FNM 2016 Program Committee cordially invites people to submit abstracts for The International Workshop on Functional and Nanostructured Materials to be held in Tbilisi, Georgia 6th -10th September 2016.

Processing 2D materials based devices, challenges and progress

G. Deligeorgis[1], K.Triantopoulos[2], F.Iacovella[2,3], V. Prudkovksiy[2,3], G.Stavrinidis[1]
[1] *FORTH – IESL Microelectornics Research Group, P.O.Box 1583 Irakleio, Crete, Greece*
[2] *Physics department, University of Crete, P.O. Box 2208, 70013 Heraklion, Crete, Greece*
[3] *Center for Quantum Complexity and Nanotechnology (CCQCN), Physics Department, University of Crete, 70013 Heraklion, Greece*

Graphene and other two dimensional materials have been at the forefront of electronics research during the past 10 years. Their extreme form factor as well as their unique properties have provided a new platform to develop devices with novel functionality [1] as well as flexibility. On the other hand 2D materials are inherently sensitive to their surrounding making processing complex circuits a challenge [2,3].

We will discuss integration of graphene based devices that provide complex high frequency functional circuits, amplification and radio signal detection based on the concept of ballistic transport on graphene. Ballistic transport provides a new class of THz enabling devices that outperform conventional devices based on drift diffusion. The idea of ballistic rectification[4] will be presented in more detail. Finally we will conclude by outlining the key technological building blocks such as contacts, dielectric e.t.c that enables such technology to be implemented in large scale, potentially flexible integrated circuits.

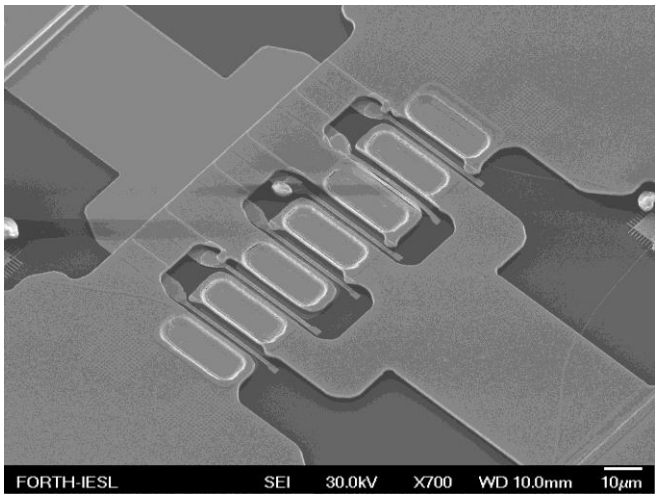

Figure 1. SEM Image of a high frequency graphene FET

[1] G. Deligeorgis, F. Coccetti, G. Konstantinidis, and R. Plana, Appl. Phys. Lett. 101, 013502 (2012).
[2] F. Schwierz, Nat Nano **5**, 487 (2010).
[3] F. Schwierz, Proc. IEEE 101, 1567 (2013).
[4] F. Coccetti, R. Plana, and G. Deligeorgis, in *Microwave Symposium Digest (IMS), 2013 IEEE MTT-S International* (2013), pp. 1–4.

FNM 2016 aims to bring together physics, material science and engineering communities to present and discuss their work on fundamental physics and applications of functional nanoengineered materials.