

High-Performance Field-Effect-Transistors on Monolayer-WSe₂

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Recently, transition-metal dichalcogenides (TMD) (**Fig.1a**) have attracted tremendous attention due to their considerable bandgaps (1-2 eV) (**Fig.1b**), thereby presenting great potential for low-power digital applications. However, a critical parameter for such nanoelectronic devices is the contact resistance at the metal-TMD interfaces. We have conducted systematic studies of metal contacts to 2D materials and has demonstrated high performance WSe₂ FETs with record high ON current (210 $\mu\text{A}/\mu\text{m}$) and mobility (202 $\text{cm}^2/\text{V.s}$). Our modeling/simulation framework and experimental work provide guidelines for designing novel 2D semiconductor devices.

