

Practical Applications of miniaturised near-infrared spectroscopy for non-invasive diagnosis and personalised monitoring

UNIPD principal investigator

Silvia Benavides Varela, Assistant professor, Dipartimento di Psicologia dello Sviluppo e della Socializzazione - DPSS & Department of Neuroscience

Monash principal investigator

Bayden R. Wood, Professor, Chemistry

Other applicants

Diana Bedolla, Adjunct to Monash, School of Chemistry, Monash University
Judith Gervain, Professor, Department of Developmental and Social Psychology, University of Padua
Sabrina Brigadoi, Assistant Professor, Department of Developmental and Social Psychology & Department of Information Engineering, University of Padua

Instrument

Joint master's and/or doctoral training workshop

Description

The aim of the project is to run an interdisciplinary workshop with PhD/Masters students at the University of Padua where students will learn about the latest developments in non-invasive spectroscopy from experts in the field. The workshop will be designed to offer students hands on experience using the latest near infrared matchbox size spectrometers currently used by the group at Monash and which will be loaned by its commercial partner for the project. Students will learn innovative methods to record and process near-infrared spectra using basic multivariate approaches. A one-day workshop will be organized, with local speakers, Masters/PhD students and with the support of the commercial partner providing spectrometers. In the following days, post workshop activities will include detailed discussions between the two groups on how to enhance the collaboration and to earmark some collaborative projects that will involve student exchange. The investigators also plan to have discussions with the commercial partner on leveraging funding to apply for commercial grant opportunities. The company is very keen to explore new markets with their technology and see this workshop as a golden opportunity to find new applications of their match box size spectrometers.

Expected results

The impact of the project will be four-fold :

1. It will provide new opportunities for collaborative projects between the NIR spectroscopy groups at Monash Melbourne and University of Padova.
2. The workshop will provide students with new skills applying state-of-the-art NIR miniaturised technology to real world applications in clinical medicine and psychology. They will also be able to meet and discuss NIR spectroscopy with the experts in the field and develop and grow partnerships.
3. The industrial engagement with the envisaged partner opens the door for joint funding for both groups through targeted grants with both cash and in-kind support. The engagement also provides students with potential opportunities to work for the company.
4. The workshop and ensuing collaborations seek to translate non-invasive NIR spectroscopy to the fields of clinical medicine, psychology, brain development and ultimately personalised medicine. These are major research themes and strengths of both institutions and fit into theme of health innovation which are research strengths.