

Abstract Submitted
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High Density Formation of Ta Nanodots Induced by Remote Hydrogen Plasma YAPING WANG, DAICHI TAKEUCHI, KATSUNORI MAKIHARA, AKIO OHTA, SEIICHI MIYAZAKI, Nagoya University — We have demonstrated the formation of high-density Ta nanodots (NDs) on thermally-grown SiO₂ by exposing electron beam evaporated a-Ge/Ta bi-layer stack to remote H₂ plasma without any external heating. After the remote H₂ plasma exposure, the formation of NDs with an areal density of $9.7 \times 10^{11} \text{ cm}^{-2}$ and an average height of ~ 2.1 nm was confirmed. The electrical separation among the Ta-NDs was observed from changes in surface potential due to charging to the dots. XPS analyses indicate etching of a-Ge layer by the remote H₂ plasma exposure, which was accompanied with agglomeration of Ta atoms on the SiO₂ surface caused by local heating associated with the recombination of atomic hydrogen on clean Ta-layer surface.

Yaping Wang
Nagoya University

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