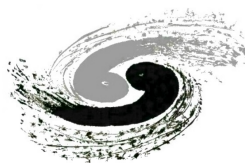
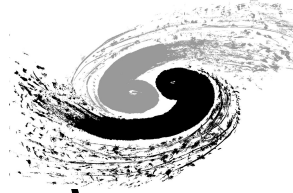


Sensor Design Update



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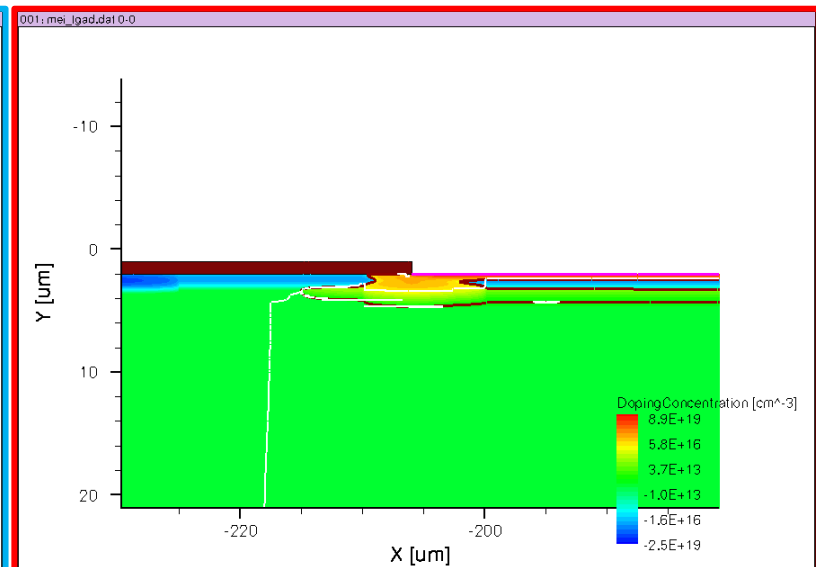
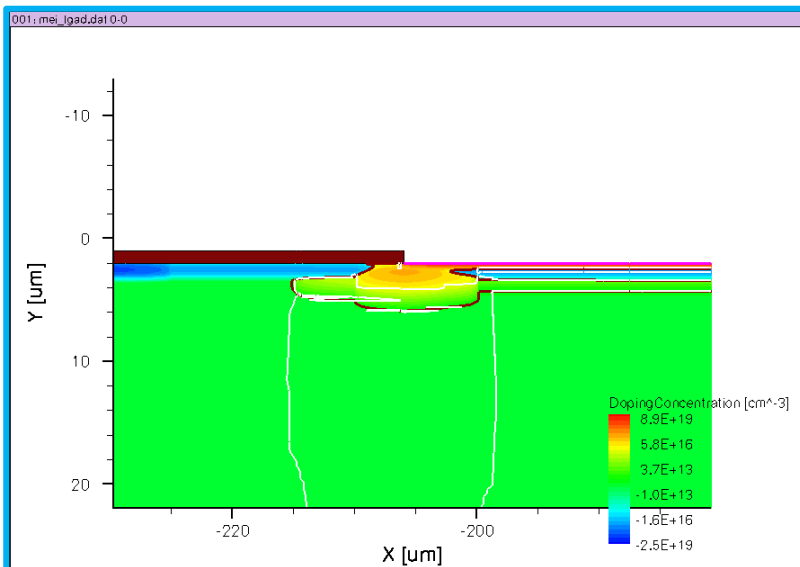
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N-JTE (Structure Simulation 7 μm)

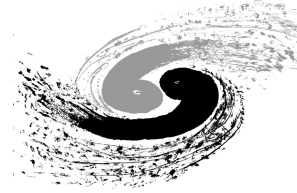
400keV Phosphorus Ion Injection: depth=3.8 μm

