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## General Program & Exhibit Guide



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## ■ S4F – P006 TRI-STABLE MEMRISTIVE SWITCHING OF A Cu/TaO<sub>x</sub>/Pt CELL

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## TRI-STABLE MEMRISTIVE SWITCHING AT PRISTINE STATE OF A Cu/TaO<sub>x</sub>/Pt CELL

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A tri-stable memristive switching was observed on a Cu/TaO<sub>x</sub>/Pt device. The underlying switching mechanism was suggested through the alteration of compliance current. The rectified switching behavior was observed while we were setting 5  $\mu$ A as the compliance current; the typical unipolar and square-shaped bipolar switching were obtained by setting 100  $\mu$ A and 10 mA, respectively, as the compliance current. It was postulated that the switching mechanism in Cu/TaO<sub>x</sub>/Pt device was closely related to the accumulation of Cu<sup>2+</sup> ions at the cathode interface.<sup>[1]</sup> The mechanism of the tri-stable memristive switching presented in this work was attributed to the migration of Cu<sup>2+</sup> ions through the initial setting value of the compliance current, while the rectification of *I-V* behavior could be attributed to the modulation of the Schottky-like interfaces.<sup>[2]</sup> The assertion was further supported by performing *C-V* measurement on the Cu/TaO<sub>x</sub>/Pt device.

Keywords: TaO<sub>x</sub>, resistive switching, thin film, compliance current

### References:

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[2] F. Kurnia, *et.al.*, *in preparation*

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