

Solar Photocatalytic Water Purification

G. Odling, A. Ivaturi, E. Chatzisyneon and N. Robertson

School of Chemistry, University of Edinburgh, Joseph Black Building, David Brewster Road, Edinburgh, Scotland EH9 3FJ

Contamination of drinking water sources is becoming increasingly problematic in the modern world¹. The presence of harmful organic molecules, inorganic heavy metals and bacteria render much of the planets readily available water unfit for consumption. Many of those worst affected by poor water quality live in rural locations with little infrastructure to allow purification of their water supply, and therefore require a simple, standalone and cheap solution to this problem.

Solar photocatalysis has received much attention in recent years as a potential method by which water purification may be achieved in such areas². Titanium dioxide (TiO₂) is the only commercial material to date, however it's performance is limited under solar irradiation due to poor absorption of visible light³.

We have developed a composite film based upon TiO₂ which has been modified such that it better fits the solar spectrum. The films have proven to be effective against both organic, inorganic and bacterial targets in water, as well as highly re-useable, lending themselves to long term use.

References

- 1 World Health Organisation Water Fact Sheet No. 391, WHO, 2014.
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- 3 M. R. Hoffmann, S. T. Martin, W. Choi and D. W. Bahnemann, *Chem. Rev.*, 1995, **95**, 69–96.