

Supplementary Materials: Structural and Electrical Properties of Atomic Layer Deposited PtRu Bimetallic Alloy Thin Films

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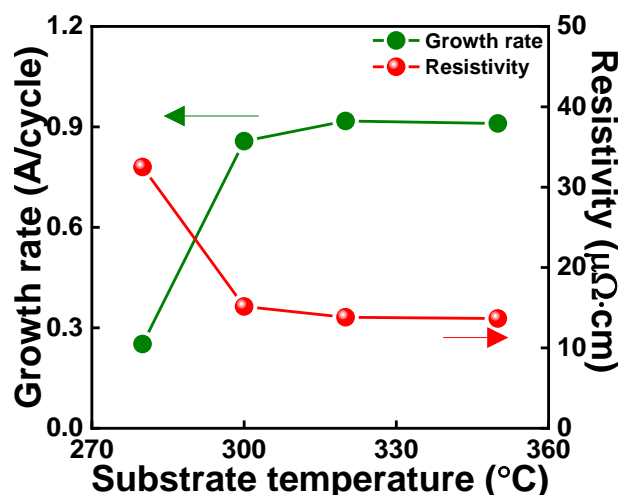


Figure S1. The growth rate and resistivity of ALD-Ru thin films using Carish precursor as a function of the deposition temperature. .

In order to prepare PtRu bimetallic alloy thin films by ALD, the ALD temperature windows of Pt and Ru should overlap. In our previous study [1], a typical ALD temperature window was appeared at between 280 and 340 °C for Pt process using DDAP precursor. For the Ru thin films using Carish precursor, a typical ALD temperature window was appeared at between 320 and 350 °C, as shown in Figure S1. Therefore, a proper ALD temperature range for ALD-PtRu bimetallic alloy thin films was determined to be from 320 to 340 °C. Considering the stable growth rate as well as lower electrical resistivities, the growth temperature of 340 °C was used to prepare ALD-PtRu bimetallic thin films.

References

1. Lee, W.J.; Wan, Z.; Kim C.-M.; Oh, I.-K.; Harada, R.; Suzuki, K.; Choi, E.-A.; Kwon, S.-H. Atomic Layer Deposition of Pt Thin Films Using Dimethyl (N,N-Dimethyl-3-Butene-1-Amine-N) Platinum and O₂ Reactant. *Chem. Mater.* **2019**, *31*, 5056.