

# Ar/H<sub>2</sub>雰囲気における熱処理によるSi(100)表面原子レベル平坦化に関する検討 Atomically flattening process in the Ar/H<sub>2</sub> gas ambient for Si (100) surface

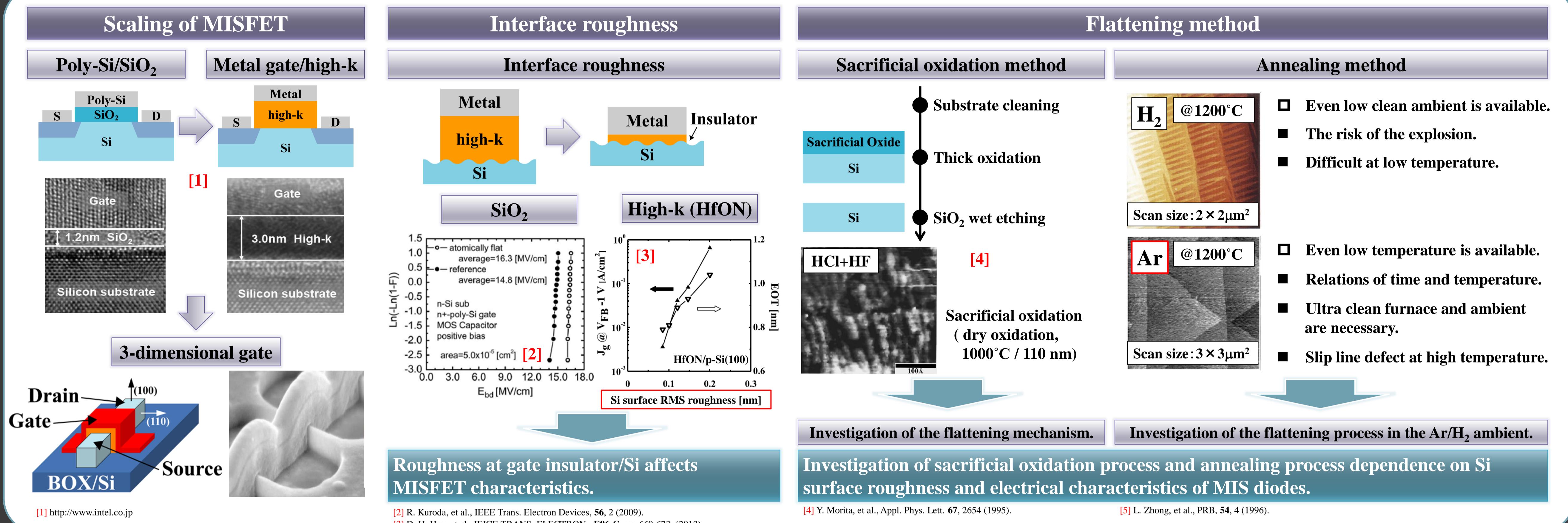
Sohya Kudoh and Shun-ichiro Ohmi

Dept. of Electronics and Applied Physics, Tokyo Institute of Technology

