Simulation of high electron mobility transistors (HEMT) in SILVICO with the aim of analyzing the effects of mole fraction on threshold voltage and energy band structure.

mahyar gholamalinejad*,

In this research, we stimulate a transistor which owes high- electron mobility in Silvaco. Then, we study the depth of potential well in energy band diagram by changing the mole fraction of AlGaAs. Increment or decrement at the amount of Drain-source current toward the voltage of Gate-Source would be seen. Analyzing and studying on this purpose for the management of threshold voltage are done. Changing AlGaAs to AlGaN, studying on the mole fraction and comparing with the first structure are also done. With the depliton at GaN region by 0.3 of mole percentage, we would study the structure of transistor and the depth of quantum well at intended region.

Keywords : high-electron mobility transistor, energy band diagram, threshold voltage.