200keV Phosphorus Ion Injection: depth=2.5 μm



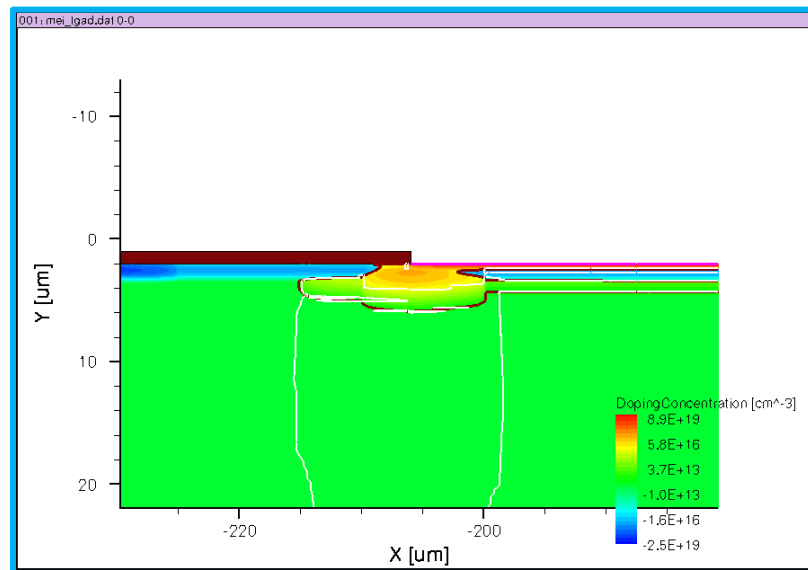
BUT!!!

Maximum Energy = 130keV

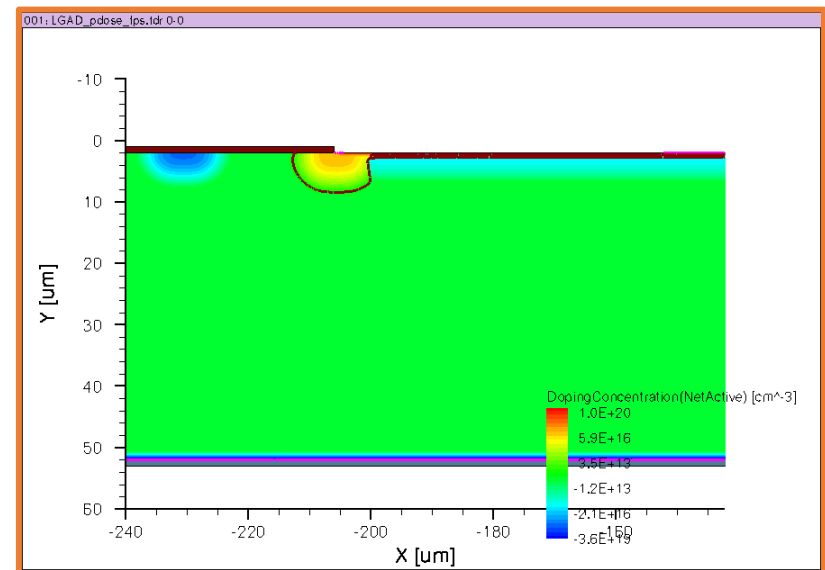


Diffusion Temperature

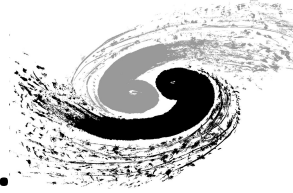
400keV Phosphorus Ion Injection
Diffusion Temperature= 1050°C
depth=3.8 μm



400keV Phosphorus Ion Injection
Diffusion Temperature=1200 °C
depth=6.2 μm



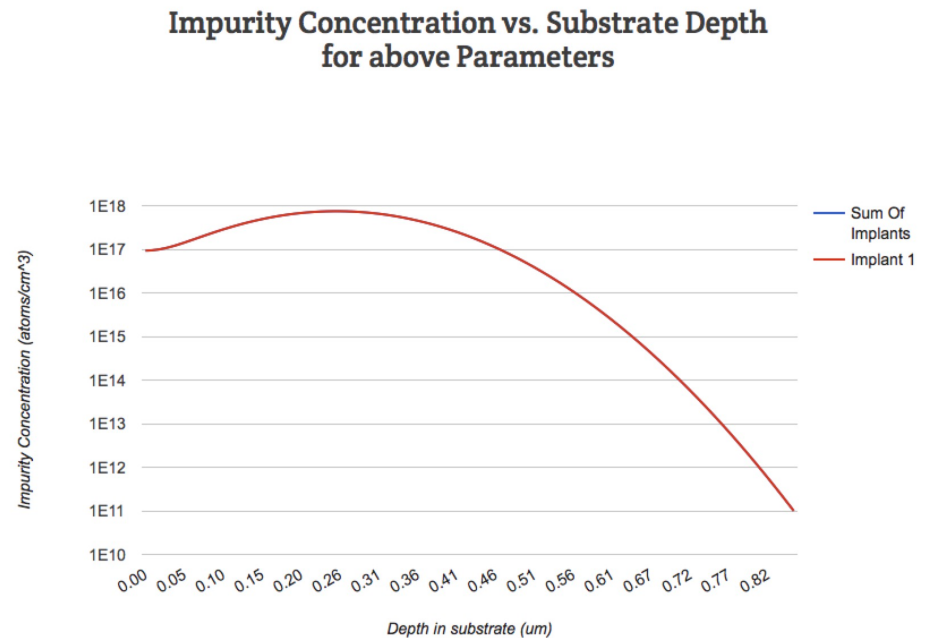
Easy way to simulate ([https://www.cleanroom.byu.edu/im](https://www.cleanroom.byu.edu/implantcal) plantcal)



