



STS Instruments Ltd

STS - SMF4 Catchment Monitoring & Pollution Tracing



*The STS SMF4
Portable Fluorimeter*

- *Measurement of organic pollutants in water.*
- *Instant readings on site without laboratory analysis costs and timescale.*
- *Tracing pollutant sources back to origin.*
- *Data logging & remote monitoring capabilities.*
- *Can be used by unskilled operators for routine monitoring.*
- *No consumables or reagents required*

The fully portable SMF4 Fluorimeter allows instant quantification of Tryptophan like fluorescence, a surrogate for BOD, in water samples on site, allowing immediate decisions to be taken regarding water quality and control actions.



*Tryptophan like fluorescence
is often associated with CSOs*



*The SMF4 uses disposable
5ml plastic cells.*

This technique simplifies and quantifies investigations into cross connections in sewers and recycled water systems, illegal discharges to surface waters and monitoring consent agreements. Operation and control of the instrument has been streamlined so that it can be used by non-scientific staff. The

instrument requires only a 5ml sample and so is not reliant on there being sufficient water depth for a probe. Both Quartz cells and plastic disposable cells may be used, dependant on the task.



Misconnection monitoring at the road side

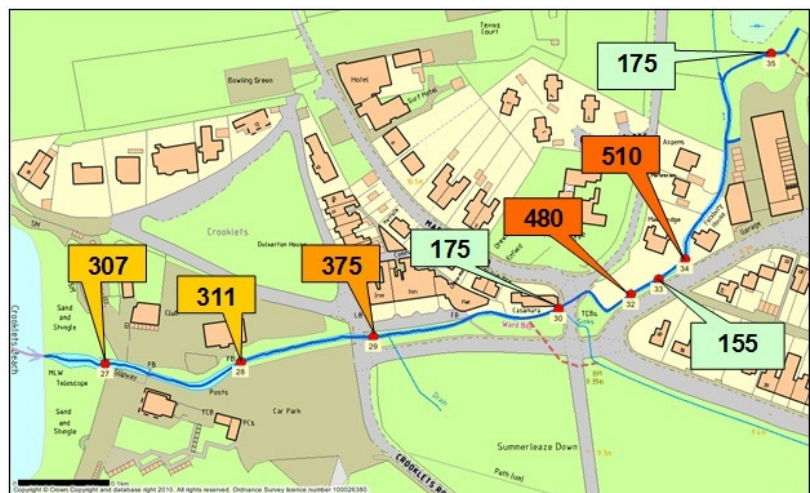
The great benefit of the SMF4 is the speed of measurement (less than 2 secs) enabling extensive surveys to be undertaken, recorded and analysed within a matter of hours, whilst also giving real time information on immediate pollution issues.

The example below is of a river monitoring exercise carried out in Bude (UK). The darker orange figures show elevated readings above normal background suggesting pollution of the watercourse with faecal derived matter. The elevated readings can then be traced back up the outflows to identify the actual source of the pollution in real time without having to send samples back to the lab for costly analysis.

Tryptophan is an excellent indicator of faecal pollution and its measurement by fluorescence is straightforward. Strong correlations can be made between tryptophan and the standard Biological Oxygen Demand test, but with an instant result rather than a 5 day delay.

Care must be taken however when making correlations to BOD.

Tryptophan like fluorescence can give a good correlation to BOD for a known water matrix but transposing that correlation to another water matrix may not be appropriate. There are also several sources of BOD which will not contain any Tryptophan like fluorescence such as Glycols from de-icing fluids and sugars from fruit processing. These will give potentially very high BODs but would return virtually zero Tryptophan counts.

