



## Feasibility of self-monitoring of blood bilirubin levels by dual wavelength approach

Jean Pierre Ndabakuranye

University of Melbourne, Australia

### Abstract:

Bilirubin is clinically confirmed as a biomarker for liver health and has been utilized for assessing the prognosis of cirrhosis. Optical and chemical methods have been utilized to determine bilirubin levels in the blood. Whilst optical methods offer real-time monitoring, are handy and immune to infection among other substantial benefits, measurements may not be practical in some instances owing to the instrument complexity and space requirements. In this paper, we investigate the feasibility of using the dual wavelength technique with the aim of miniaturizing the setup. Our experiments were performed using blood phantoms within the pathological range projected from a healthy person to a cirrhotic patient (0.15 - 30 mg/dL). Results show a high sensitivity of bilirubin in blood phantoms with a larger predictive accuracy at higher bilirubin concentrations. This may provide an alternative



means of determining blood bilirubin levels mostly for cirrhotic patients.

### Biography:

JEAN PIERRE NDABAKURANYE is a PhD student at the University of Melbourne, Australia from 2017. He received his BSc degree from the National University of Rwanda (2010-2013) and his MSc from Hallym University, South Korea (2014-2016). His research interests are in optical MEMS, bioelectronics, and biomedical engineering technology.