



**Southeastern Michigan Section
“Chapter IV” Speaker Series
Thu., Oct. 6, 2011, 5:00pm – 6:00pm
Networking and Refreshments at 4:30pm
Room #1005, EECS Bldg,
North Campus, University of Michigan
1301 Beal Ave, Ann Arbor, MI**



“Graphene-based Electronics for RF Communications and Sensing”

Tomás Palacios

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Abstract:

Electrical engineering is at a crossroads. For the last fifty years, semiconductors have been driving the development of information technology, which has completely transformed our society. Conventional electronics, however, is reaching scaling and performance limits which jeopardizes future developments. New materials with unique properties are necessary and graphene, a one atom thick layer of sp² bonded carbon, is at the top of potential candidates.

Graphene not only has outstanding transport properties, but it also shows many unique properties not found in any other high performance electronic material. It is flexible, transparent, ultimately scalable, easily transferable to any surface, and its ambipolar conduction offers new possibilities for advanced electronics. In this talk, we describe how the use of these properties allows the development of new devices, which can overcome some of the main limitations of traditional electronics in terms of sensitivity, maximum frequency, and linearity. Several novel devices will be discussed for RF communications and remote sensing, including graphene frequency multipliers, graphene RF mixers and graphene chemical sensors.

Speaker’s Biography:

Tomás Palacios is the Emmanuel E. Landsman Career Development Associate Professor of Electrical Engineering and Computer Science at the Massachusetts Institute of Technology (MIT). He is affiliated with the Department of Electrical Engineering and Computer Science and with the Microsystems Technology Laboratory. He studied Telecommunication Engineer in the Polytechnic University of Madrid, and he received his MS and PhD degrees in Electrical Engineering from the University of California - Santa Barbara in 2004 and 2006, respectively.

Tomás’ research interests include the design, processing and characterization of new electronic devices based on wide bandgap semiconductors for power amplification and digital applications beyond 100 GHz. He is also very interested in the development of new concepts for biosensors and bioactuators as well as in the use of the unique properties of nitrides semiconductors for power generation and conversion. His group is also focused on developing new applications and devices for graphene, a one-atom-thick new electronic material with amazing properties. When not at MIT, Tomás enjoys reading, listening to classical music, hiking and attending plays and concerts.

Tomás has been awarded the DARPA Young Faculty Award (March 2008), the Office of Naval Research’ Young Investigator Award (March 2009) and the National Science Foundation (NSF) CAREER Award (July 2009).

Public Invited