Lung cancer is the most common malignancy worldwide, with nearly 2 million new cases each year. This is a novel non-invasive optical method for the identification of malignant lung lesions. Lung cancer is usually diagnosed by histological examination of biopsies but identification of optimal sites for sampling is difficult and missed lesions can lead to an incorrect ‘all-clear’ result. This method enables real-time detection and identification of malignant and pre-malignant lesions during bronchoscopy, thus improving the selection of sites for biopsy.