



Graphene Photodetectors Review in Nature Nanotechnology

ICFO and other international experts provide an overview and evaluation of state-of-the-art photodetectors based on graphene.

October 07, 2014

The conversion of light into electrical signals is considered to be the very core process of many of the technologies we use nowadays. As technology grows at a continuous and very rapid pace, the need for photodetection platforms that showcase higher speed, efficiency or wavelength range, is becoming extremely important.

In a recent review published in Nature Nanotechnology, ICFO Professor Frank Koppens and collaborating colleagues including Andrea Ferrari - president of the Graphene Flagship Executive Council, Thomas Mueller, Phaedon Avouris, Miriam Serena Vitiello and Marco Polini have discussed and put into perspective the current state-of-the-art photodetectors based on graphene, other two-dimensional materials, and hybrid systems based on the combination of different two-dimensional crystals and other (nano) materials, such as

plasmonic nanoparticles, semiconductors, quantum dots, or their integration with (silicon) waveguides.

Prof. Koppens who is a co-leader of the Optoelectronics work package in the Graphene Flagship, and co-authors have debated the versatility of these material systems, established as the building blocks for optoelectronic devices. Not only have they highlighted these systems as potential candidates for applications concerning ultrafast and ultrasensitive detection of light in the ultraviolet, visible, infrared and terahertz frequency ranges, but they have also presented the level of maturity and performance these are having with respect to current existing technologies.