

Abstract Submitted
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Electronic Devices with Dichalcogenide Nanolayers¹ ANDRAS KIS, BRANIMIR RADISAVLJEVIC, MOHAMED BENAMEUR, JACOPO BRIVIO, EPF Lausanne — We have exfoliated single, two-dimensional layers 6.5 Angstrom thick from a number of dichalcogenide materials such as MoS₂, using the micromechanical cleavage technique commonly used for the production of graphene. Optical microscopy together with AFM was used to characterize the nanolayers and establish optimal conditions for rapid identification of monolayers using optical methods. Our nanolayers are mechanically and chemically stable under ambient conditions. We have electrically contacted nanolayers using electron-beam lithography and fabricated field-effect transistors. Electrical transport measurements show that our devices have high on/off ratios and high mobilities. Our results indicate that two-dimensional dichalcogenide nanolayers could be interesting building blocks for nanoelectronic applications.

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