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TMDs imaging and characterizations using Kelvin probe force microscopy

Abstract

Kelvin probe force microscopy, which is also called surface potential microscopy, is a tool that enables nanometer-scale imaging and mapping the local surface potential on the surfaces of various materials[1]. KPFM has found broad applications, ranging from corrosion studies of alloys, photovoltaic effects on solar cells, and surface analysis. Transition metal dichalcogenides (TMDs) have the general chemical formula of MX_2 , here M represents a transition metal element and X represents a chalcogen (e.g., S, Se, or Te). TMDs also consist of a layered structure which is similar to the structure of graphite[2]. Here, the monolayers of the TMDs have been grown through CVD method, which is a traditional technique for the preparation of thin films with large scale on different substrates. Here the physical properties of 2D TMDs monolayers are studied via Scanning probe microscopes.

References

- [1] Wilhelm Melitz, Surface Science Reports, 66 (2011) 1–27
- [2] Chaoliang Tan, Chemical Reviews, 2017 117 (9), 6225-6331