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Investigation of the time-dependent electric field induced second harmonic signal from the Si/SiO₂ interface

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Abstract content
   (Max 300 words)

It has been observed that the second harmonic (SH) signal generated at the Si/SiO₂ interface varies on a time scale of several seconds when illuminated with high intensity near infrared laser pulses (λ=800 nm, 75 ± 5 fs pulses, 80 MHz repetition rate, Epulse ≤ 10 nJ). The temporal behaviour arises from the generation of trap sites and subsequent trapping of charges at the interface via multi-photon processes. These trapped charges create an interfacial electric field which influences the nonlinear properties of the Si/SiO₂ interface and leads to a time dependent second harmonic signal on continuous irradiation. This is known as electric field induced second harmonic (EFISH) generation. Initial experiments confirming some of these earlier results from our laboratory will be presented as well as the experimental setup for our future planned experiments. These future measurements will focus on the simultaneous measurement of the EFISH signal from a free standing oxidized Si membrane both in reflection and transmission as a function of incident polarization orientation and angle.

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

Yes

Level for award
 (Hons, MSc,
   PhD)?

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)?

Yes

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