

Carbon nanotubes, graphene and other 2D materials for electronics and optoelectronics, past present and possibly future?

Abstract:

Graphene has been around for 15 years, Carbon nanotubes since the 90's and other two dimensional materials have been investigated for a decade. Was this time enough to materialize electronics based on those systems? Does Physics allow us to have a 2D based electronic platform or is there a fundamental flaw in such a quest? Is the initial promise for beyond Silicon electronics taking shape or is there – still – nothing that can replace conventional electronics? This presentation will focus on three parts:

We will initially review past work on the field of 2D and CNT electronics, material and device fabrication aspects will be discussed, our current understanding of the technology and device milestones achieved will also be presented. We will also critically compare the existing Silicon and conventional semiconductor technology to what is attainable today using 2D and CNT materials. Finally we will focus on the fundamental capabilities of 2D materials as we understand them now and discuss which of the initial promises is still viable and which is not.