筑波大学物理工学域 専攻セミナーのご案内

2014 年 11 月 11 日（火）15：00-17：00@3F800

JSPS 二国間共同研究（日仏）により、フランス・リモージュ大学から 4 名の研究者が筑波大学を訪問いたします。これにあわせて、Rod O'Connor 先生と Vincent Couderc 先生の二名の先生による、光エレクトロニクスに関するセミナーを開催することとなりました。お忙しい中大変恐縮ですが、ご出席頂けますと幸いです。

世話人：加納英明

電子メール：hkano@bk.tsukuba.ac.jp

参考：Limoges University XLIM：http://www.xlim.fr/

"Bioelectrophotonics: The application of biophotonics tools to study the biological effects of ultrashort pulsed electromagnetic fields" (by Rod O'Connor)

The BioEPIX lab at XLIM is a new lab interested in the application of optical imaging and biophotonics tools to bioelectrics research. Tools developed in our past work using optogenetics to manipulate olfactory sensory coding in mice with light, and using in vivo multiphoton microscopy to dissect and image the brain, are now being applied to understand the effects of ultrashort pulsed electromagnetic fields (picosecond-nanosecond, MV/m) in vitro and in vivo. Our lab is now combining live cell imaging, multiphoton microscopy, electrophysiology and molecular techniques to explore the mechanisms of ultrashort pulsed electromagnetic fields with the hope of exploiting their significant potential for cancer therapeutics and neuromodulation.

"Microwave assisted nanosecond CARS multiplex system" (by Vincent Couderc)

Recently, nanosecond electrical pulses have been used for ultrafast stimulation of cells. Bioeffects on internal cell membranes and manipulation of subcellular structures has been obtained. In my talk, I will first describe how it is possible to couple multiplex CARS measurement with an ultrafast electrostimulation system. I will present, in details, the optoelectronic generator technology and CARS measurements versus electrical polarization. That unconventionnal mixing between electrical and optical waves can allow improving or decreasing CARS signal by using molecular orientation. Additionally, evidence of optoelectrical cooling of paraffin molecules will be shown.