

AC And DC Theoretical Modeling Of A MoS2-FET With COMSOL Multiphysics

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Abstract

Transition metal dichalcogenides (TMDCs) have attracted the interest of researchers because of their physical properties, such as tunability, non-zero bandgap, gas sensing and superconductivity. One of the most studied TMDC is monolayer MoS₂, for this reason we present how COMSOL can be used to model a field-effect transistor (FET) based on this material. The device will be studied both in DC and AC regime to theoretically investigate its electrical behavior and performance at the two different regimes. The semiconductor physics has been used to model the device in the DC regime, the electromagnetic waves module have been used to model the device at RF frequency.

Reference

Keywords: transition metal dichalcogenide, MoS₂ FET, 2D material, theoretical model.

Figures used in the abstract

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Figure 1

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Figure 2

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Figure 3