

COMPARATIVE INVESTIGATION OF PTSE₂-BASED SYSTEMS FROM 1L TO BULK

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The Transition Metal Dichalcogenides (TMD) class of materials attracts the interest of researchers and technologists because of their intrinsic physical properties, such as the thickness dependence of electronic properties that switch from semiconducting to metallic in the same material and the possibility of bandgap engineering. PtSe₂ is a promising material with potential for future applications due to the chemical stability of the surface and the predicted high charge carrier mobility [1].

In the presentation experimental studies of 1, 2, 3, 5, and 10 L of PtSe₂ deposited on an Al₂O₃ substrate will be shown, including a comparison with the bulk properties. The discussion will focus on the properties of commercially available samples and the impact of temperature on the considered systems (in the range of RT to 520K) [2]. Finally, the fabrication of elaborate procedures for the PtSe₂-based simple electronic devices will be discussed [3].

[1] H. Xu, et al., *Adv. Funct. Mater.* 29 (2019) 1805614.

[2] J. Raczyński, et al., *Mater. Sci. Eng. B.* 297 (2023) 116728.

[3] W. Koczorowski, et al., *Mater. Sci. Semicond. Process.* 167 (2023) 107814.

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