

## Sunlight to clean up pollutants

A research effort led by Dr. Gianluca Li Puma at the University of Nottingham is developing a novel type of reactor, the fountain photo-catalytic reactor, to destroy persistent contaminants such as pesticides and pharmaceutical residues. The technology, which breaks down molecules into carbon dioxide and water, could provide a breakthrough for a sustainable way of cleaning up water supplies and industrial wastewater.

The new reactor employs the photo-catalyst titanium dioxide, instead of granular activated carbon, to treat contaminated water. Titanium dioxide is added to the contaminated water and the water is pumped out through a special nozzle, which produces an umbrella-shaped fountain of water. Sunlight or artificial ultraviolet (UV) light is made to fall on the canopy of this umbrella. Titanium dioxide absorbs the UV component, causing a change in its internal electron configuration. In this form, it can split water into free radicals. One of

these, the OH radical, readily reacts with large carbon-based molecules, such as pesticides, converting them into carbon dioxide and water. Once the pollutants are removed, the water can be passed to a settling tank where the titanium dioxide can be recovered and reused. *Contact: Dr. Gianluca Li Puma, The University of Nottingham, University Park, Nottingham NG7 2RD, United Kingdom. Tel: 44 (0) 115 951-5151; Fax: 44 (0) 115 951-3666; Website: [www.nottingham.ac.uk](http://www.nottingham.ac.uk).*