

## Post-annealing effect on resistive switching behaviors in the metal deficient CoO thin film

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The resistance switching property in Pt/CoO/Pt structure has been investigated with the as-deposited and post treated CoO thin films. The CoO thin film was prepared by a radio frequency magnetron sputtering using a Co-O ceramic target, and post-anneal was performed in vacuum chamber. In order to understand the effect of post thermal annealing treatment in metal-deficient CoO layer, resistive switching properties were compared with as-deposited sample. Under the dc sweeping voltage and biasing short pulse voltage, the post-annealed CoO thin film exhibited more reproducible and stable unipolar switching property than those of as-deposited CoO thin film. By investigating x-ray photoemission spectroscopy, the stable resistance switching and the increase of initial resistance in post-annealed CoO thin film were attributed to reduction of the oxygen stoichiometry without phase transformation of the CoO. The observation of stable switching property in post-annealed CoO thin film is considered to originate from the decrease of Co vacancies in CoO layer.