



**2<sup>nd</sup> April, 2015 - 11:00 am**  
CFEL-bldg. 99, seminar room IV (O1.111)

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## **Clinical virtual biopsy imaging by using optical harmonic generation microscopy**

Virtual biopsy techniques, for imaging cells and tissues at microscopic details capable of differentiating benign from malignant lesions non-invasively, are highly desirable. Without removing tissues, in vivo virtual biopsy not only avoids or minimizes the various disadvantages associated with the physically invasive biopsy procedure, but also reduces the cost and time for traditional pathological decision. Optical virtual biopsy could also potentially provide a more comprehensive bedside non-invasive total lesion scanning for improved clinical disease classification and therapeutic guidelines, and a feasible way for continuous disease monitoring during and after treatment.

In this talk, I will review our effort in developing a state-of-the-art optical virtual biopsy system based on the least invasive multi-harmonic generation microscopy (HGM). Our in vivo clinical study indicated that the HGM system outperforms other imaging techniques in providing higher penetration depth, higher spatial resolution, and minimized photodamage and phototoxicity. This system enables 3D subsurface imaging in vivo without the need for surgical approach.