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Development of a Supercontinuum based Nonlinear Optical Microscopy setup

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Nonlinear Optical microscopy (NLOM) has been used in recent years in probing biological tissues both in vivo and in vitro due to its numerous advantages such as intrinsic 3D imaging with submicron spatial resolution, decreased photodamage, increased depth of penetration and the ability to perform label-free imaging. The integration of a broadband supercontinuum (SC) light source within a NLOM setup provides the versatility of accommodating multiple imaging modalities in a single setup, while also increasing the intensity of the output signal as a result of the high peak intensity achieved through temporal pulse compression of the SC pulse. This research focuses on the development of a SC based NLOM setup with a broadband source generated from a passive highly nonlinear All Normal Dispersion Photonic Crystal Fiber (ANDi-PCF). Spectral phase distortions caused by the nonlinear properties in the PCF are also characterized and corrected using a Multiphoton Intrapulse Interference Phase Scan (MIIPS) compression algorithm. Preliminary results will be shown and discussed.

Apply to be
 considered for a student
   award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
   PhD, N/A)?

PhD

Main supervisor (name and email)
and his / her institution

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Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

No

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