

Giovedì, 6 giugno 2019, ore 4 pm (2h), c/o MO 25, Aula P1.5 (Fa-1e)  
**Prof. Raphael Clerc, Institut d'Optique Graduate School**

*“Organic photodetectors :  
state of the art, operation and perspectives”*

Seminario nell'ambito del corso di Laurea Magistrale in Electronic Engineering e del Corso di Dottorato di Ricerca in ICT

Tutti gli interessati sono invitati a partecipare

**Abstract:** *Organic photodetector is a promising technology for a large range of applications including efficient indoor solar cells, large area imagers in the visible and IR range or improved CMOS imagers.*

*This talk will first give an overview of the performances, status and perspectives of this emerging technology. It will also give several examples on how a simple “silicon-inspired” approach of device modeling can help in solving open questions in the development of these technologies.*

**Seminar Outlook:** *After an extended introduction, the basic of the operation of these printed devices will be presented: transport, contacts, trapping and light propagation. Recent advances in polymer doping will also be summarized. Then, the critical question of device reliability will be addressed, with in particular emphasis on the impact of oxygen contamination on device performances.*

*Moreover, the intriguing high level of gain (or photo-multiplication) observed in organic photo-resistance (as well as other technologies such as perovskite photo-resistance for instance) will be discussed, proposing an original interpretation of this mechanism.*

*All these examples demonstrate how a rather elementary device physics expertise can be useful, even in a chemistry driven technology such as organic photodetectors.*

**Raphael Clerc**, graduated from Grenoble Institute of engineering in 1998, is a professor at Jean Monnet University in Saint-Etienne and at the Optics Graduate School since 2012. His research focuses on the modeling of opto components - electronics in organic technology and / or silicon. In the field of organic electronics, he collaborates with IMS Bordeaux, ISORG, CEA LITEN and LETI.



Printed organic photodetector products on the market  
(Array 1536\*1600, pixel pitch = 50.8µm)  
X ray imaging (left) and fingerprint and vein recognition (right)