

COMPARISON OF DIFFERENT METAL/PtSe₂ SYSTEMS

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Today, 2D materials also include Transition Metal Dichalcogenides (TMD), which provide a wide range of charge carrier mobility values and bandgap energy, which depend on the thickness [1,2]. One of the most promising TMD materials for further applications is PtSe₂, which exhibits a chemically nonreactive surface, it is crucial to determine the properties of the metal/PtSe₂ interfaces. Different metals form morphologically unique structures on the PtSe₂ surface, which requires a comprehensive analysis of physicochemical properties including an analysis of the thermal stability of such systems.

This presentation will discuss the properties of the metallic layers (eg. Ni, Ti) with various thicknesses embedded on the surface of the bulk PtSe₂ crystal. Particular emphasis will be placed on forming intermixed phases at the interface observed in the form of vibration modes in Raman spectroscopy and the chemical shift in XPS measurements. The observed differences between the metal layer and PtSe₂ indicate the distinctive properties of such structures, which translate into the operation of planar architecture sensor devices.

[1] J.H. Kim, *et al.*, AIP Adv. 6, 065106 (2016)

[2] X. Duan, *et al.*, Chem. Soc. Rev. 44, 8859 (2015)

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