

# Introduction to carbon nanotubes, graphene, and beyond graphene

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NT15, held in Nagoya, Japan, in 2015, is the next NTXX conference in the series of annual conferences held alternately in Asia, Europe, and North/South America since 1999. The first conference in 1999 was devoted to nanotubes emphasizing the science and potential applications of cylindrical structures of about a nanometer in thickness made of a single layer of carbon atoms. A tutorial introduction to the structure, properties, and applications of carbon nanotubes will be presented.

After several years, the NTXX conference series expanded to include graphene and graphene/nanotube-related studies, and this tutorial will also provide some tutorial background for understanding the structure and properties of graphene. More recently, the NTXX conference has expanded to include composites of nanotubes with few-layer transition metal dichalcogenides, which will therefore also be reviewed in this tutorial, along with the newest few-layered material, phosphorene, consisting of a few layers of the phosphorus allotrope black phosphorus, which was discovered in bulk form in 1914 and in few-layer form in 2014. The aim of his tutorial will be to welcome newcomers to this conference and to help them benefit from the presentations made by the international speakers.