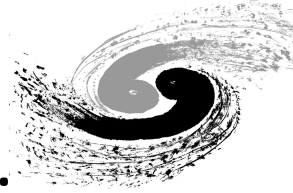
Number of Implants:

Dopant: ☐ Arsenic ☐ Boron ☒ Phosphorus	Diffusion Temperature: 1050 [°C]	Diffusion Time: 10 [minutes]
Implant 1 Ion Energy: 200 [keV] (0-400) Ion Dose: 4e13 [ions/cm ²]		
Substrate Depth (x): 50 [μm] Calculate Concentration CSV Ion Concentration at x: 0 [atoms/cm ³]		

Impurity Concentration vs. Substrate Depth
for above Parameters



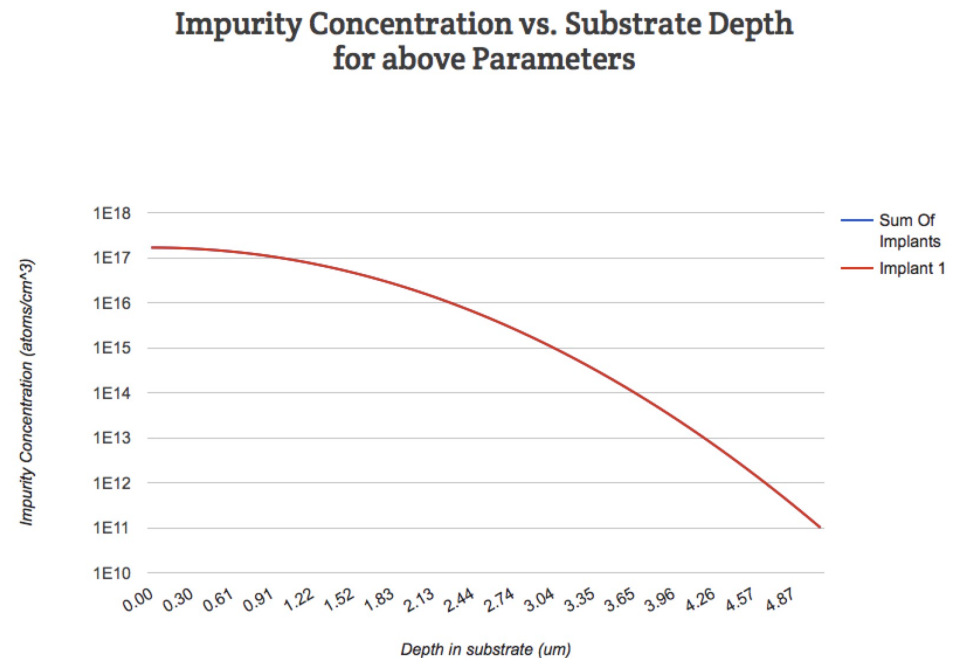
Easy way to simulate ([https://www.cleanroom.byu.edu/im](https://www.cleanroom.byu.edu/implantcal) plantcal)

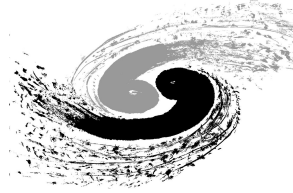


Number of Implants: 1

Dopant: ☐ Arsenic ☐ Boron ☒ Phosphorus	Diffusion Temperature: 1200 [°C]	Diffusion Time: 60 [minutes]
Implant 1 Ion Energy: 200 [keV] (0-400) Ion Dose: 4e13 [ions/cm²]		
Substrate Depth (x): 50 [μm] Calculate Concentration CSV Ion Concentration at x: 0 [atoms/cm³]		

**Impurity Concentration vs. Substrate Depth
for above Parameters**

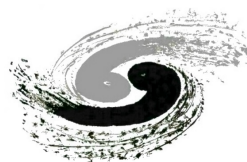




Summary

1. Process below 130keV.
2. Work on diffusion time and temperature.

Thanks for your listening!



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