E-mail : kudoh.s.ab@m.titech.ac.jp, ohmi.s.aa@m.titech.ac.jp



## Introduction



[1] http://www.intel.co.jp

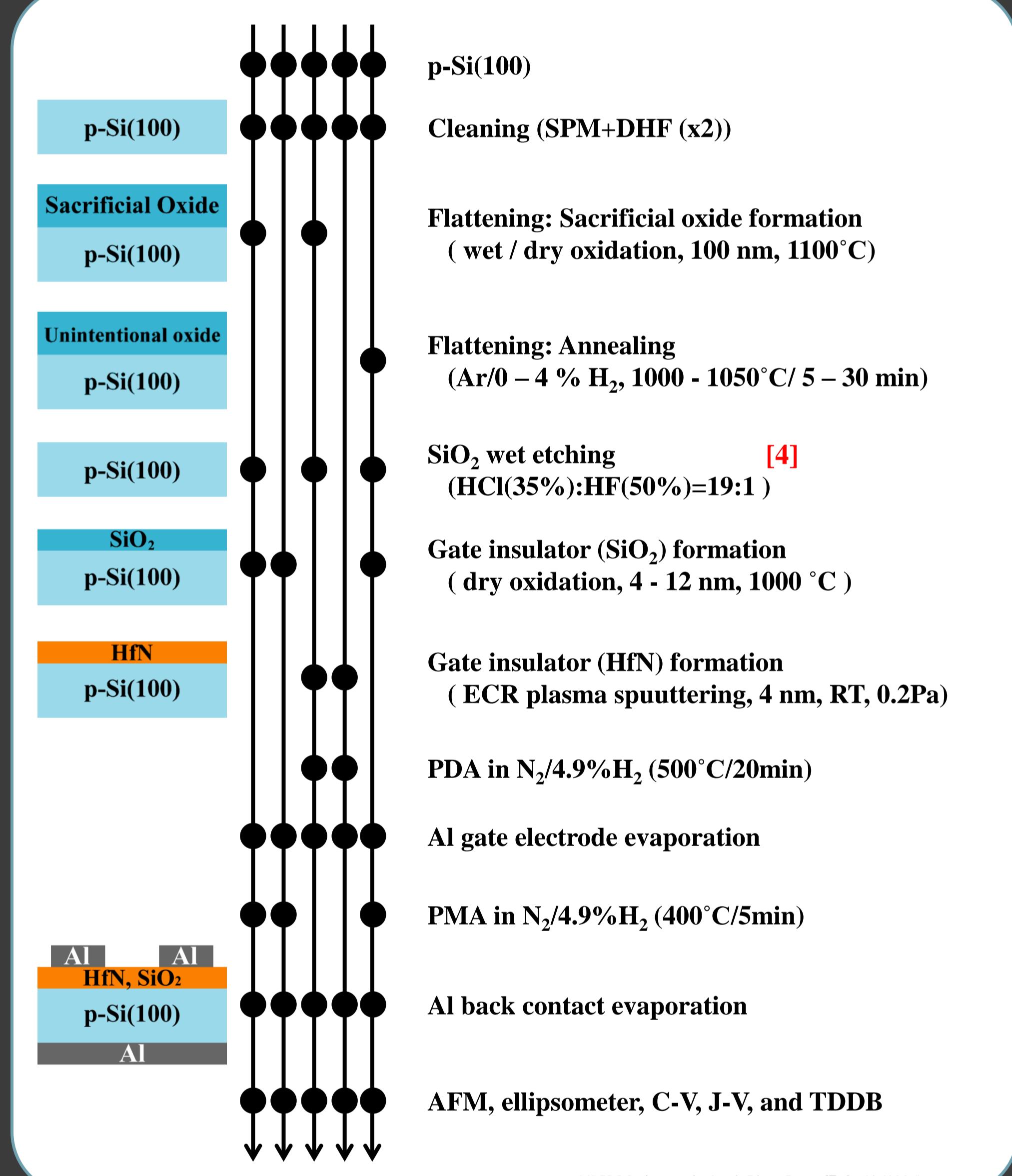
[2] R. Kuroda, et al., IEEE Trans. Electron Devices, 56, 2 (2009).

[3] D. H. Han, et al., IEICE TRANS. ELECTRON., E96-C, pp. 669-673, (2013).

[4] Y. Morita, et al., Appl. Phys. Lett. 67, 2654 (1995).

