Science and technology of two-dimensional crystals @ Istituto Italiano di Tecnologia, Graphene Labs

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Abstract

The Italian Institute of Technology (IIT) is a Foundation established in 2003 jointly by the Italian Ministry of Education, University and Research and the Ministry of Economy and Finance to promote excellence in basic and applied research. The research plan of the institute focuses on Humanoid technologies and Robotics, Neuroscience and Cognition, Nanotechnology and Materials. The Institute has a staff of about 1300 people, the central research lab being located in Genoa. IIT has a large experience with the management of large research projects and has been involved in more than 100 EU funded projects in the last 8 years. IIT headquarter in Genoa has a 30,000m^2 facility equipped with state-of-the-art laboratories for robotics, nanoscience and neuroscience, and 10 Research Centres all over the country. Since September 2013 IIT graphene research is collected under the umbrella of the IIT Graphene Labs (http://graphene.iit.it), which currently involves more than 30 researchers working on different aspects of graphene and 2d crystals science and technology. IIT Graphene Labs is actively involved in realising scientific and technological targets in the field of energy conversion[1,2] and storage[3], material production (*e.g.*, CVD[4] and solution processing[3]), deposition[5] and composite production[6], as well as heterostructures[7] and bio-nanotechnology (*e.g.*, biocompatibility essays, biomolecule-graphene interaction). We will also have a strong effort in dissemination and technology transfer activities. In particular, the technology transfer program of IIT Graphene Labs is developing through specific agreements with companies. At the moment we have in place agreements with more than 10 companies on different aspects of graphene technology. The relevant facilities available span from colloidal chemistry synthesis for nanoparticle production, electron microscopies, low temperature scanning tunnelling microscopies, optical spectroscopies from femtosecond to continues wave, a class 100 clean room for nanofabrication (600m^2) and finally a the processing and prototypes unit, equipped with state-of-the-art 2d crystals production and coating instruments.

References:

1 F. Bonaccorso, *et al*., *Science* **347**, 1246501, 2015.
2 G. Calogero, *et al*., *Chem. Soc. Rev*. DOI: 10.1039/c4cs00309h, 2015.
3 J. Hassoun, *et al*., *Nano Lett*. **14**, 4901-4906, 2014.
4 V. Miseikis, *et al*., *2D Materials* **2**, 014006, 2015.
5 G. Fiori, *et al*., *Nature Nanotech*. **9**, 768-779, 2014.
6 E. Jomehzadeh**,** *et al*., *Comput. Mat. Sci*. **99**, 164-172, 2015.
7 A. Gamucci, *et al*., *Nature Comm*. **5**, 5184, 2014.