

## Supplemental Document

### The oxygen-free thermal ALD and Area Selective ALD of Ruthenium film.

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Figure 1. SEM images of Ru film deposited near the via opening, and outside the via (left); and of the same Ru film deposited near the via bottom (right)-

#### Via Structure (20:1 AR, 90nm CD)

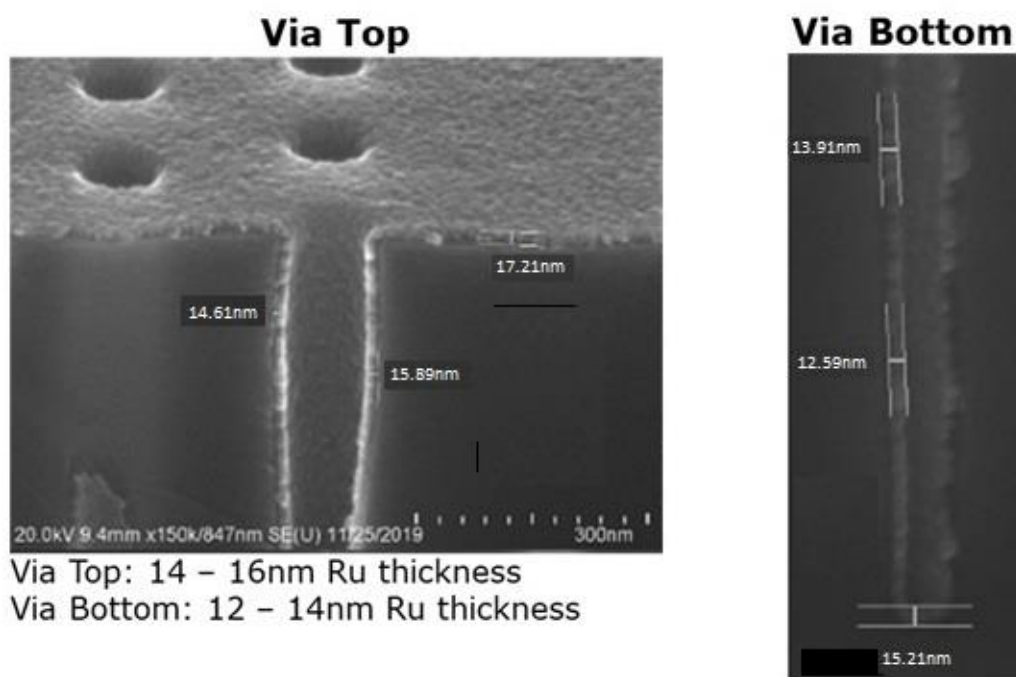


Figure 2. Selective deposition of Ru film grown on Ru and SiO<sub>2</sub>.

