Fundamentals of layered materials

12th of July, Professor Adam Babinski, University of Warsaw, Poland

Intense investigations of layered materials such as graphene and transition metal dichalcogenides (TMDs) followed studies of A.Geim and K. Novoselov who were awarded the Nobel Prize in Physics in 2010. The separation of single layers of those materials revealed a variety of their remarkable properties.

In this talk, fundamental properties of TMDs will be reviewed with the main focus on their optical properties. The effect of reducing the thickness of semiconducting TMDs down to the monolayer limit on the band-structure, electron-electron interactions, and lattice dynamics will be discussed. Practical perspectives of their applications will be shown.