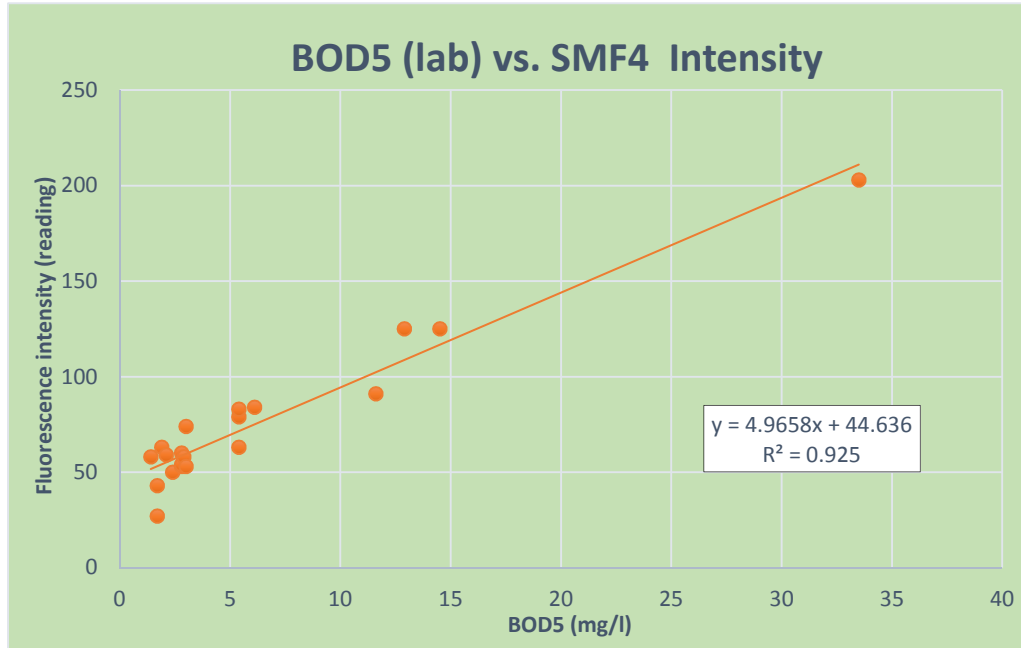


Bathing water outfall monitoring at Bude



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The graph below shows an example of the established correlation between BOD and SMF4 fluorescence intensity counts.



*BOD 5
Correlation
taken from
survey work
carried out by
the EA in
Birmingham*

The instrument has a very wide scope of use from Treatment Plant final effluent analysis through to direct pollution from farm, industrial and household point sources.

SMF4 units are being used in the field for online monitoring of reverse osmosis plants in Australia, analysis of borehole water in South Africa, process optimisation in Nevada USA and Cross Connection investigation of foul water sewers to storm water drains in the UK.

The SMF4 is also configurable to monitor for Optical Brighteners in sewer systems and rivers. Optical brighteners are by their very nature excellent at fluorescing and so easy to monitor. OBs are particularly of use for tracing domestic washing machine outfalls through misconnections to storm water sewers.



The SMF4 with integrated swing top cell cover may also be configured for Optical Brighteners



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Users of the SMF4 are the water companies in seeking to improve bathing water quality, resolve cross connections and achieve required consents, and the enforcement agencies, in their monitoring of such consents and in the identification of diffuse and point source pollution.

Technical Specification for the STS - SMF4 Fluorimeter

- Size including carrying handle 18 x 30 x 15 cm
- Weight including batteries 2.2 Kg
- Splash proof sealing
- LCD Display 93 x 70 mm
- Dimmable Backlight
- Internal rechargeable batteries with 30hrs continuous life or 4 weeks logging
- 3 sensitivity level settings
- Integrated cell cover
- Downloadable Internal Memory data capture of up to 2000 sample records
- Automated serial sample data recording



Published articles on the SMF4 are available via the website

www.instantbodmonitoring.com

More Products from STS:

STS Instruments specialises in the design, development and manufacture of scientific instruments for a range of markets including pollution monitoring for the Water Industry, dye measurement and spectral analysis in the Printing Industry, Transferable contamination research for the Military and Agriculture sectors and Siloxane Monitoring of Biogas for the Waste water and Landfill Industries.



STS Siloxane Monitor



STS SMF3 Whole body fluorimeter



STS SMF2 Spectrofluorimeter