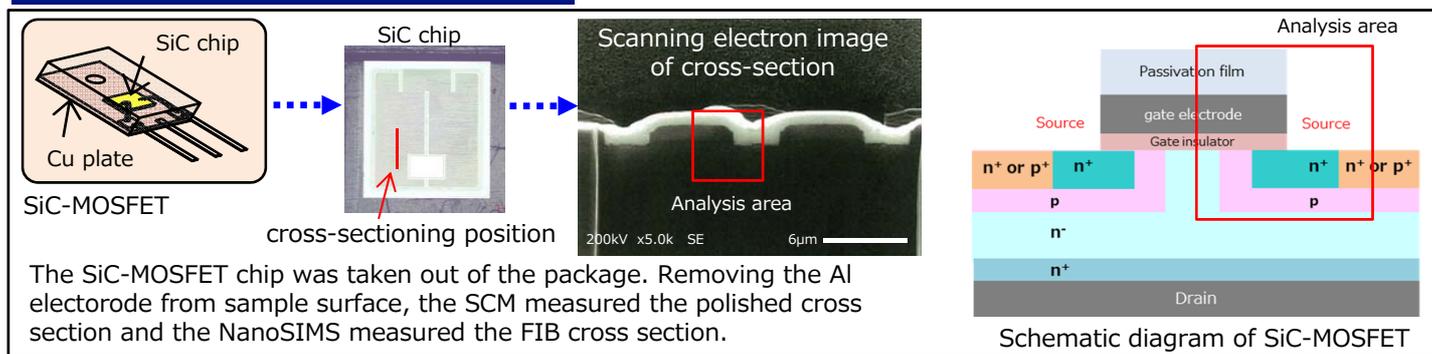


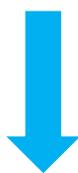
# Dopant • Carrier distribution analysis for SiC-MOSFET

NanoSIMS 50L has the highest spatial resolution of secondary ion mass spectrometry, and can perform imaging analysis with high sensitivity and high mass resolution. Here, we introduce the cross-sectional analysis of SiC-MOSFET using NanoSIMS and SCM.

## Cross-section image of SiC-MOSFET

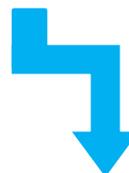


It is important to use NanoSIMS and SCM properly according to the purpose.



### NanoSIMS :

NanoSIMS obtains 2-D and 3-D dopant distributions with high spatial resolution, high mass resolution and high sensitivity.



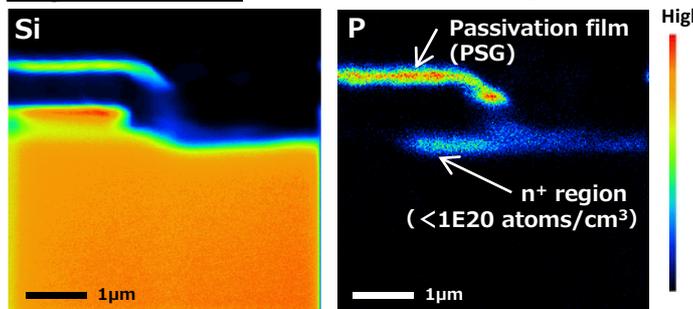
### SCM :

SCM images 2-D carrier distributions (p-type, n-type) in semiconductor devices and materials, measuring small capacitance variations with high spatial resolution.

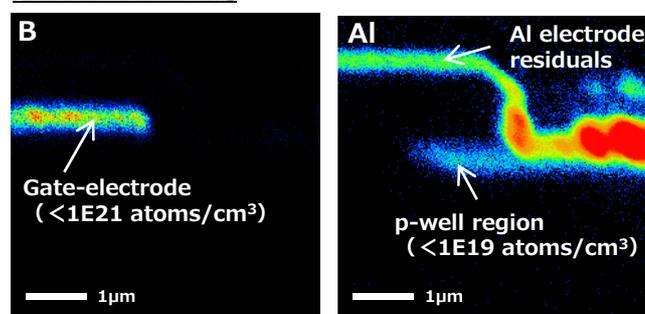
## Dopant distribution [NanoSIMS]

## Carrier distribution [SCM]

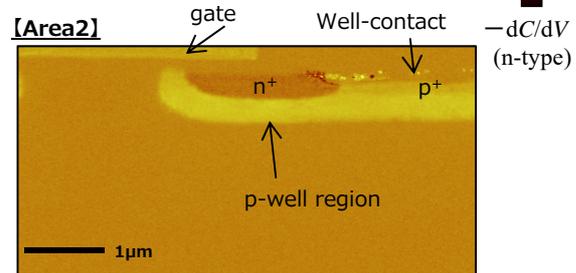
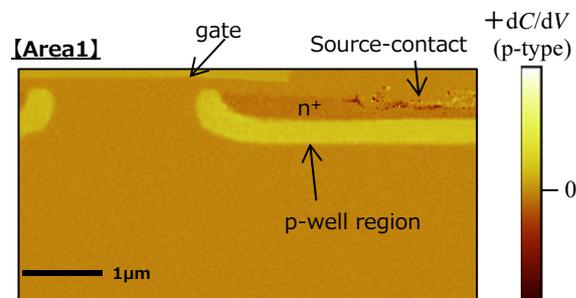
**[Negative ion mode]** ※Different areas were analyzed for each analysis.



**[Positive ion mode]**



The dopant distribution of the gate-electrode, p-well region and n<sup>+</sup> region can be confirmed by NanoSIMS analysis. These dopant can NOT be confirmed by STEM-EDX analysis.



The carrier distribution of the diffusion layer can be confirmed by SCM analysis, and the contact-state with the electrode can be visualized.

**Dopant concentration obtained by NanoSIMS would be also useful for carrier concentration analysis in the same device.**