



## **PROF. SARAH BOHNDIEK**

**Department of Physics  
University of Cambridge**

### **Seeing Early Cancer in a New Light**

The dynamic cellular ecosystem of a growing tumour mass requires a vascular network to obtain oxygen and nutrients, as well as to remove metabolic waste products. Early in their development, tumours stimulate new blood vessel growth through a range of mechanisms to meet this need, leading to marked differences between normal and tumour tissue that could be exploited for early cancer detection.

The structure and function of the tumour vasculature can be revealed using optics, thanks to the strong absorption of light by oxy- and deoxy-haemoglobin. To extract quantitative biomarkers such as haemoglobin concentration and oxygenation from optical images, we combine novel spectral imaging methods with advanced computational analysis and biophysical modelling, applied in both preclinical cancer models and early phase clinical trials in patients. In this talk, I will focus on one aspect of these studies, applying multi- and hyper-spectral imaging during endoscopic surveillance of the gastrointestinal tract.