"Factors Affecting the Laser-induced Ni Silicidation"

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Abstract

Laser annealing has increasingly received a renewed interest to be used during complementary metal-oxide semiconductor fabrication process. Laser annealing can be utilized during both ultra-shallow junction and silicide formation. In this talk, three aspects which affect the laser-induced silicide or germanosilicide formation, have been investigated. First of them is the alteration of the laser energy and the number of laser pulses might enhanced the silicide formation and its uniformity depending the laser fluence and/or the number of laser pulsed used. Secondly, introduction of heterostructure in the substrate, which exploits the difference in thermophysical, and optical properties of materials has enabled the laser annealing process to form an atomically abrupt germanosilicide/ substrate interface. And lastly, the Pt alloying has also been found to be beneficial in reducing the oxygen contamination during Ni germanosilicide formation which results in a better germanosilicide morphology and a reduction in the surface roughening.