



# Optics and Photonics Group Lunchtime Seminar

## “Optical fibre sensors for biomedical applications”

Sergiy Korposh

### 1. Intensive care unit

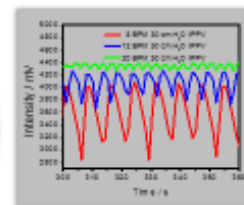
Sensors around endotracheal tubes: Propofol detection, selective bacterial detection;



Smart ETT with optical fibre sensors

### 2. Point of care sensor

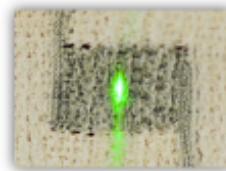
Breath biomarkers: ammonia, VOCs, etc.



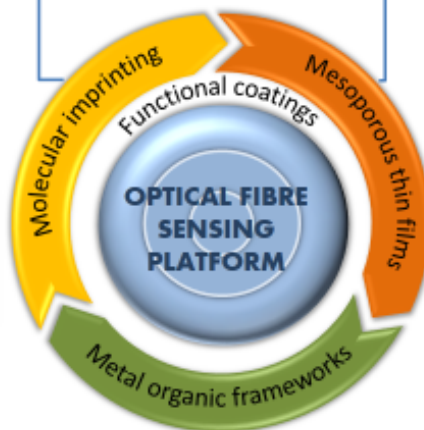
Respiratory rate measured using optical fibre humidity sensor

### 3. Wound healing

Wearable sensors embedded into textile; Detection of gaseous wound biomarkers: CO<sub>2</sub>, VOCs;

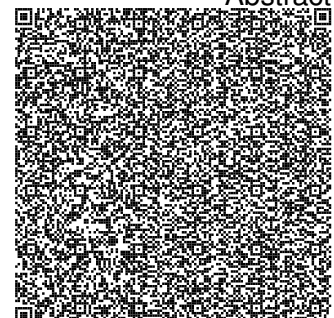


Photonic textile



12:00pm Thursday 23rd February 2017  
203 Tower Building  
All Welcome

Abstract



# “Optical fibre sensors for biomedical applications”

Sergiy Korposh

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All Welcome

Optical fibres functionalised with chemically sensitive layers offer a powerful platform for the development of sensing systems with a wide range of potential applications, ranging from the monitoring of industrial processes to healthcare. Sensors based upon optical fibres to probe the optical characteristics of nanomaterials that exhibit changes in their optical properties upon exposure to targeted chemical species are particularly attractive, due to their potential high sensitivity, selectivity, the ready ability to multiplex arrays of sensors, and the prospect for remote sensing. The variety of different designs and measurement schemes that may be employed using optical fibres provides the potential to create very sensitive and selective measurement techniques that can be deployed in real environments. The use of optical fibre sensors is finding increasing acceptance across a range of industrial sectors, with interest being driven by features of the technology that offer advantages over conventional measurement approaches in niche applications.

The presentation will discuss examples of the application of optical fibres sensors to improve the functionality of the medical devices, for biomarker detection and drug monitoring, and draws upon work that has been conducted as collaboration between teams at the Universities of Kitakyushu, Cranfield and Nottingham.