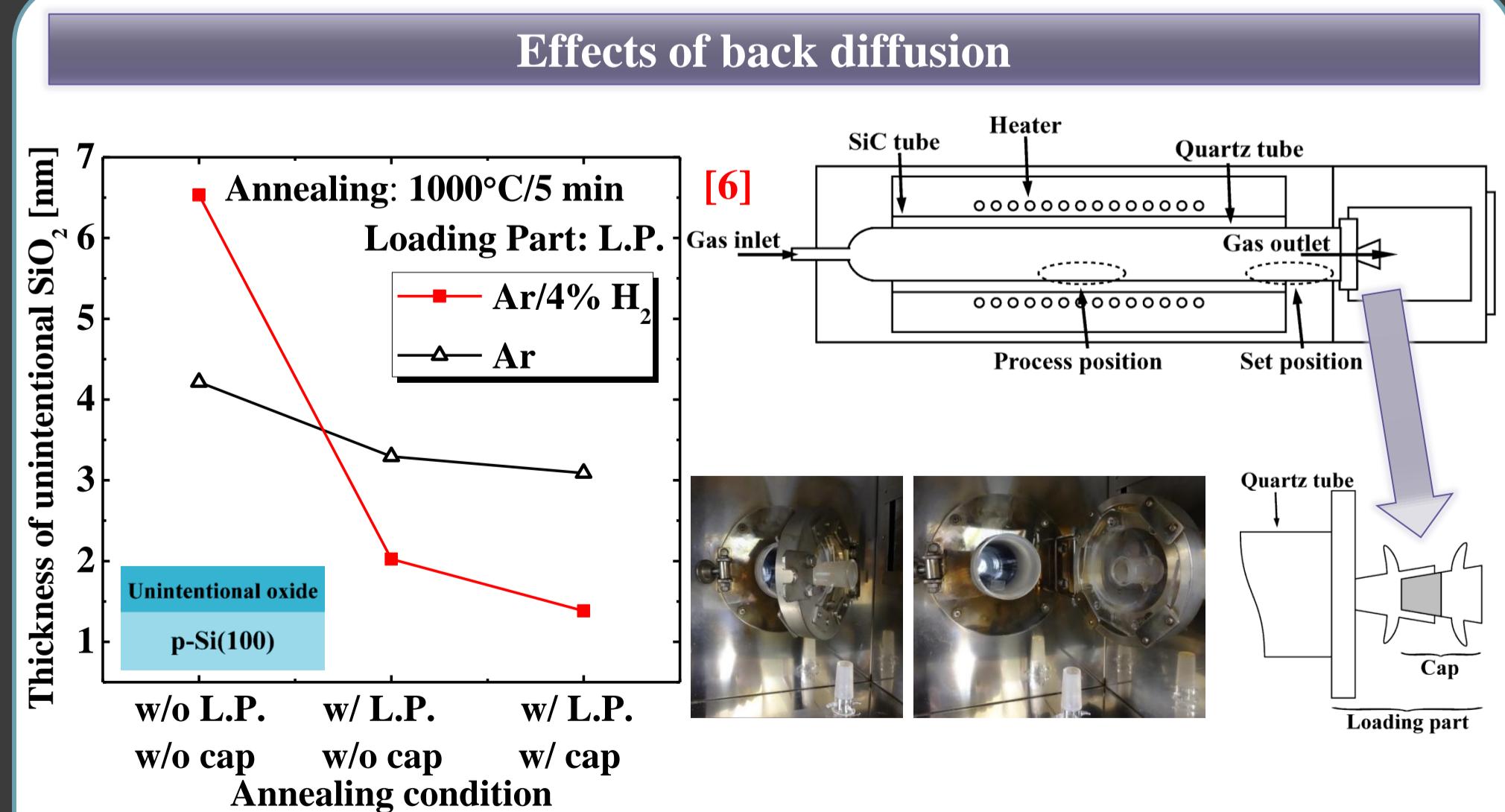
[5] L. Zhong, et al., PRB, 54, 4 (1996).

