



3rd March, 2014 - 13:00
bldg. 99, seminar room IV (O1.111)

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Pushing limits in the mid-IR – high average power, few-cycle OPCPA and applications

The availability of amplified few-cycle pulses delivered with unprecedented control over the electric field has enabled a number of advances in our understanding of highly nonlinear processes. Over the past decade, most milestone results have been achieved using 800 nm wavelength, carrier-envelope phase (CEP) stable pulses derived either from OPCPAs or from spectrally broadened Ti:Sapphire CPA systems. Theoretical and experimental studies have nevertheless consistently pointed that long wavelength laser sources will be key enablers to scale a number of highly nonlinear processes such as e.g. supercontinuum generation, optical pulse self-compression or high harmonic generation (HHG).

In this presentation, a unique 3 μm wavelength OPCPA operating at high average power and delivering CEP stable few-cycle pulses will be described. The uniqueness of the OPCPA technology to amplify few-cycle pulses in the mid-IR spectral range will be highlighted. Selected applications illustrating the tremendous potential of mid-IR laser sources to drive and scale highly nonlinear processes in solid-state materials will be presented.

