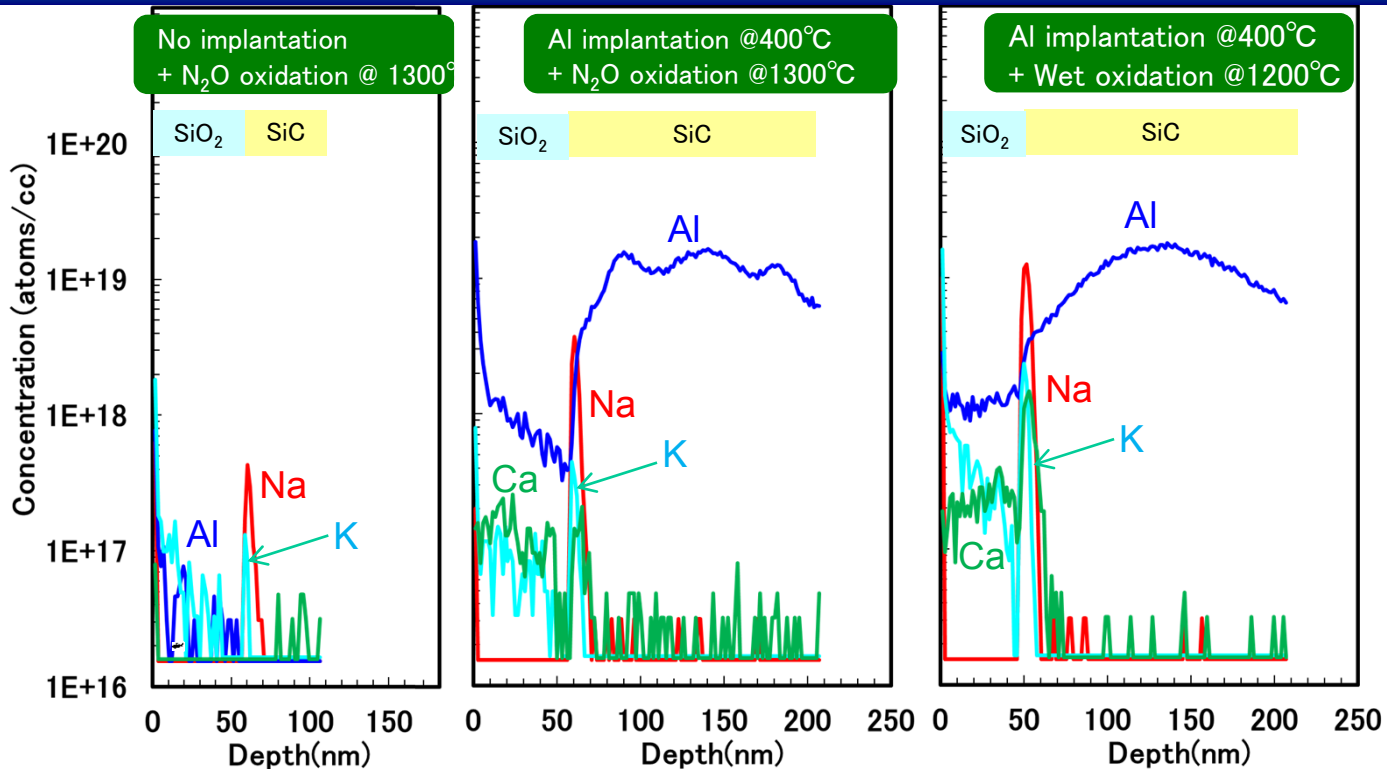


# High sensitivity analysis of impurities in SiC semi-conductor by TOF-SIMS

TOF-SIMS enables to analyze impurities at the small area or in the thin film. Here we shows two examples of 1) depth profiles of Al and other impurities in SiO<sub>2</sub>/SiC, and 2) Al depth profile at the small area (a few  $\mu\text{m}^2$ ) of SiC-MOSFET device.

Depth profiles of Al and impurities in SiO<sub>2</sub>/SiC system of Al implanted into SiC at 400°C

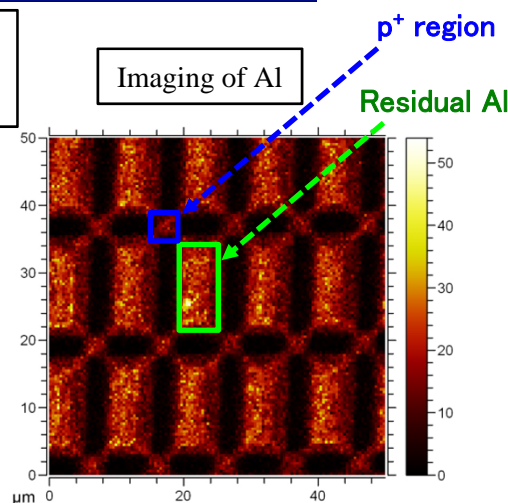
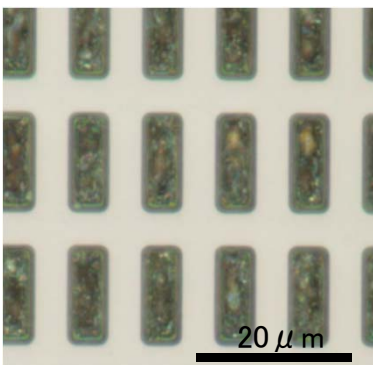


⇒ Al in SiC has been diffused into the SiO<sub>2</sub> layer after the formation of the oxide films.

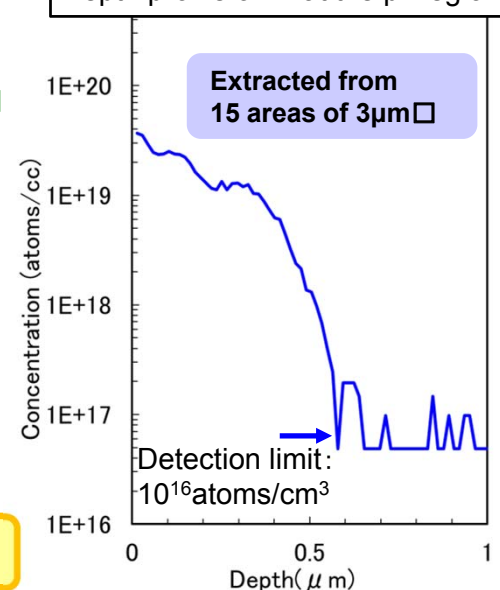
⇒ Depth profiles of Al and metals are different between samples treated by N<sub>2</sub>O and Wet process.

## Imaging and depth profile of Al in SiC-MOSFET

Optical microscope image at the surface of the device after removal of metals and passivation film



Depth profile of Al at the p<sup>+</sup> region



⇒ Al is detected with the detection limit of  $10^{16}\text{ atoms/cm}^3$  at the small areas.