

SPECIFIC's water treatment project is an innovative product, which spun out of our work on titanium dioxide layers in photovoltaic cells.

A photoactive coating of titanium dioxide (TiO₂) nanotechnology on water containers, roofs or walls, utilises UV light and degrades organic pollutants to gas.

There are many possible applications of this technology for the water treatment industry in both developing and developed parts of the world.



Technology Transfer Fellow Dr Ashley Pursglove using the small scale water treatment demonstrator.



*One in nine people worldwide doesn't have access to improved sources of drinking water and one in three lacks improved sanitation.**



*Industry dumps an estimated 300-400 MT of polluted waste in waters every year.**

* UNwater.org water quality factsheet 2013



Our water treatment test facility successfully breaks down the coloured dye Indigo Carmine (similar to the dye used in jeans) through constant flow of the waste water over the active plates in the presence of the sun.

Led by



Swansea University
Prifysgol Abertawe

Funders

EPSRC

Engineering and Physical Sciences
Research Council

We work with
Innovate UK



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Llywodraeth Cymru
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Key Features

- Fixed treatment – the titanium dioxide is immobilised and no further chemicals are added
- Nanoparticles create an extremely large photoactive surface area
- Simple but novel technology using low cost ingredients
- Rapid processing routes suitable for scale up
- Use on a variety of substrates including steel, glass, glass fibre and steel mesh

Applications

- Sewage treatment
- Municipal water
- Dyestuffs (textile, food and beverage industry)
- Paper mills
- Fracking
- Water fountains
- Drinking water
- Oil remediation
- Swimming pools



Advantages of the water treatment innovation

- Capable of reducing organic contaminants
- Capable of destroying a large proportion of micro-organisms
- Coating is chemically regenerative - minor abrasion from any particles in wastewater renews the coating
- Photoactive coating can be immobilised onto flexible substrates
- Coated substrates are simple and inexpensive - renewal is easy, low cost and practical
- Low capex and opex costs as coating utilises natural sunlight
- Pilot line and up-scaling know how - geared towards reel-to-reel manufacture

Strategic Partners

