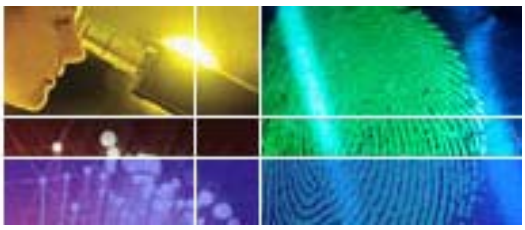


December 10, 2008

Newsletter December 2008

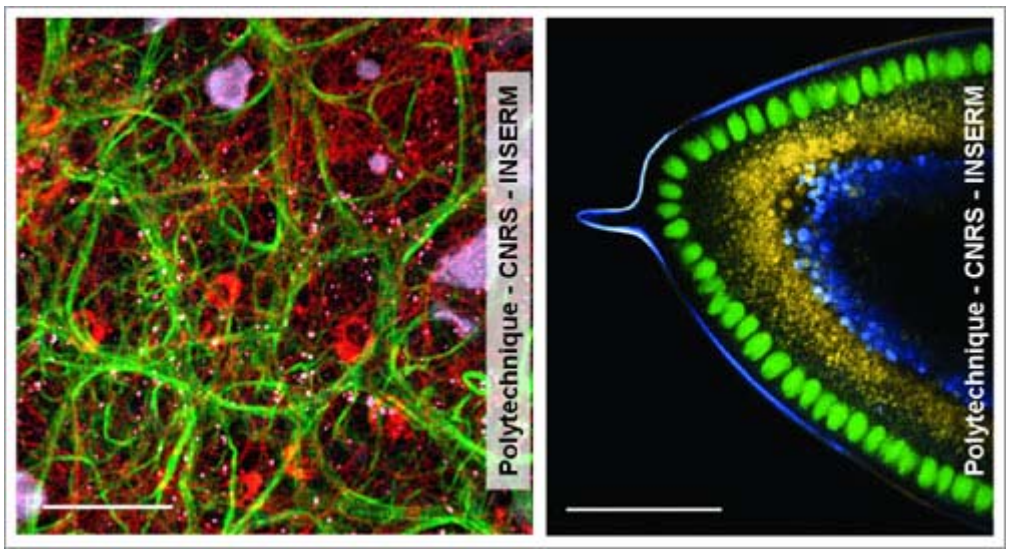
MPE Applications with Coherent Chameleon Laser

The Chameleon by Coherent was introduced in 2003 and has rapidly become the laser of choice for MPE microscopy. It is the undisputed leader in terms of tunability, power, tuning speed, wavelength extensions (OPO), ease of use and reliability.

***

Dr Emmanuel Beaurepaire and his colleagues at Ecole Polytechnique LOB (Lab for optics and biosciences, Palaiseau France) are recognized experts in novel imaging techniques for investigation of embryo development and intact tissues, such as MPE, 2nd and 3rd harmonic generations. Dr Beaurepaire uses his Chameleon Ultra II to excite fluorescent proteins like GFP or to perform imaging without any markers (endogenous contrast using natural fluorescence or SHG/THG generation). The laser is also being used for photo ablation and OPO pumping, also for THG imaging.

Dr Beaurepaire particularly enjoys the extra power out of the Chameleon, "very usefull to get the best out of the OPO or even do a split use between the Chameleon and the OPO for imaging and/or ablation". He comments that bio-physicists like him who previously used the old generation of Ti:S oscillators now appreciate the full automation of the laser "we can really focus on the experiment, not on the laser, and we also have to spend some development time on our home made microsocpe". He also appreciates the long term stability of the laser performance, and its compact size.



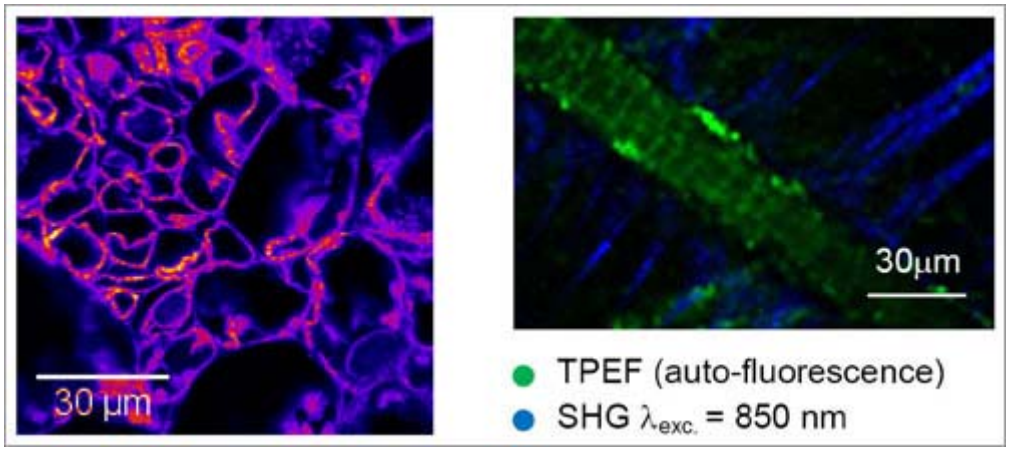
Multimodal multiphoton imaging of intact tissue. Left: Rat lung tissue. Green: SHG (collagen fibers); Red: endogenous 2PEF; Pink: THG. Right: Drosophila embryo. Green: GFP 2PEF (nuclei); blue: endogenous 2PEF; Yellow: THG. Scale bars: 50 µm.

References: www.lob.polytechnique.fr. Optics Letters 29, 2881 (2004) and Nature Methods 3, 47 (2006).

***

Another great user of the Chameleon is the mosaic group at the Fresnel Institute leaded by Dr Herve Rigneault that develops and investigates new optical imaging techniques for cell and tissues imaging. Principal investigator Dr Patrick Ferrand uses the Chameleon Ultra II for two photon imaging and fluorescence correlation spectroscopy on a custom made laser scanning confocal microscope that possesses two fully independent measurement spots. Such a system permits to perform multimodal simultaneous measurements at two distant locations within the sample. Another possibility is to combined MPE and SHG. Dr Ferrand enjoys the Chameleon ability to adjust quickly the desired wavelength and the full automation and reliability of the laser system.

The laser is also being used in combination with CARS microscopy to provide multicontrast imaging on the same sample.



Multiphoton imaging. Left: TPEF (auto-fluorescence) of a cut of lily ovary. Right: TPEF (auto-fluorescence) and SHG of a fresh mouse node without additional fluorescent marker.

***

About Coherent, Inc.

Founded in 1966, Coherent, Inc. is a world leader in providing laser-based solutions to the commercial and scientific research markets.

To find out more about Coherent, visit our websites at www.coherent.fr
and www.coherent.com or call +33 1 69 85 51 45

Visit Coherent, a world leader in providing laser-based solutions to the commercial and scientific research markets with the largest Laser-Portfolio.

Superior Reliability & Performance

Coherent France, Domaine Technologique de Saclay – 4 rue René Razel – Bâtiment Azur
91892 Orsay cedex
Tel : 01 69 85 51 45 – Fax : 01 69 85 51 46