photoluminescent nanomaterials. Photoluminescence is a spontaneous emission of light by a substance when it is illuminated by a light source. Nanomaterials are nanoscale substances made of very tiny particles," says Dr Langutani Mathevula.

Mathevula and colleagues at UNISA have been working on the development of nanomaterials in their laboratories to assist the medical sector. These materials may soon be available for use in

actual operations.

"The nanomaterials are extremely tiny, so they can bind with the smallest of cancer cells. The patient could ingest the nanomaterial, which, after some time, would go to the cancer-affected areas in the patient's body," says Mathevula.

When activated by a light source, the glowing nanomaterials would then lead the doctors directly to the cancerous cells that need to be treated.



Glowing nanomaterials can point out cancerous cells to surgeons: compare the old view (left) with the new (right).



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