Planar Nano electronic Devices and Biosensors Using 2D Nanomaterials

Date: Tue. 3rd Oct.
Time: 1:10 pm on
Location: Building 59, Room 2013

Speaker:

Dr. Feras Al-Dirini
Assistant Professor EE Dept.

Abstract:

The recent discovery of two-dimensional (2D) nano-materials with unique electronic properties has introduced a new platform for the realization of electronic devices. This talk presents an array of Nano devices that can be realized within a single 2D monolayer, minimizing processing steps and enabling extreme miniaturization and CMOS compatibility. New classes of planar field-effect and resonant-tunneling devices that achieve rectification, Negative Differential Resistance (NDR) and tunable bio sensing are proposed, and their implementation using Graphene, MoS2 and Silicene is investigated.

Speaker Bio:

Dr. Feras Al-Dirini has recently joined the Electrical Engineering Department at KFUPM, in September 2017, as an Assistant Professor, coming from the University of Melbourne in Australia, where was working in the Electrical and Electronic Engineering Department since 2015. Dr. Al-Dirini received the PhD degree in Electrical and Electronic Engineering from The University of Melbourne - Australia in 2016 and the B.Sc. degree in Electronics Engineering from Princess Sumaya University for Technology - Jordan, with the highest honors, in 2011. In 2009 and 2010, he was an exchange student at the University of Illinois at Urbana–Champaign - USA, and in the summer of 2009, he was a Research Intern with the Institute for Microsystems Technology, Technical University of Hamburg-Harburg - Germany. His research interests are in the fields of Nano electronics and Nanotechnology, within which he has published 14 journal articles and 12 conference papers, including an invited paper.

Dr. Al-Dirini was a recipient of the Australian Postgraduate Award and the National ICT Australia Ph.D. Top-Up Scholarship from 2011 to 2015. In the year 2017 he was nominated by the University of Melbourne to the Australian Research Council's 2018 Discovery Early Career Researcher Award (DECRA) valued at 0.5 Million Dollars in research funding. He is a member of the IEEE and a member of the Australian Nanotechnology Network.