Optimizing Sputtering Parameters for Tantalum Oxide-Based Resistive Memory: A Design of Experiments Approach

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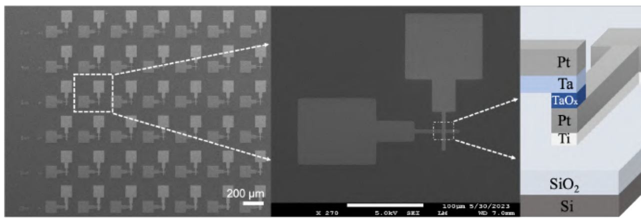

Fig. 1: a) SEM images and 3D device schematic of the cross-bar RRAM devices

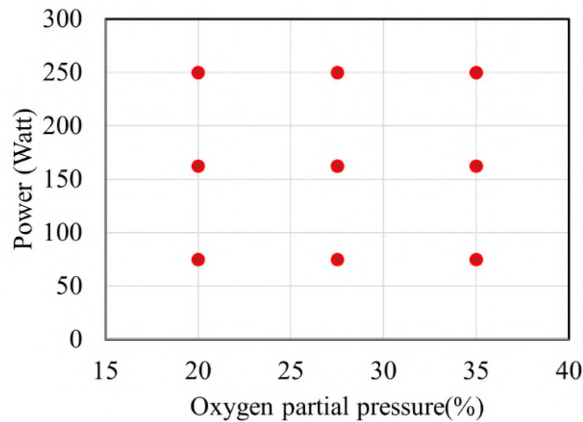

Fig. 2: a) A schematic of the DOE settings

Table 1: Design of Experiment settings

	Oxygen partial pressure (%)	Power (W)
Low	20	75
Center point	27.5	162.5
High	35	252

Fig. 3: a) The DOE settings

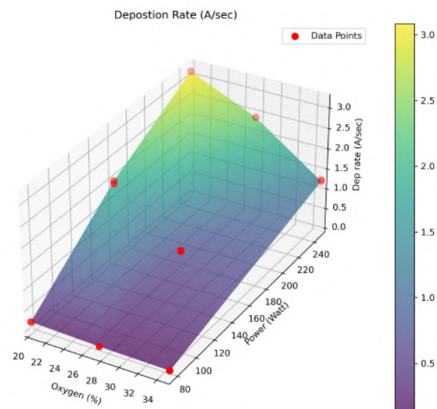

Fig. 4: a) The surface map of the deposition rate of TaO_x films obtained in the different DOE settings

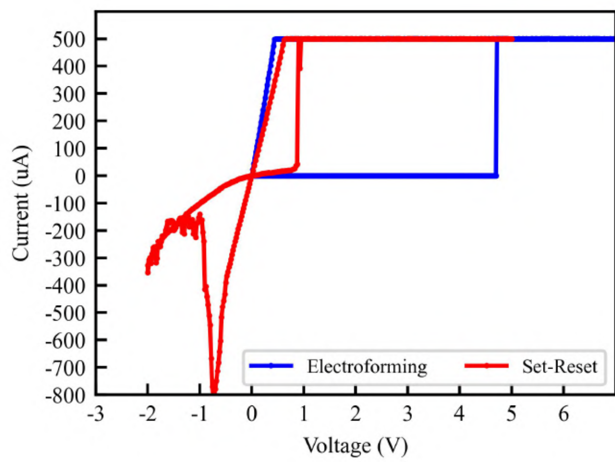

Fig. 5: a) The I-V characteristics of the representative fabricated device (Sample 1)

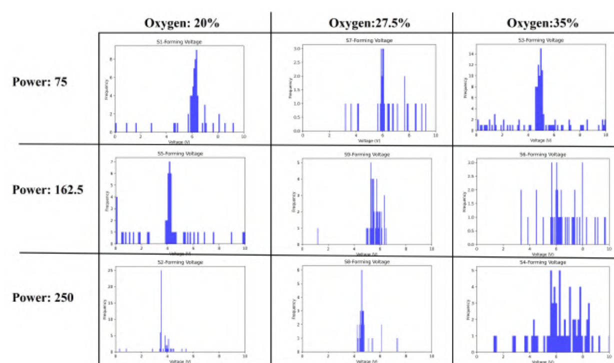

Fig. 6: a) The histogram plot of Forming Voltage in fabricated samples