



School of Nano Science



IPM Condensed Matter &  
Statistical Physics Group

## Weekly Seminar

### Graphene based new nanocapillaries

Invited Speaker:

**Dr. Ali Esfandiar**

Department of Physics, University of Manchester(UK)

**Abstract:**

Nanoscale pores and capillaries have been studied intensively because of their importance in many natural phenomena and use in numerous applications. Based on our last findings, I present ultimately narrow and smooth capillaries that can be viewed as if individual atomic planes were removed from a bulk crystal, leaving behind flat voids of a chosen height. The capillaries are fabricated by van der Waals assembly of atomically flat materials using two-dimensional crystals for different fluids such as water, gases and ions. Our work opens a venue for making capillaries and cavities with sizes tunable to angstrom precision and permeation properties controlled through a wide choice of atomically flat materials available for channel walls. In continue a short overview of the key aspects of graphene and related materials, ranging from fundamental research challenges to a variety of applications in different fields will be provided. Along this direction, National graphene institute of UK will be introduced in terms of facilities and possibilities as a new center aimed to make a connection between research centers and industries.

Wednesday, 24 Shahrivar 95 (14 September, 2016), 2-3 pm  
Farmaniyeh seminar room