## Experimental Procedure

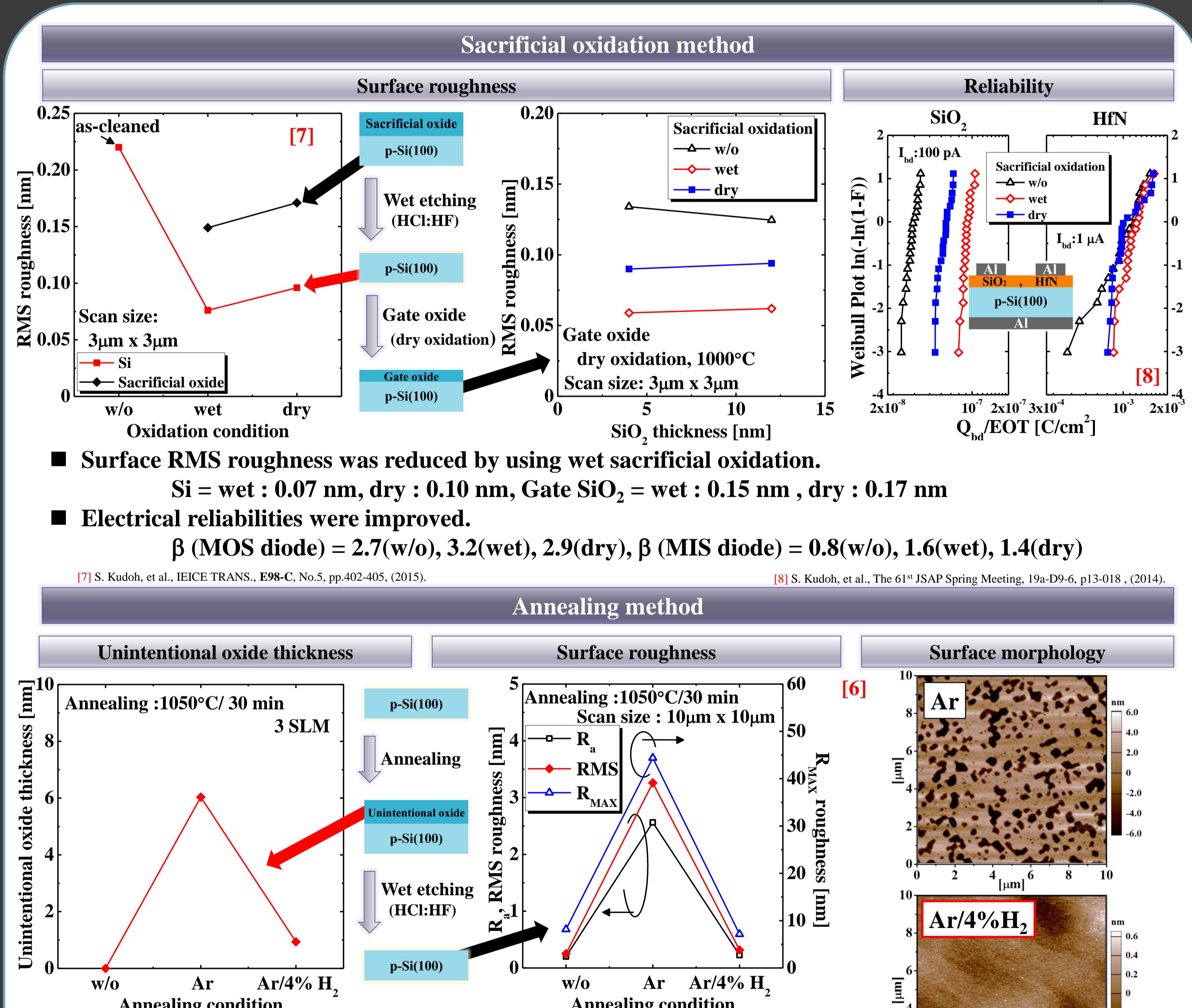


[4] Y. Morita, et al., Appl. Phys. Lett. 67, 2654 (1995).

## Annealing method



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[7] S. Kudoh, et al., IEICE TRANS., E98-C, No.5, pp.402-405, (2015). [8] S. Kudoh, et al., The 61<sup>st</sup> JSAP Spring Meeting, 19a-D9-6, p13-018 , (2014).

## Conclusions

The flattening process utilizing sacrificial oxidation and annealing were investigated.

- Surface RMS roughness was reduced by using wet sacrificial oxidation.
- Atomically flat surface was obtained by 1050°C/30 min annealing in the Ar/4%H<sub>2</sub> ambient.
- Electrical characteristics of MOS diodes on the atomically flat surface were improved dramatically.

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